The mobilised learner: Heutagogy and mobile social media

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Declaration

I declare that this thesis is my own account of the research and contains as its main content, work that has not previously been submitted for a degree at any tertiary educational institution.
Abstract

The rapid growth and enhancement of mobile and social media tools, and their affordances, offer significant opportunities for creative and innovative design of learning experiences. The purpose of this study was to investigate the affordances of mobile and social media tools that could enable the design of a first year journalism course, which allowed the learners the opportunity to direct and determine their own learning. Three learning frameworks provided the theoretical underpinnings for the study: Pedagogy 2.0, heutagogy, and mobile learning.

A design-based research approach was used to conduct the study and to create the learning solution. A set of draft design principles was created from the theory, research literature and consultations with practitioners. In collaboration with the practitioners, the draft design principles were incorporated in the design and implementation of the learning solution, and were refined over two iterations. At the end of each iteration, formative evaluations were conducted to identify areas for improvement in subsequent implementations. Data were collected from the students in the course using an online anonymous survey, focus groups, interviews, researcher reflections, and student and teacher created artefacts. These data were coded using the first two phases of data reduction and display and then analysed using a constant comparative method of analysis.

The findings in the study suggest that mobile and social media affordances increased learner autonomy over the learning process and mobility in purposively designed learning environments using social constructivist pedagogies. Mobile and social media enabled increased learner access to teachers, peers, people, content, communities and networks to create content and new knowledge in meaningful and contextually relevant spaces through collaboration and participation—shifting the learning from knowing (knowledge) to ‘learning to become’. The findings in the study, however, suggest that for learners to achieve learning benefits with mobile and social media tool, they need to be scaffolded in the process for effective and pedagogic use of the tools—requiring a reconceptualisation from social to academic application. The key outcome of the study is a set of refined design principles for educators to guide the use of mobile and social media in contextually embodied learning and teaching.
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Preface

Many fortunate children around the world enter the education system thinking it will change their lives and offer opportunities to improve the quality of living and the society they live in. Unfortunately, many children are let down by this system that is meant to help nurture and grow their knowledge and creativity. Many schools and teaching approaches still mirror the processes that were in place when the world we lived in was different in so many ways. While the world and we, as a species, have evolved, teaching has predominantly remained rooted in its historic past. The process of creating knowledge is arguably still seen as a product of the learner’s ability to remember and regurgitate content and ideas shared by the teacher. The failure to consider learner input, capability, knowledge, experience, context, and the lack of opportunity in the learning process for the learner to experiment with and construct their own meaning and knowledge are contributing factors for learner dissatisfaction, disengagement and dropout in formal education.

I was a victim this archaic education system during my early years in school. From year one to year seven I was regularly positioned in the last five percent of the class, but, deep inside I knew I could do better. It was not until year eight when two teachers, who did not speak at me but involved me in the learning process helped ignite my passion and keenness to learn. The two teachers—Ms Post and Mr Singh who taught science, invited their students to be involved and, for a change they asked questions. They endeavoured to include us in our learning by giving us freedom to experiment with simple tools and apparatus with which to learn.

My own experience as a learner—and learning first hand that good teaching can make a difference in every learner’s life—is what ignited my passion in education, in particular, exploring technology as a mechanism for actively involving and empowering the learner. In recent years in my role as an academic advisor, I have focused on utilising mobile devices and social media tools for actively engaging students in the learning process. And, that forms the basis for this study—to explore strategies and affordances that help the learner in directing and determining their learning and learning path in a formal educational setting and to share the lessons learnt with other teachers.
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CHAPTER 1

Introduction

The invention of electricity sparked a chain of transformative events that has and continues to redefine who we are as humans (J. S. Brown, 2006). Over the last decade, the evolution of the World Wide Web and the rapid advancements in mobile technology have created a social transformation that is drastically changing the way we communicate and interact with each other (Conole, 2013; Lewis, Pea, & Rosen, 2010; Sharples, Taylor, & Vavoula, 2010). According to International Telecommunication Union (ITU) (2015), cell phone subscription achieved 97% penetration in 2015, up sevenfold when compared to the year 2000 (Figure 1.1). While mobile broadband penetration in 2015 stood at 47%, an increase by twelvefold when compared to 2007 when mobile broadband was only beginning. The phenomenal rate of acceptance and integration of mobile devices in daily human live could be credited to the social affordances that the mobile devices embody (Anderson, 2004; Arthur, 2013; Cook & Santos, 2015; Hsu & Ching, 2015; McLoughlin & Lee, 2008b). The pervasiveness of mobile phones, connectivity through mobile broadband and an ever growing list of mobile applications and affordances provide people with a mechanism that enables connection, communication, collaboration, ability to easily create contextually rich data and the ability to share it with anyone around the world regardless of time or geographical barrier (Cochrane & Bateman, 2010; Cook, Bradley, Lance, Smith, & Haynes, 2007; Cook, Pachler, & Bradley, 2008; Luckin, 2010b; McLoughlin & Lee, 2008c). These affordances have seen humans create data at a rate and amount never before witnessed—evidenced on social media platforms such as Facebook, Twitter, YouTube and many others (Chen & Bryer, 2012).
University learning and teaching practices, however, still remain predominantly embedded in didactic pedagogies that perpetuate teacher-centric learning methods (Bates, 2015), hence fail to capitalise on the affordances of mobile and social media technologies (McLoughlin & Lee, 2008b; Sharples et al., 2012). According to Laurillard (2013), the underpinning concepts professed by Dewey (1916), Vygotsky (1978), Lave and Wenger (1991) and Freire (1970) have long emphasised a learner driven, social constructivist approach to learning and teaching. This, however, largely remains unrealised in tertiary education that still values the transmission model for teaching (Bates, 2015)—where the learner is supposed to sit, observe and acquire the knowledge to be learnt from the expert at the front of the classroom (Beetham & Sharpe, 2013).
For over a decade, there have been renewed calls for learning and teaching to reconsider the types of skills and knowledge needed by the learners in today’s world—learners who face an uncertain future in this fast changing technological world (Brown, 2001; Laurillard, 1993, 2002; Robinson, 2003, 2011; Bates, 2015).

Laurillard (2013, p. xvi) states that ‘digital technologies trigger a different kind of relationship between the teacher, the learners, and what is being learned’. Cochrane (2014) similarly argues that the use of digital technologies provide us with an opportunity to revisit our own teaching practices by exploring new teaching paradigms, particularly labelling mobile and social media tools as ‘catalyst’ for pedagogical change. There is a growing body of literature investigating the role of technology and new approaches for learning and teaching in an attempt to move learning beyond a spectator event to actively engaging the learner through the affordances of mobile and social media technologies (Bannan, Cook, & Pachler, 2015; Beetham, 2013; Beetham & Sharpe, 2007; Cochrane & Bateman, 2010; Conole & Alevizou, 2010; Cook, Pachler, & Bachmair, 2011; de Freitas & Jameson, 2006; Herrington & Herrington, 2007; Herrington, Parker, & Boase-Jelinek, 2013; JISC, 2009; Johnson, Becker, Estrada, & Freeman, 2014; Kukulska-Hulme, Sharples, Milrad, Arnedillo-Sánchez, & Vavoula, 2009; Laurillard, 1993; Luckin & Benedict, 2015). In particular, mobile learning is claimed to be ‘growing at an exponential rate’ (Crompton & Burke, 2014, p. 304) due to the high ownership rate, constant connectedness and rapidly advancing affordances.

Pachler (2007) states that ‘the mobility of digital technologies creates intriguing opportunities for new forms of learning because they change the nature of the physical relations between teachers, learners, and the objects of learning’ (p. 154). One such pedagogical approach that has received a renewed lease of life because of mobility and social media affordances is heutagogy (Blaschke, 2012). Heutagogy refers to self-determined learning or learner-generated context (Blaschke, 2012; Hase & Kenyon, 2000; Luckin et al., 2011). In their seminal paper, Hase and Kenyon (2000) argue that learning and teaching has always been seen as a process where the teacher is the orchestrator of all learning, however, ‘the rapid rate of change in society, and the so-called information explosion, suggest that we should now be looking at an educational approach where it is the learner…who determines what and how learning should take
place’ (p. 1). Similarly, Bannan et al. (2015) argue that learning is not just a cognitive process but also a ‘social phenomenon, and does not only take place in one location but also across communities, locations, time, social contexts and sites of practice’ (p. 4).

This research study was undertaken to explore current and emerging theory and practice, and advancements in the affordances of mobile and social media technologies to investigate heutagogical use of learner owned mobile devices. It is hoped that the findings of this study will help to identify possible solutions or models for use by other higher education practitioners in supporting learner-generated content and context-based learning and teaching.

A four phase design-based research approach was utilised in this study (Reeves, 2006). Design-based research is defined as ‘a series of approaches, with the intent of producing new theories, artifacts, and practices that account for and potentially impact learning and teaching in naturalistic settings’ (Barab & Squire, 2004, p. 2). Design-based research approach was deemed appropriate for this study (discussed in Chapter 3) as it leads to the creation of transferrable knowledge—helpful for other practitioners and helps investigate unrealised and unexplored possibilities in mobile learning (Bannan et al., 2015). The design-based research model and its use in this study are described in detail in Chapter 3.

**Consultations with the practitioners**

A central tenet of design-based research ‘is that it requires practitioners and researchers to collaborate in the identification of real teaching and learning problems’ (Reeves, 2006, p. 59). In a typical design-based research project, the practitioners and the researchers would then embark on a long-term collaborative relationship to design a solution from a set of draft design principles, implement the solution while testing and refining both the initial solution and the draft design principles.

In this study, informal face-to-face consultations were held with a group of university lecturers teaching a journalism course as part of the Bachelor of Communication Studies degree. These informal conversations with the practitioners effectively became weekly catch up sessions over coffee at the university café. The practitioners were
driven by their curiosity to know the current and emerging state of technology in an attempt to find relevance with the fast changing face of journalism, and the changing role of a journalist and journalism education. The practitioners had a desire to deliver a learning experience that was indicative of the practice in the real world by real journalists. Journalism is arguably the leading face of change driven by the fast developing mobile technologies and the desperate desire of people to be up to date with what is happening around them and in the world (Alejandro, 2010; Harper, 2010). The main issue in conversation with the practitioners was the disruption brought by mobile and social media technologies to the profession of journalism. For example, everyday citizens were now capable of capturing and sharing news themselves through mobile devices and social media (citizen journalism). The practitioners (former journalists themselves) through their own observations and reflections, accompanied by an article from Jarvis (2012) from NiemanLab acknowledged that they needed to investigate and facilitate an innovative approach to teaching journalism. According to Jarvis (2012), the one-size-fits-all approach to journalism education needs to change and the educators need to explore and endorse radical innovations in relation to mobile and social media tools in three areas:

- teaching of technology and tools embedded within the journalism curriculum
- teaching in practice or learning by doing
- the need for teaching to facilitate new ways of building an understanding of the role of journalism in the society.

From the conversations and consultations with the practitioners over several weeks (as described in Chapter 3), the following issues and suggestions were identified:

- **Teaching**: The practitioners recognised that teaching approaches needed to move beyond the simple transfer of knowledge and attempt to actively engage the learner in the learning process.
- **Teaching**: The practitioners expressed an interest in contextualising the learning experience by adopting a ‘learning by doing’ approach.
- **Learning**: The practitioners wanted to provide all the students who enrolled in the first year journalism course with an authentic and real world experience of
being a journalist to help them decide if journalism was the career they wanted to focus on for the next two years as part of their study.

- **Learning**: The practitioners were willing to embark on a journey to utilise and in turn facilitate learning and teaching methods that considered the affordances of mobile social media.

- **Design**: There were concerns about the design and facilitation of the course, particularly what it would mean for them as teachers and their role in the process. Would increasing use of social media in journalism mean that they would now need to provide students with technological support for which they felt ill-prepared? What would the assessments in a learner-driven course look like? How could they design for learning with mobile and social media tools while teaching the specific curriculum content.

- **The learner**: The practitioners wanted to explore pedagogical strategies that could be used to implement the use of technology for learning and teaching. Specifically, how to manage learner expectations, support and use of technology in the course? How to enable learning that goes beyond just knowing to ‘being’? How to facilitate a learning experience where the learner would not perceive him/herself as being a ‘student’ in learning, but rather view learning as an embodied practice of the profession—in this case, from knowing to being a journalist?

As a result, the focus of the study in collaboration with the practitioners was to design and facilitate a course that would help address the issues discussed above.

**The research approach and research questions**

The research study was designed and implemented using design-based research, in particular the four phases of design-based research outlined by Reeves (2006). The following sections provide an overview of the activities undertaken within the four phases of design-based research.

**Phase 1: Analysis and the problem**

Phase 1 of design-based research encompassed consultations with three practitioners teaching a journalism course at a University to identify the educational problem.
Following this, an in-depth literature review was conducted to identify the characteristics of the possible intervention, an appropriate research methodology to evaluate the design was selected and research questions were developed to guide the study. The identification of the educational problem in collaboration with the practitioners was discussed earlier in this chapter. The literature review conducted as part of the first phase is presented in Chapter 2 of this thesis and the research methodology is discussed in Chapter 3.

The overall research question that guided this study was:

How can mobile and social media tools enable learner-generated content and context (heutagogy) for enhanced learning?

In addition, the secondary questions that helped answer the main research question were:

1. What are the pedagogical affordances of mobile and social media tools that enable the design and implementation of heutagogic learning?
2. How did the use of mobile and social media tools within a heutagogical framework enhance the learning and learner experience in an undergraduate journalism course?
3. What is the role of the teacher in facilitating a heutagogical learning experience using mobile and social media tools in a course?

**Phase 2: Development of the solution**

In Phase 2, an intervention or ‘solution in practice’ (Reeves, 2006) to the problem investigated in Phase 1 was created. A contextually embodied journalism course was created by the practitioners assisted by the researcher—guided by draft design principles (discussed in Chapter 4) elicited from the literature review and findings from the consultations held in Phase 1. At the end of Phase 2, the existing Principles of Journalism (PoJ) course was re-evaluated and elements of the course were redesigned. A learning environment to facilitate PoJ was assembled ready for implementation (discussed in Chapter 5). The aim of PoJ was to deliver a contextually embodied learning experience through the use of mobile and social media. This would allow the learner to work in authentic real-world situations with the opportunity to explore,
critique and understand the concepts of journalistic practice mediated by the use of mobile and social media technologies.

**Phase 3: Iterative cycles of testing and refinement**

In Phase 3, the PoJ semester course was facilitated and evaluated at a University in Auckland, New Zealand. Data from the first iteration (three practitioners and 174 students) were analysed using a constant comparative method (Glaser, 1965) to identify areas of success and areas in need of improvement. Changes to the design of the initial PoJ course were made and implemented again with a cohort of 162 students and four practitioners. In all, two iterations of PoJ were implemented and evaluated. Data in both iterations were collected using an anonymous online survey, interviews, focus groups, researcher reflections, and student and practitioner created artefacts (discussed in Chapter 3). The analysis and findings from the first iteration is discussed in Chapter 6 and the analysis for the second iteration is presented in Chapter 7.

**Phase 4: Design principles**

In the final phase of design-based research, a summary of the research and a presentation of the recommended design principles based on the researchers’ reflections and recommendations for further research are provided. These are discussed in Chapters 8 and 9 respectively.

**The structure of the thesis**

This introductory chapter provided an overview of the learning problems, which were identified in collaboration with the practitioners, an outline of the research questions, which were formulated to guide the study and a brief outline of the four phases of the DBR approach used in this study.

In Chapter 2 of the thesis, the literature review that was conducted pertaining to the learning problems and issues identified in Chapter 1 is presented. The literature review provides a brief overview of how educational psychology and practice has progressed and has been influenced by the advancement of technology, particularly mobile and social media tools. The literature also provides an overview of learner traits for effective learning in an uncertain and fast changing world—*lifelong learning*. In addition, an in-
depth review of three frameworks: Pedagogy 2.0, heutagogy and mobile learning or mlearning that informed and guided the development of the learning solution is also provided.

Chapter 3 provides a detailed description of the use and implementation of the design-based research (DBR) approach in the study. The chapter provides an argument for DBR and its use in the study for researching mobile and social media tools and heutagogy. The main activities and tasks within the four phases of the DBR approach are then discussed with key references. The chapter also provides a justification for the selection and use of the research method and a detailed overview of the analysis methods used in the study. The chapter also provides a description of the ethical conduct of the study and measures that were put in place to ensure trustworthiness and credibility of the analysis and findings.

Chapter 4 in the thesis outlines the design principles, which were elicited from the consultations with practitioners, together with an in-depth review of the literature relating to the three frameworks identified in Chapter 2—Pedagogy 2.0, heutagogy and mlearning. The six draft design principles derived from the three frameworks are discussed and a suggestion of how each principle could be instantiated in the design of the solution is also provided.

Chapter 5 of the thesis describes the development of the learning solution by the practitioners—assisted by the researcher. A detailed description of the design of the intervention (PoJ) is provided. The critical elements of the course—tasks and learning activities, assessment, and the design of the learning environment are discussed in relation to the affordances and use of the chosen mobile and social media tools. An overview of how each draft design principle was instantiated in the design of PoJ is also provided.

Chapters 6-7 present the data analysis and findings, and discuss the impact of each of the draft design principles used in PoJ on the learner and the learning experience. In Chapter 6, the learning environment (designed and discussed in Chapter 5) is evaluated to identify areas for improvement for the second iteration, and each design principle is
evaluated to understand the impact it has on the learner and the learning. In Chapter 7 the refined course and learning environment is evaluated with the data collected in the process. The draft design principles are again evaluated with the analysis of the data to understand their impact on the learner and the learning experience.

Chapter 8 of the thesis provides an overview of what was learnt in the study over the two iterations and outlines refined design principles for designing an authentic and real world learning experience informed by the findings of the study.

Chapter 9 provides a summary of the study, addresses the secondary and primary research questions, identifies the limitations and implications of the study and discusses opportunities for future research.

Figure 1.2 provides an overview of the structure of this thesis in relation to the four phase design-based research approach that was applied in the study.

The following chapter presents the literature review that was conducted as part of Phase 1 in the study.
CHAPTER 2

Literature Review

In Phase 1 of design-based research, the need for a contextually embodied approach to facilitating a journalism course was established. In collaboration with a group of journalism practitioners, specific issues were identified to understand the problem area and characteristics of a possible solution (discussed in Chapter 1 and in detail in Chapter 3). The practitioners identified a need to move away from a ‘transmission’ focused teaching approach to an alternative that would allow the students ownership over their own learning process. The practitioners also expressed an interest in facilitating learning that took into consideration the affordances of mobile and social media tools that allowed the students to learn as a journalist working in real world contexts composing real news stories. As such, the challenge set in this study was to co-create a contemporary learning experience with the practitioners that was student-led, utilised current mobile and social media tools and was situated in authentic real world contexts.

A critical step in Phase 1 of design-based research is to conduct a literature review to explore the problems identified. This is done to investigate applicable theoretical frameworks or models as a basis for the formulation of an innovative solution. The literature discussed here is a part of this process.

The first section of this chapter provides a historical overview of learning and teaching practices before and after the advent of the Internet, in particular Web 2.0. This is done to build an understanding of past educational practices (pre-Web 2.0) and to identify emerging pedagogical practices and affordances provided by mobile and social media tools (post-Web 2.0). The following sections in the chapter discuss the three key areas of the research literature that inform this study: heutagogy (e.g., Hase, 2011; Hase & Kenyon, 2000), Pedagogy 2.0 (e.g., McLoughlin & Lee, 2007; McLoughlin & Lee, 2008d) and mobile learning (e.g., Cook et al., 2007; Luckin et al., 2007; Pachler, Cook, & Bachmair, 2010; Sharples, 2002).
Pre-Web 2.0 educational practices

The dominating practices in the early 1900s

The pre-Web 2.0 contexts for learning were almost entirely classroom based—the activities, tasks and connections the learners engaged in and created were defined within the physical realm of the traditional learning space (Anderson, 2010; Whitworth, 2008). Annand (2007) contends that most learning experiences were orchestrated and mediated by the teacher, who was the only source of knowledge. Early pedagogies for learning and teaching emerged in an era when knowledge was limited and only accessible through an expert and encouraged behavioural teaching practices that viewed learning as the transfer of knowledge (Huang & Behara, 2007), where the learner was perceived as an ‘unknowable black box’ (Farkas, 2012, p. 3), who played an irrelevant and passive role in the learning process (Alzaghoul, 2012; Conole, Dyke, Oliver, & Seale, 2004). According to Blaschke and Hase (2016), behavioural teaching practices provided an effective framework that met the demands of the industrial revolution—that was to ‘prepare and maintain people to fit an economic model of society’ (p. 27).

In the late 1950s, learning models began to shift from behavioural teaching approaches to learning and teaching theories from cognitive sciences (Ertmer & Newby, 2013). Here the focus moved beyond the transfer of knowledge model to enabling ‘complex cognitive processes such as thinking, problem solving, language, concept formation and information processing’ (Ertmer & Newby, 2013, p. 50). In particular, cognitive learning theories placed an emphasis on ‘how information was received, organised, stored, and retrieved by the mind’ (Ertmer & Newby, 2013, p. 51). Barab and Plucker (2002), however, argue that during the cognitive revolution, learning and knowing were ‘self-contained processes’ (p. 165) that resided in the mind of an individual learner. They state that the cognitive view of learning was ‘founded on the separation of the learner from the learning context, effectively isolating the body from its mind, the self from the world, the content from its context and ability from those situations in which one is competent’ (p. 165). Cognitive learning and teaching approaches as a result ignored the importance of context and wider environment the learner was situated in, and failed to consider learner actions in the process (Ertmer & Newby, 2013).
In the shadow of these dominant and established teaching paradigms, there were voices that challenged their limitations and proposed new forms of pedagogical practices. The then emergent pedagogies, such as constructivism in its many forms (Bruner, 1961; Dewey, 1916; Freire, 1970; Lave & Wenger, 1991; Piaget, 1952; Vygotsky, 1978), andragogy (Knowles, 1975) and humanism (Rogers, 1969) situated the learner at the centre of knowledge construction either individually or in collaboration with others. They took into consideration the learner’s historical, social, and cultural backgrounds as the basis for effective learner development. While these learner-centred pedagogies existed alongside the behaviourist and cognitive teaching paradigms, they largely failed to capture widespread implementation and use in learning and teaching. The arrival of the Internet brought with it new opportunities and affordances that disrupted the established pedagogies and offered potential to implement student-centred learning.

**The arrival of the Internet and increased ownership of computer**

The arrival of the Internet (or the World Wide Web (WWW)) in the early 1990s brought with it the ability to access vast amounts of data and information (Brown & Alder, 2008). This version of the Internet, labelled Web 1.0, was viewed mostly as a platform to access and deliver static information (Bower, 2015a; Lee & McLoughlin, 2007), and it allowed only basic forms of user interactions through services such as instant messaging, bulletin boards, and email (P. Anderson, 2007; Dabbagh & Reo, 2011; Lee & McLoughlin, 2007). It was a platform that mostly perpetuated passive user interactions and was mono-directional in nature (Bates, 2011; Conole, 2013). It further perpetuated the principles of early teacher-centred pedagogies where learning resources were pre-package into CDs and the creation of web-based resources for use in learning and teaching were left to an individual to create (McLoughlin & Lee, 2008c; Siemens & Tittenberger, 2009). According to Gunawardena, Hermans, and Richmond (2009, p. 5) learning during the early Web 1.0 era was characterised by:

- learning was formal and structured
- learning was teacher-centred, web-based, virtual and blended
- learning was top-down and followed a command and control model with a focus on pushing content to the students
any content created by the learner(s) was kept within the realms of the classroom environment
learning had a clear management and hierarchical structure
learning was viewed as an event that could be scheduled and planned.

The advent of Web 1.0, did however, initiate a significant shift by enabling open access to data and information with the potential of empowering the learner in an otherwise teacher-centred environment (Brown & Alder, 2008; Dabbagh & Reo, 2011)—challenging established teaching and learning practices. The early version of the Internet (Web 1.0) underwent significant development due to rapid advancements in technology and user-friendly features and capabilities that offered opportunities for implementing and exploring new teaching practices.

**Evolution of the World Wide Web**
By the year 2000, the Internet infrastructure and capability had evolved and was labelled Web 2.0 by Tim O’Reilly as a ‘meme or idea describing the patterns of emerging technology’ (Dabbagh & Reo, 2011, p. 7; O’Reilly, 2005). Web 2.0 as such denotes a phenomenon characterised by the affordances of web tools that encourage ‘active participation, connectivity, collaboration and sharing of knowledge and ideas amongst users’ (McLoughlin & Lee, 2007, p. 665) referred to as Web 2.0 tools, social software (Shirky, 2003) and social media (Shipley, 2004). Web 2.0 also outlined a shift in the way the Internet was previously perceived and used—moving away from being predominantly mono-directional to a platform that:

- allowed individual production and user-generated content
- enabled formation of virtual communities
- provided access to data on an ‘epic scale’
- provided an architecture of participation
- enabled connectedness between people
- provided people with open access to user-created data to be able to edit and remix the original. (P. Anderson, 2007, pp. 14-26)
The rapid development of technology and the proliferation and use of the Internet has drastically changed the way we live, work and study (Blaschke & Hase, 2016; Siemens & Matheos, 2010). In particular, the affordances of social media tools (Web 2.0 tools) and mobile devices (such as smartphones and tablets) have impacted upon every facet of human life and have transformed and changed the societal values due to their pervasive and participatory nature (Bannan et al., 2015; Baran, 2014; Bruns, 2007; Holmberg, 2014).

The ubiquitousness of the powerful mobile devices accompanied by the affordances of social media tools have blurred the boundaries between, work, learning and play (Burbules, 2014; McLoughlin & Lee, 2008d). The confluence of the affordances of mobile and social media tools allow people to create, share and ‘digitally link experiences across, between and with multiple locations, multiple people and a range of subject matter’ (Luckin, 2010a, p. 154). The ability to easily access, capture, create and share content and data with social media tools and mobile devices have led to the creation and consumption of data and information at a phenomenal rate never witnessed before, marking the dawn of the information age and end of the industrial revolution (Castells, 2011; McLoughlin & Lee, 2007). The shift from the industrial to the information age characterised by the ability to access, create and share knowledge and content and the advancements in mobile and communication technologies (Conole, 2013) have brought a ‘revolution in the way people learn’ (Blaschke & Hase, 2016, p. 25). This revolution according to Siemens and Matheos (2010) is characterised by ‘the increased freedom of the learners to access, create and re-create content and the opportunities for the learners to interact with each other outside the mediating agent [teacher]’ (p. 3). McLoughlin and Lee (2008d), however, note that while social media tools have provided access to data and information, it is the ‘architecture of participation’ that is the key difference as it encourages the creation and sharing of digital artefacts by groups, teams and individuals’ (p. 10). The participatory nature of social media tools and affordances facilitate social aspects of learning such as communication, collaboration, co-creation of knowledge, learner empowerment in terms of choice and access to content, scaffold and context, learner connectedness to networks and people and open access to data and participation, as such lends itself to
social constructivist pedagogies (P. Anderson, 2007; Anderson, 2010; Bryant, 2006; Conole & Alevizou, 2010; JISC, 2009).

**Post-Web 2.0 educational practices**

**Possible practices in the new era of learning**

Over the last decade rapid rise, advancement and ownership of mobile devices have taken social media tools and capabilities to another level (Cook & Santos, 2015). The increasing affordances provided by the ability to use social media tools on mobile devices enable new ways of user interaction and engagement, such as learner mobility and the ability to create and capture contextually rich data and content in and across contexts (Cook et al., 2008; Cook & Santos, 2015). As a result, the convergence of mobile and social media affordances offer new opportunities and approaches for enabling learning that is student-centred (Al-Shehri, 2011), facilitates lifelong learning through communication and collaboration (Blaschke & Hase, 2016; McLoughlin & Lee, 2007), encourages reflective and self-directed learning (Conole, 2013; McLoughlin & Lee, 2008a), and social learning that considers learner context and history (Brown, 2001; Brown & Alder, 2008). The pedagogies perpetuated by the affordances of social media tools enable the learner to take control and responsibility of their own learning by enabling learner choice in the learning process, which shifts the learning experience from being teacher-centred to learner-centredness (Conole & Alevizou, 2010; Herrington & Herrington, 2007; McLoughlin & Lee, 2007).

According to Farkas (2012), pedagogical practices have always reflected the affordances of the context in which they are implemented and used. For example, even though sociocultural and social constructivist views of learning and teaching have existed for nearly a century (Dewey, 1916; Dewey & Bentley, 1946; Freire, 1970; Vygotsky, 1978) their potential in learning are only now being realised because of the alignment and advancements in technological affordances (Anderson, 2010; Crook, 2008; Dron & Anderson, 2015; Gros, 2016; McLoughlin & Lee, 2007).

Anderson (2010) states that active learner engagement is normally associated with constructivist learning paradigms. Anderson further argues that constructivism exists in many forms, however, ‘all forms of constructivism share an understanding that
individuals construct knowledge that is dependent upon their individual and collective understandings, backgrounds and proclivities’ (p. 27). A constructivist learning experience actively engages the learner in the learning process, encourages social and collaborative process for the construction of knowledge, where learning tasks and activities are situated in meaningful and authentic contexts (Herrington, Oliver, & Stoney, 2000; Jonassen, 1999; Jordan, Carlile, & Stack, 2008; Mayes & de Freitas, 2007). According to McLoughlin and Lee (2008c), the ubiquitous mobile and social media affordances help operationalise the central tenets of a constructivist learning paradigm and are now pushing our conceptual understanding, leading to new extensions and theories (Butler, 2007; Karagiorgi & Symeou, 2005). Technology according to Gros (2016) plays a critical and embedded role in the implementation of learning and teaching practices as ‘it is the context in which learning takes place’, however, ‘technology does not determine the nature of its implementation rather evolves in accordance with evolving practice’—highlighting the ‘cause and effect’ relationship between technology and pedagogy (Gros, 2016, p. 4). Gros provides an overview of the central tenets of emergent pedagogies that leverage the affordances of new and emerging technological tools to facilitate active learning and provide increased learner autonomy over the learning process (Table 2.1).

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Central tenets of emerging pedagogies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational values</td>
<td>• supports lifelong learning for holistic learner development</td>
</tr>
</tbody>
</table>
| Curriculum, pedagogy and assessment  | • supports ecologies of learning to engage the learner is valued forms of knowledge  
• facilitates learning that considers the learners’ prior knowledge and experience  
• technology plays an integral role in facilitating and for scaffolding learning  
• the design of the assessment and the learning process changes the traditional roles of the learner and the teacher                                                                                                                                 |
| Personal and social process          | • uses the affordances of technology to actively engage and empower the learner over the learning process  
• provides a deeper learning experience by fostering individual and social processes and outcomes  
• considers and acknowledges learning in informal contexts                                                                                                                                                                    |
| Educators, policies, frameworks and research | • the design and facilitation of the learning process is underpinned by constructivist and sociocultural pedagogies  
• explores and implements new forms of assessment methods that supports and scaffolds the learner in the learning process                                                                                                                                 |

Table 2.1 – Central tenets of emerging pedagogies adapted from (Gros, 2016, p. 17)
The convergence of the affordances of new technologies and emerging pedagogical practices (Table 2.1) portray a changing educational landscape, where McLoughlin and Lee (2008d) argue that ‘there is a need to rethink models of teaching and learning’ (p. 10). In a rapidly changing educational landscape, Chatti, Agustiawan, Jarke, and Specht (2010) state that learning should be viewed as ‘personal, social, distributed, ubiquitous, flexible, dynamic and complex in nature’ (p. 66-67) thus more learner-centred and driven teaching and learning approaches are needed. Similar concerns are echoed by Gros (2016) who states that the complexity of the modern society necessitates learning and teaching practices that help develop learner competencies such as ‘higher-order thinking skills, problem solving, systems thinking and the ability to communicate, collaborate, and interact effectively with others’ (p. v)—emphasising the need for learning to be ‘more authentic, contextual and social in nature’ (p. v) that supports lifelong learning skills. With regard to the demand of the modern society on learning, Blaschke (2012) stresses that the teachers in today’s global knowledge economy also need to revisit their role in order to focus on developing lifelong learning skills that help the learner ‘survive and thrive in this global knowledge economy’ (p. 57) —learners who have the capability to effectively and creatively apply skills and competence to new situations in an ever-changing, complex world (Blaschke & Hase, 2015).

**The modern learner and lifelong learning skills**

The concept of lifelong learning was first articulated by Yeaxlee (1929), who argued that learning is a lifelong endeavour that continues beyond university education and encompasses everyday interactions and actions (Kind & Evans, 2015). According to Leone (2013), there is a growing acknowledgment and understanding that learning eventuates beyond the formal boundaries of an institute and encompasses formal, non-formal and informal learning situations. A broad definition of lifelong learning is provided by Kind and Evans (2015) as ‘the development of human potential in the areas of knowledge, values and skills, through a continuously supportive process that is stimulating and empowering and that fosters confidence, creativity, and enjoyment in all roles and circumstances.’ (p. 125).

Sharples (2000) states that the notion of lifelong learning is generally exploited to provide people with the skills and knowledge needed ‘to succeed in the rapidly changing world’ (p. 177). In order to facilitate lifelong learning, learners must be made
responsible for their learning, must acquire skills such as perseverance, adaptability and initiation, and should learn to be self-regulated (Leone, 2013; Zimmerman, 2002) — characteristics (explained further in Table 2.2) that help the learner recognise and actively seek avenues for learning from any situation on an ongoing basis.

Table 2.2 – Lifelong learner skills and characteristics adapted from Leone (2013, p. 11)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Meaning</th>
<th>Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>The learner is actively involved in the learning process and in the construction of knowledge.</td>
<td>• The learner sets his/her own goals and actively seeks ways and motivation to achieve it • Attempts to solve problems and has good time-management skills</td>
</tr>
<tr>
<td>Cooperative</td>
<td>The learner is provided with a collaborative learning environment were he/she learns appropriate group actions and interactions through building a shared understanding of the tasks, goals and responsibilities.</td>
<td>• Guides and supports others • Is able to network and connect with people • Is an effective team member</td>
</tr>
<tr>
<td>Creative</td>
<td>The learner has the freedom and opportunity to express their ideas and thinking, leading to creativity and originality.</td>
<td>• Is able to creative ideas and is solution focused • Is imaginative and innovative • Is able to handle a task regardless of the level of difficulty</td>
</tr>
<tr>
<td>Critical</td>
<td>The learner is able to conceptualise, apply, analyse, and evaluate information that is gathered through observation, experience, reasoning or communication.</td>
<td>• Seeks multiple perspective when faced with a situation • Is inclusive and considerate</td>
</tr>
<tr>
<td>Strategic</td>
<td>The learner is capable of and is allowed the space to construct his/her own understanding and knowledge. The learner is also cognition of his/her own learning process – metacognition.</td>
<td>• Is thoughtful • Examines his/her own thought processes • Seeks alternatives</td>
</tr>
<tr>
<td>Autonomous</td>
<td>The learner has control over the learning and learning processes.</td>
<td>• Is self-driven and self-regulated • Is reflective • Utilises available resources wisely and effectively</td>
</tr>
</tbody>
</table>

The principles for lifelong learning advocate active learner participation in the learning process, learner autonomy, and ownership, as such Dron and Anderson (2014b) state that ‘social software has become one of the most central means of enabling lifelong learning’ (p. 9). They further explain that search engines such as Google and Yahoo are becoming the first port of call for learners seeking new knowledge and information, while social media tools enable collaboration and communication without the learner having to give up freedom over time, place or direction. The openness and learner autonomy afforded by social media tools enable self-directed and self-regulated
learning, where the learner is free to seek and determine their own learning path by learning in formal and informal contexts and by connecting and accessing communities and information in varied and multiple formats (Dron & Anderson, 2014b; Kind & Evans, 2015; Leone, 2013; McLoughlin & Lee, 2010).

According to Sharples (2000), learning is an individual pursuit and, as learning evolved to become learner-centred, so too have the new and advancing technologies. He argues that just as learning is now perceived as social, situated and collaborative, mobile devices now have the power to enable communication and collaboration regardless of the context or location. Sharples further notes that ubiquitous mobile technologies now offer affordances and capabilities that could be leveraged in the design of a learning environment to enable lifelong learning. He provides an overview of the synergies between the ubiquitous mobile devices and the characteristics of lifelong learning (Table 2.3).

<table>
<thead>
<tr>
<th>Lifelong learning</th>
<th>Ubiquitous devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individualised</td>
<td>Personal</td>
</tr>
<tr>
<td>Learner-centred</td>
<td>User-centred</td>
</tr>
<tr>
<td>Situated</td>
<td>Mobile</td>
</tr>
<tr>
<td>Collaborative</td>
<td>Networked</td>
</tr>
<tr>
<td>Ubiquitous</td>
<td>Ubiquitous</td>
</tr>
<tr>
<td>Lifelong</td>
<td>Durable</td>
</tr>
</tbody>
</table>

**The lifelong learner, post-Web 2.0 context, and learning theories**

In an attempt to find alignments with the characteristics of lifelong learning and effective implementation and use of social media, Leone (2013) and Dron and Anderson (2014b) critiqued old and several new and emergent learning theories such as connectivism, networked learning, andragogy, communities of practice and complexity theory. They concluded that pedagogies that were grounded in social-constructivist theories were capable of embodying and facilitating learning that provided opportunities for the learner to acquire lifelong learning skills. Similarly, post-Web 2.0 contexts for education dominated by the affordances of ubiquitous mobile and social media tools provide an effective platform for the teachers to implement pedagogies underpinned by social-constructivist theory for learning (Anderson, 2010; Cochrane, 2012a; Crook,
Dron & Anderson, 2015; McLoughlin & Lee, 2007; Traxler & Kukulska-Hulme, 2002). As a result, social constructivist based theories are capable of providing a framework that could guide the use of mobile and social media tools in enabling and designing a learner-centred environment for integrating skills and knowledge required by the modern learner.

In search for ideas and concepts that could enable and inform the design of an innovative solution for learning and teaching issues discussed in Chapter 1, three learning and teaching frameworks were examined. In particular, three learning and teaching frameworks underpinned by social-constructivist theories—heutagogy, Pedagogy 2.0 and mobile learning were examined to help guide the design of a contextually embodied learning experience mediated by mobile and social media tools in a university course.

**Heutagogy**

*Defining heutagogy*

‘Heut’ in heutagogy originates from ancient Greek meaning ‘self’ (Bhoyrub, Hurley, Neilson, Ramsey, & Smith, 2010; Hase & Kenyon, 2007). Heutagogy refers to self-determined learning (Blaschke, 2012; Hase, 2014; Hase & Kenyon, 2000, 2007, 2013). According to Hase and Kenyon (2011; 2000, 2003; 2013), heutagogy is learner-centred, holistic, future focused, and the core tenet is for the learner to learn how to learn or acquire ‘lifelong learning’ skills through active and proactive learning processes. Heutagogy aims to empower the learner over where, how and when learning occurs, in a process where the learner is viewed as ‘the major agent in their own learning, which occurs as a result of personal experience’ (Hase & Kenyon, 2007, p. 112). Heutagogy, as a result places an emphasis on high learner autonomy, and on the facilitation of learning experiences that build competency and capability. It also advocates active learner engagement in authentic contexts (formal and informal learning environments) for creating new knowledge (Blaschke, 2012; Hase, 2011) resulting in a learning process where the learner is central to the creation of content and context (learner-generated content and context) for their own learning (Blaschke, 2012).
According to Hase and Kenyon (2003), people are lifelong learners, they gain and create knowledge in many and varied ways through their interactions ‘in real time by interacting with the environment’ (p. 3), as a result people create ideas, enhance their creativity and ‘re-learn how to learn’ (p. 3).

Heutagogy was conceptualised in the year 2000 and was triggered by the proponents’ frustration with education being predominantly underpinned by out-dated traditional teaching paradigms that do not recognise ‘the need to acknowledge learning as being an extremely dynamic experience occurring in a world that was (and is) highly complex, non-linear and ever changing’ (Hase & Kenyon, 2000, p. 43). Heutagogy according to Hase and Kenyon (2000), can be viewed as a progression from andragogy—a form of self-directed learning, where:

- Individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. (Knowles, 1975, p. 18)

The founding assumption of andragogy is that humans grow in capability and thus in their ability to be self-directed. As a result, a person’s experience in the world has the potential to act as a source in their learning and this should be exploited in the process (Knowles, 1975). According to Knowles (1975), another assumption that underpins andragogy is that the learners are naturally task or problem oriented. The learning experience for the students should, therefore, focus on problem solving tasks and activities that have personal relevance and motivate them.

In their seminal paper, Hase and Kenyon (2000) argue that while andragogy is a widely accepted and implemented theory for learning and teaching, it, however, remains a teacher driven and directed process, where andragogy ‘still has connotations of a teacher-learner relationship’ (p. 2). They elaborate that while andragogy attempted to drag educational practice from the grips of teacher-centred learning environments by advocating learning principles that directed power to the learner in terms of mediating their own learning, it, however, ‘did not go far enough’ (Hase & Kenyon, 2007, p. 112). In their view, andragogy limited student participation and ownership of the learning—‘curricula were still very much teacher-centric with little opportunity for any real involvement at a micro or even macro level by the learner’ (Hase & Kenyon, 2007, p.
The basis for their argument in proposing heutagogy was that the world we live in has changed (andragogy was theorised in 1975). The world was now flexible and highly connected where information and data were readily and easily available, the rate of change is so fast that learning and teaching practices easily become ‘inadequate’, where ‘discipline based knowledge’ was no longer appropriate for the societies, networks and workplace we live and work in, and where learning has a strong alignment with what we do, as a result ‘modern organisational structures require flexible learning practices’ (Hase & Kenyon, 2000, p. 2). According to Blaschke (2012), the key differential factor between andragogy and heutagogy is that in an andragogical practice the teacher is the driver and director of student learning and ‘shows learners how to find information, relates information to the learner experience, and places a focus on problem-solving within real world situations’ (p. 58). In andragogy, the teachers are responsible for establishing the learning objectives and the curriculum based on the input from the learners, they mentor and guide the learners through the learning path but the learners are responsible for their own learning. While the teachers in a heutagogical learning approach facilitate the learning similar to andragogy by providing resources and guidance, Blaschke states that the teacher, however, ‘fully relinquishes ownership of the learning path and process to the learner, who negotiates learning and determines what will be learned and how it will be learned’ (p. 59). The principles of andragogy (Knowles, 1975), as a result inform the foundations of heutagogy which aims at equipping the learner for an uncertain world by promoting learner autonomy, learning in context and self-determinism (Anderson, 2010).

The progression from andragogy to heutagogy, as a result places an emphasis on developing learner capability, self-reflection and double loop learning, metacognition and a non-linear learning and teaching process (Blaschke & Hase, 2016). In order to help academics situate heutagogy on the learning and teaching spectrum, Blaschke (2012) provides a pedagogy-andragogy-heutagogy (PAH) continuum (Figure 2.1) based on the work done by Cunning (2010) to outline the key differences between the three approaches in terms of the role of the learner, learner maturity and autonomy, cognitive development and the level of structure or teacher control in the learning process.
The PAH continuum is further elaborated upon by Luckin et al. (2011) (Table 2.4), who argue that pedagogy is an appropriate approach for building the learner’s understanding of the discipline, where the teacher is in control and directs and facilitates the learning process to help the learner build an understanding of the content. While andragogy is viewed as a appropriate avenue for helping the learner build an understanding of how to negotiate their way through the learning process, as a result the learner develops learning how to learn skills or metacognitive skills. Where as heutagogy is seen as a platform for ‘developing the understanding that you are empowered to look at the learning context afresh and take decisions in that context’ (p. 78)—enabling the learner to apply the metacognitive skills in different contexts that help them gain epistemic traits. The PAH continuum for learning and teaching highlights the progression of heutagogy from pedagogy and andragogy.

Table 2.4 – The PAH continuum adapted from Luckin et al. (2011, p. 78)

<table>
<thead>
<tr>
<th></th>
<th>Pedagogy</th>
<th>Andragogy</th>
<th>Heutagogy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locus of control</td>
<td>teacher</td>
<td>learner</td>
<td>learner</td>
</tr>
<tr>
<td>Cognitive level</td>
<td>cognitive</td>
<td>metacognitive</td>
<td>epistemic</td>
</tr>
<tr>
<td>Knowledge production context</td>
<td>subject understanding</td>
<td>process negotiation</td>
<td>context shaping</td>
</tr>
<tr>
<td>Knowledge and skills</td>
<td>competency</td>
<td>competency</td>
<td>capability</td>
</tr>
</tbody>
</table>
Heutagogy acknowledges learning in formal and informal contexts, as a result borrows principles from other theories and frameworks that consider the learners’ actions and interactions in everyday life for learning (Blaschke & Brindley, 2015). These frameworks and theories are discussed in the sections below.

**The makings of heutagogy**

**Constructivism and humanism**

Heutagogy is firmly rooted in constructivist and humanistic theories of learning and attempts to align a number of other learning philosophies that meet the needs of today’s societal requirements (Blaschke & Hase, 2016; Hase, 2014, 2016; Kenyon & Hase, 2013). In humanistic learning, the learner is the critical and central agent in the learning process, where they have control and ownership over the learning process. The humanist view of learning, initially deduced by Rogers (1969), went through several iterations of change from humanistic learning to person-centred teaching (1951) to what it is known in the modern era—student-centred learning (Kenyon & Hase, 2013). Constructivism on the other hand also places the learner at the centre of the learning process, where the learners are actively involved in the learning and construct their own understanding and knowledge based on past and current knowledge and experience (Dewey, 1916; Freire, 1970; Vygotsky, 1978).

**Double-loop learning**

Apart from its roots in constructivism and humanism, heutagogy also elicits concepts and ideas from other theories. A key element of heutagogy is double-loop learning initiated by Argyris and Schön (1978, 1989). Double-loop learning eventuates, when the learner is faced with a problem, contemplates a possible solution and acts upon it—challenging the learner’s ‘theories in use, values and the assumptions rather than simply reacting to problems’ (Hase & Kenyon, 2000, p. 2). This results in learner actions and outcomes. In addition to this, reflection on the resolution process challenges the learner’s knowledge, perception and actions (Figure 2.2) (Blaschke, 2012; Hase & Kenyon, 2000). According to Argyris and Schön (1978), double-loop learning is central to the notion of ‘learning how to learn’, and double-loop learning eventuates when the learners ‘question and test one’s personal values and assumptions’ (p. 45). Double-loop
learning also encompasses the notion of self-reflection on the individual process of learning—this involves the learner reflecting on what has been learnt and how it was learnt (Blaschke, 2013).

Figure 2.2 – Double-loop learning (Sharples et al., 2014, p. 21)

**Capability**

Another core tenet of heutagogy is capability (Hase & Kenyon, 2003; Stephenson, 1996; Stephenson & Weil, 1992). In order to differentiate capability from competency, Hase and Kenyon (2003) discuss capability on the competency and capability continuum—in a teacher-centred learning environment knowledge, skills and behaviour are transferred and communicated by the teacher to the students. Competency, as a result, is the learner’s ability to ‘replicate’ and regurgitate the same knowledge, skills and behaviour in a similar environment, also referred to as ‘knowing in familiar environment’ (Blaschke, 2014, p. 3). Capability on the other hand is the learner’s ability to take and use the knowledge and skills (the competencies learnt) in different contexts and learning situations, referred to as ‘knowing in unfamiliar environment (Blaschke, 2014, p. 3). According to Hase (2011), gaining competence is not learning, rather it is the ability to effectively apply the skills and knowledge learnt in different contexts that constitutes learning—achieved by engaging the learner in deeper-cognitive processes developing a capable learner. Capable learners are people who ‘know how to learn, are creative, have a high degree of self-efficacy, can apply competencies in novel as well as familiar situations and work well with others’ (p. 4) and this is at the heart of heutagogy (Hase, 2002). Competency is the prerequisite toward acquiring capability—competency, according to Blaschke (2012), is the learner’s proven ability in acquiring the knowledge and skills, where as capability is the learner’s confidence in the acquired skills and knowledge (competence) and the ability to apply these competences to formulate
solutions to problems and issues in different contexts both familiar and unfamiliar to the learner. As a result, capability is the extension of the learner’s own competence.

**Complexity theory**

Complexity theory (Doolittle, 2014) is another framework that informs the constructs of heutagogy (Hase, 2002; Hase & Kenyon, 2007). Complexity theory or complex constructivism has its root in constructivist theory and it perceives learning as the learner’s engagement with multiple contexts. Doolittle (2014), however, argues that complexity theory is not a learning theory but could help situate learning in complex and dynamic learning environments. He states that ‘complexity is a broad-based theory concerning the evolution and functioning of non-linear systems that may be applied in many domains’ (p. 490). Non-linear systems are unpredictable and ever changing. Doolittle argues that even if a person is fully aware of all the components and functions of a system, they are still not able to fully comprehend the impact and outcome of what will eventuate next. An instance of complexity theory in learning is defined by Doolittle (2014) as complex constructivism—where ‘learning [is] the active construction and adaption of one’s internal models of reality based on the interaction between oneself and one’s environment (including other people) such that the functioning of one’s internal models exceeds the sum of the models’ components’ (p. 494). Complex constructivism is thus characterised by the learner’s ability to adapt to an environment, active construction of knowledge, self-organisation of knowledge and learning from ongoing experiences in the world (Anderson, 1999; Doolittle, 2014).

The congruence between heutagogy and complexity theory is how both perceive learning (Hase, 2009). Hase (2009) argues that learning is the act and ability of the learner to self-organise and adapt to an environment and context, where ‘the learner and the context are in a state of constant flux, where one dynamically affects the other’ (p. 45). As a result, the non-linear construct and view of the world encapsulated in complexity theory helps explain the learner’s actions and interactions in a self-determined learning process as the view of learning shifts from learning as something that is ‘caused’ to learning that is emergent and determined by the learner’s interaction in real world contexts (Hase, 2009). Heutagogy as such offers a theoretical framework that situates the learner in the uncertain, complex and fast changing contexts and
environment envisaged by complexity theory to help the learner create knowledge, capability and self-efficacy—all the skills critical and applicable in the uncertain world the learners face (Anderson, 2010; Bhoyrub et al., 2010; Blaschke & Hase, 2016).

Complexity theory implies non-linear, unstructured, complex and uncertain systems, where Hase and Kenyon (2007) speculate that capability is another common element of heutagogy and complexity theory. While complexity theory conceptualises learning as the learner’s ability to navigate and learn from unstructured and non-linear systems, heutagogy at the same time expects that the learners will build on their competency to become a capable operator in conditions envisaged by complexity theory (Hase & Kenyon, 2007).

In a synthesis of the founding theories and principles of heutagogy, Blaschke and Hase (2016) outline a set of core heutagogical tenets. According to them, the elements (outlined in Table 2.5) are the traits of heutagogy and the factors that help differentiate it from andragogy. The principles also help situate heutagogy as a learning and teaching approach that is ‘critical to life in the rapidly changing economy and cultures that characterise postmodern times’ (Anderson, 2010, p. 33).
Table 2.5 – Core tenets of heutagogy adapted from Blaschke and Hase (2016, p. 28)

<table>
<thead>
<tr>
<th>Core tenets</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner-centred and learner determined</td>
<td>The role of the learner in the learning process is a fundamental principle. As a result, the learner is:</td>
</tr>
</tbody>
</table>
|                                         | • central to all activities in heutagogical practice  
|                                         | • autonomous, self-motivated and has control of what is to be learnt, how and how it will be assessed.                                                                                                    |
| Capability                              | The learner has the ability to apply his/her competencies in different contexts. Learner capability is characterised by:                                                                                      |
|                                         | • self-efficacy  
|                                         | • ability to communicate  
|                                         | • creativity  
|                                         | • ability to collaborate  
|                                         | • and has positive value.                                                                                                                                                                           |
| Self-reflection and metacognition       | In heutagological approach, reflection is viewed holistically, where the learner is able to:                                                                                                           |
|                                         | • reflect on what has been learnt  
|                                         | • understand how it was learnt – learn metacognitive skills.                                                                                                                                          |
| Double-loop learning                    | In double-loop learning, the learner is psychologically and behaviourally engaged in the learning process. As a result, the learner while reflecting on what has been learnt also reflects on how it was learnt and how it impacted on his/her core beliefs and values. |
| Nonlinear learning and teaching         | In heutagogy, learning is self-determined by the learner. As a result, the learner has control over his/her own learning path and process eventuating in nonlinear learning.                                      |

**Designing for heutagogy**

Heutagogy is an emergent framework for holistic learner development (Bhoyrub et al., 2010). Since its inception in year 2000 (Hase & Kenyon, 2000), heutagogy has been applied in a number of different educational contexts, such as nursing (Bhoyrub et al., 2010), education (Ashton & Newman, 2006; Blaschke, 2014; Canning, 2012; Cunning, 2010; Cunning & Callan, 2010), journalism, graphics design, product design and public relations (Cochrane, Antonczak, Gordon, Sissons, & Withell, 2012), landscape, architecture, product design, contemporary music, performing and screen arts and architecture (Cochrane & Bateman, 2010). In the recent years, Blaschke (2012) along with the initial creators of heutagogy, Hase and Kenyon (2000) articulated the notions of heutagogy informed by the work done in the field and proposed a set of design guidelines in a number of publications that other educators could use to facilitate a heutagogic learning approach (summarised in Table 2.6).
## Table 2.6 – Key design considerations for designing heutagogic learning

<table>
<thead>
<tr>
<th>Design considerations</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>The learner plays an active role in determining what to learn and how and learning activities.</td>
<td>(Hase &amp; Kenyon, 2007, 2013), (Kenyon &amp; Hase, 2013), (Blaschke, 2012), (Blaschke &amp; Hase, 2016), (Hase, 2014)</td>
</tr>
<tr>
<td>Throughout the learning process, the learner is the key driver in determining his/her own learning path.</td>
<td></td>
</tr>
<tr>
<td>The learner’s role in the learning process is characterised by:</td>
<td></td>
</tr>
<tr>
<td>• collaboration</td>
<td></td>
</tr>
<tr>
<td>• exploration</td>
<td></td>
</tr>
<tr>
<td>• reflection</td>
<td></td>
</tr>
<tr>
<td>• creation</td>
<td></td>
</tr>
<tr>
<td>• connecting</td>
<td></td>
</tr>
<tr>
<td>• sharing</td>
<td></td>
</tr>
<tr>
<td>The curriculum should be open to accommodate learner development through questioning, motivation and growth of learner understanding and knowledge as he/she progresses in the course.</td>
<td>(Blaschke &amp; Hase, 2016), (Hase, 2011, 2014, 2016)</td>
</tr>
<tr>
<td>The learner and teacher in partnership negotiate and how learning outcomes will be assessed. This includes self and peer evaluation allowing the learners to learn from each other.</td>
<td>(Blaschke &amp; Hase, 2016), (Dick, 2013)</td>
</tr>
<tr>
<td>The teachers play an important role in providing constructive and formative feedback to the learner in order to progress their learning.</td>
<td>(Blaschke &amp; Hase, 2016)</td>
</tr>
<tr>
<td>The design of the learning environment needs to provide the learners with opportunities for exploration and reflection on what they learn and how.</td>
<td>(Blaschke &amp; Hase, 2016)</td>
</tr>
<tr>
<td>Learning within a heutagogic learning approach is viewed as collaborative and coaching and scaffold is provided to the learner enabling true collaboration with the teacher</td>
<td>(Blaschke, 2012), (Hase, 2011, 2014, 2016)</td>
</tr>
<tr>
<td>The learner creates contextually relevant content according to his/her knowledge and learning needs.</td>
<td>(Blaschke, 2012)</td>
</tr>
<tr>
<td>Encourage learner reflections on the learning and learning process. These could be achieved through:</td>
<td>(Blaschke, 2012), (Hase &amp; Kenyon, 2007), (Hase, 2011)</td>
</tr>
<tr>
<td>• learning journals</td>
<td></td>
</tr>
<tr>
<td>• experiential learning in real world contexts</td>
<td></td>
</tr>
<tr>
<td>• formative and summative assessments – where assessment is viewed as ‘assessment for learning’.</td>
<td></td>
</tr>
</tbody>
</table>

### The role of the teacher in heutagogic learning

Heutagogic practice implies that the teachers have to relinquish power over the learning process and path to provide the learner autonomy and choice (Blaschke, 2012; Blaschke & Hase, 2016). There is, however, scepticism over the diminished role of the teacher in the learning process and the quality and depth of learning (Kirschner, Sweller, & Clark, 2010; Kop & Hill, 2008; McAuliffe, Hargreaves, Winter, & Chadwick, 2008). Kop and Hill (2008) citing the example of online learning where the teacher may play a minimal role in the learning process, state that such learning emphasises learners connection with like-minded people rather than engaging with more ‘challenging transactions’ of learning with the expert in the classroom, as a result the learning lacks critical cognitive engagement (p. 6). A similar argument is echoed by Freire and Macedo (1999) who state that the teacher’s directive role in the learning process is critical as they provide
the learner with ‘alternative view points’ by engaging in a dialogue with the learner ‘as a process of learning and knowing’ (p. 48). They further argue that by demoting the teacher’s role to being a facilitator rather than having a directive role weakens the criticality and the potential for critical engagement with the learner and the learning (Freire & Macedo, 1999). The lack of guidance and the demised role of teachers in constructivist based teaching approach is further criticised by Kirschner et al. (2010), who state that the lack of guidance in learning and teaching does not lead to improved learning. They conclude ‘After a half-century of advocacy associated with instruction using minimal guidance, it appears that there is no body of research supporting the technique’ (p. 83).

Central to this argument is the view that increased learner autonomy equates to the demised role of the teacher in the learning process. With regard to this, Mariani (1997) states that autonomy is a gradual process that we learn and acquire as a part of learning—‘autonomy is not a complete, irrational freedom to do anything under the sun, but rather a more subtle ability – the power to decide, at any single moment, whether we should be safe or daring’ (para. 7). He explains that autonomy is on one end of the spectrum and on the opposite end is dependence. Autonomy is what humans need to be productive and become a responsible person, while dependence is ‘the feeling that we belong somewhere…feeling that we can reply on people and things to get through the demands of life’ (para. 4). He, as a result espouses that learner autonomy and the role of the teacher in learning should be viewed as two parallel concepts—‘challenge and support’ (para. 9)—‘To answer our students’ need for autonomy we challenge them. To answer their need for dependence, we support them.’ (para. 9). In relation to this, Blaschke and Hase (2016) argue that in a heutagogic learning environment, the teacher’s role is central and critical in the learning process, as the learning is no longer ‘standardised, and assessed’ in a one-size-fits all model. The teachers in heutagogic learning form partnership with the learners to support, guide and collaboratively customise the learning process and tasks according to the learner’s needs, ‘in fact, both of these agents [students and teachers] need to be flexible, able to shift as learning occurs, and as the learner forges new paths, new questions, and new contexts’ (p. 27). The relationship between the teacher and the learner in heutagogic learning is viewed as that of ‘true collaboration’ (Hase, 2011, p. 4), where the learner creates contextually
relevant content in collaboration with the teacher by seeking scaffold and support to overcome the learning hurdle or barrier in achieving the task.

Blaschke and Hase (2015) provide a set of critical tasks and aspects of a teacher’s role in heutagogic learning—highlighted in Table 2.7.

Table 2.7 – The role of the teacher in heutagological practice adapted from Blaschke and Hase (2015, p. 88)

<table>
<thead>
<tr>
<th>Domain</th>
<th>Role of the teacher</th>
</tr>
</thead>
</table>
| With the learner                            | The teacher works with the student according to the student’s ability to be an autonomous learner. The teacher gains an understanding of the level of learner autonomy by:  
  - administering learner questionnaires  
  - enabling learner-directed questions and discussions |
| With others - scholarship of learning and teaching | In order to keep up with the transitioning practice in learning and teaching, the teachers connect and build a network with other teachers to learn together and from each other to move forward. |
| In the learning activities                  | The teacher:  
  - implements an open and flexible approach to teaching to allow the learner to create and play  
  - designs learning activities and tasks that build learner skills and competencies. |
| As a teacher                                | The teacher:  
  - encourages learner reflection in the learning process  
  - acts as an empowering agent who encourages the learner to collaborate and create  
  - works with the learners to define the parameters for assessment and for defining success  
  - has the capability and ability to let go of control and power in the learning process to promote learner-centred learning  
  - ensures a safe environment for learning and acts as a resource for the learner to access and request  
  - plays the role of being the ‘knowledge broker’ (Canning, 2012), where they access and share knowledge from networks and online communities (Singh, 2003). |

Heutagogy proposes significant changes in how learning and teaching is perceived and facilitated. As a result, challenges ingrained and current pedagogical and institutional practices and policies—discussed in the section below.

**Critical view of heutagogy**

**Educational institutes, history and requirements**

The central focus of heutagogy is to provide the learner with control and choice over the entire learning process. Hase (2011) acknowledges that ‘…it is the notion of the flexible and negotiated curriculum that might pose the biggest problem’ (p. 4) in a formal
credentialing institute. Heutagogy as a learning and teaching approach implies fundamental changes in the way education is perceived as it focuses on developing lifelong learning skills through active and proactive learning processes. These aspirations are in direct contrast to the ingrained traditional practices over decades still prevalent in higher education and is a major barrier to the adoption of heutagogy and new teaching paradigms (Annand, 2007; Dron & Anderson, 2015; Siemens & Matheos, 2010). The resistance to change, the ‘fear of relinquishing power’ to the students and the resolute stand on assessment and student grade rather then the level of student engagement and learning are other complicating factors in the adoption of heutagogy (Ashton & Newman, 2006, p. 832; Blaschke, 2012; Hase & Kenyon, 2013).

According to McAuliffe et al. (2008), ‘the removal of the educator makes the concept of heutagogy impractical in a credentialing institution’ (p. 4) and the implementation of negotiated assessment impossible. They state that the main cause for their argument is that in a credentialing institute other stakeholders set most of the guidelines and the standard for learner achievements. This, they argue, limits the teacher’s ability to negotiate the learning process and the assessment standards. They state ‘students have to meet certain criteria laid out by these stakeholders, or they do not meet the criteria set out by bodies governing their profession and professional practice’ (p. 4)—as a result, the teacher’s role in ensuring that the students learn and adequately acquire and achieve the standards required is critical.

Dick (2013), however, states that a design principle for creating learner-centred and determined learning that he found useful was ‘to offer freedom within limits’ (p. 47). He argues that when the limits were fully known and understood and were discussed with the learner, the learners ‘more willingly took on the responsibilities that autonomy required’ (p. 47). The discussions about the limitations and the involvement of the learner in enabling autonomy within the boundaries of the limitation helped him create trustful relationship with the students (Dick, 2013).

**The learner**

According to Haymes (2013), the preparedness of the learner is a limiting factor in an unstructured learning environment. The lack of motivation, self-directedness and the
learners’ lack of ability to determine their own learning path due to previous learning experience where information and content were spoon-fed requires the teacher to evaluate and spend time in scaffolding the learners to a level where they are able to take control and effectively inform their own learning tasks and processes. Luckin et al. (2011), however, argue that rather than expecting all learners to be capable and to have the ability to undertake a heutagogy learning approach, learning and the learner’s abilities and skills should be viewed as a continuum starting with pedagogy, andragogy and heutagogy (PAH)—where the learner builds and acquires the skills by moving through the PAH continuum—understanding the subject, understanding how learning occurs and gaining the ability to then apply the skills and knowledge in different contexts.

The openness and learner empowerment afforded by learner-centred pedagogies, however, have the potential to create learning barriers for students from different cultures. Gazi (2014) questions the foundations of heutagogy and other emergent learner-centred learning theories in relation to the globalised and the intercultural world. He argues that the flexible and open principles guiding heutagogy and other contemporary theories may not be perceived as learner empowerment and a better and effective way for learning in all cultures. According to Gazi, not all citizens from countries around the world have equal power. The power distance between people in some countries determines cultural expectations and the role of a person in the society. This restricts the level of autonomy, freedom and choice a person has and becomes accustomed to and this may have a negative impact on the student’s learning experience in an environment designed for open and learner-centred learning.

**Heutagogy and role of technology**

In the review of heutagogical practices in higher education, Blaschke (2012) states that heutagogy as a framework for learning and teaching has received renewed interest lately ‘due to the ubiquitousness of Web 2.0 (social media), and the affordances provided by technology (p. 56). In particular, social media affordances (Cameron & Tanti, 2011; McLoughlin & Lee, 2008c) and mobile technologies (Cochrane, 2012a; Herrington, Herrington, & Mantei, 2009) support learner engagement in authentic and real world contexts and empower the learner in determining and directing their own learning path.
argue that ‘learner ubiquitousness (or the learner’s ability to weave the social, physical, conceptual and digital realm according to their learning need at the time) is the central tenet governing effective use of heutagogy as a framework for learning and teaching’ (p. 151). They argue that it is the learners’ mobility and interactions in multiple contexts that allow them to create contextually relevant content and learner-owned mobile devices and social media tools act as a bridge in allowing the learner to be able to collaborate, co-create, communicate and learn in and across contexts (Blaschke, 2013; Cochrane, 2012a; Narayan & Herrington, 2014). Furthermore, Blaschke (2013) adds that the ethos of social media tools—freedom, choice, communication, collaboration, ability to create and consume content and connect and establish relationship align with the principles of heutagogy (Figure 2.3). She states ‘[w]hen using Web 2.0, the learner’s ability to be self-determined is inherent in the system: the web is non-linear, allowing the learner to decide in a random way what and how she or he will learn’ (p. 57).

![Figure 2.3 – Alignment of Web 2.0 affordances and heutagogy (Blaschke, 2013, p. 58)](image-url)
Beyond heutagogy: the search continues...

In order to design an intervention to address the problems faced by the Principles of Journalism practitioners, heutagogy as a learning theory was explored in this section. The principles of heutagogy provide a learning and teaching framework for holistic learner development and place an emphasis on enabling a high degree of learner autonomy for directing and determining their own learning. Learning as a result eventuates in and across contexts regardless of time and space with regard to the mobility of the learner. This aspect of heutagogy has a high degree of alignment with the act of journalism, as it eventuates regardless of time and geographical barriers. Heutagogy also places an emphasis on developing lifelong learning skills. This again is reflective of the demands put on journalists, who live and practice their profession in a fast changing and developing world with a growing need from their audience for faster and better news coverage.

While heutagogy provides a framework for empowering the learner in the learning process by placing the responsibility of learning on the learner, it still does not provide a framework for implementing and effectively using social media tools in learning and teaching—another issue the PoJ practitioners wanted to explore and critical in modern journalistic practice (Harper, 2010). Social media tools have the potential to operationalise heutagogical principles, however, Blaschke (2012) states ‘research on the use of social media and its role in supporting heutagogy is limited, indicating that this is an area for further investigation’ (p. 63). Considering the lack of research on the use of social media in a heutagogic approach and the need for the Principles of Journalism practitioners to embed the use of social media tools in the facilitation of the course to provide the learners with up to date knowledge of its potential in journalism, the notion of Pedagogy 2.0 or a pedagogical framework for the use of social media tools and affordances in learning and teaching (McLoughlin & Lee, 2008d) is discussed in the following section.
Pedagogy 2.0

Defining and designing for Pedagogy 2.0

Pedagogy 2.0 (McLoughlin & Lee, 2007), or the pedagogy for the use of Web 2.0 tools, ‘aims to focus on the desired learning outcomes in order to exploit more fully the affordances and potential for connectivity enabled by Web 2.0 and social software tools’ (McLoughlin & Lee, 2008d, p. 15). Pedagogy 2.0 reconceptualises the role of the learner from being the recipient of pre-packaged content and knowledge to engaging them in active learning processes afforded by Web 2.0 tools, such as collaboration, personalization, participation, communication, creation and co-creation resulting in learner-generated content—moving the learner’s role from being consumers of content and knowledge (passive learning) to being the creators and producers of knowledge and content (active learning) (McLoughlin & Lee, 2008c, 2010).

Pedagogy 2.0 is a learning framework that aims to exploit the affordances and potential of Web 2.0 tools. It empowers the learner by providing autonomy in the learning process, opportunity for the learner to socialise and interact, allows the learner access to online and open communities, and peer-to-peer networking—‘in order to move beyond instructor-centred classroom environments, prescribed curricula and content, and the ‘walled-garden’ approach of learning management systems’ (McLoughlin & Lee, 2008d, p. 15). Pedagogy 2.0 leverages the core affordances and opportunities provided by Web 2.0 tools to facilitate a learning process where the learner has freedom and choice over the content and the process of learning, is able to collaborate with others, access knowledge, expertise and support by accessing open online communities, and has the ability to create, remix and produce artefacts in the learning process to capture and create knowledge (Bates, 2011; Lee & McLoughlin, 2007, 2008; McLoughlin & Lee, 2007, 2008b, 2008c, 2008d, 2011).

Web 2.0 tools ‘acquire their value’ (p. 8) when used by two or more people (Dron & Anderson, 2014b) and support user actions such as participation in communities, networking, connection and ability to form communities, sharing of content, annotation, discussion, ability to edit content and information and to create and construct knowledge collaboratively with others (Conole, 2011; Dron & Anderson, 2014b; McLoughlin & Lee, 2011; Rahimi, van den Berg, & Veen, 2014). These user or learner
actions are captured by phrases such as ‘wisdom of the crowd’ (Surowiecki, 2004), collective knowledge building (O’Reilly, 2005) and user-generated content. The affordances of social media form the pinnacle foundation of Pedagogy 2.0. These affordances according to Don and Anderson (2014b, p. 15-24):

- help the learner build and participate in online communities
- help create knowledge
- help engage, motivate and make the learning enjoyable
- encourage active learning
- are accountable and transparent
- bridge the gap between formal and informal learning
- address both individual and social needs
- build identity, expertise and social capital
- are cost effective, accessible and easy to use
- protect and advance current models of ownership and identity
- are persistent and findable
- support multiple media format
- encourage debate, cognitive conflict and discussion
- support creativity
- and expand the adjacent possible.

A detailed description of each of these affordances is provided in Appendix 1.

The plethora and ever increasing number of social media tools enable numerous types of user actions and interactions on the web and mobile devices leading to various forms of user-generated content (Lee & McLoughlin, 2007; Redecker, Ala-Mutka, Bacigalupo, Ferrari, & Punie, 2009). In relation to this, Bower (2015b) (Figure 2.4) provides a typology of social media tools and the types of user engagement enabled by them for learning and teaching purposes (Bower, 2015a).
The affordances of social media tools according to McLoughlin and Lee (2011) have acted as a catalyst for the conception of new pedagogies such as networked learning (Polsani, 2003), e-learning 2.0 (Downes, 2005), social learning 2.0 (T. Anderson, 2007) and curriculum 2.0 (Edson, 2007)—emergent pedagogies that attempt to support enhanced forms of learning by enabling learner autonomy, self-directedness, social, collaborative and participatory forms of learning approaches. Pedagogy 2.0 as a result was ‘envisioned as a overarching concept for an emerging cluster of practice’—practices similar to social learning 2.0, e-learning 2.0 or networked learning that leverages the affordances of social media tools for improved learning and teaching practice (McLoughlin & Lee, 2008d, p. 15).

In an attempt to distil the essence of the emerging Web 2.0 pedagogical practices, McLoughlin and Lee (2007) outlined a set of core design guidelines and continued to build on their work (McLoughlin & Lee, 2008a, 2008d, 2011) to provide a comprehensive list of design guidelines (Table 2.8) that capture the core affordances and effective use of social media tools for learning and teaching.
Table 2.8 – Underpinning guidelines for Pedagogy 2.0 adapted from McLoughlin and Lee (2008d, p. 15).

<table>
<thead>
<tr>
<th>Design elements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>The course content provided to the learner should ‘consist of micro units’ that enable higher cognitive processes—by creating confusion or ‘augmenting’ the learner’s thinking.</td>
</tr>
<tr>
<td>Curriculum</td>
<td>The design of the curriculum should be ‘dynamic’, ‘open’ and enable and encompass learner input where the course topics or modules are ‘bite-size’ encouraging learning in formal and informal context that is multidisciplinary.</td>
</tr>
<tr>
<td>Communication</td>
<td>Learner communication in the course should be encouraged in multiple forms and layers and is inclusive of ‘open, social and peer-peer communication and ‘visual, verbal, and auditory’ types of communication to allow the learner to achieve ‘relevance, immediacy and clarity’.</td>
</tr>
<tr>
<td>Learning processes</td>
<td>The design of the learning activities and tasks should be ‘situated, contextualised, reflective, integrated with thinking processes, iterative, dynamic, performance, and inquiry based’.</td>
</tr>
<tr>
<td>Learning resources</td>
<td>The resources for learning should be a composite of formal and informal content provided in multiple digital formats, should be interdisciplinary and have a global reach.</td>
</tr>
<tr>
<td>Learning scaffolds</td>
<td>Learning aid and support for the learner to build knowledge and understanding should be inclusive of peers in class, the teacher, experts and communities online.</td>
</tr>
<tr>
<td>Learning tasks</td>
<td>The design of the learning tasks and activities in the course should be authentic, personalisable by the learner, experimental and learner driven and designed as a result should enable learner-generated content to capture and present learning enabling creativity and innovation in the process.</td>
</tr>
</tbody>
</table>

The design guidelines outlined in Table 2.8 align with constructivist and social constructivist learning approaches (e.g, authentic learning (Herrington & Oliver, 2000) and inquiry-based learning (Bruner, 1961)), learning as a knowledge creation metaphor (Paavola & Hakkarainen, 2005) and emerging practices in relation to Web 2.0 (McLoughlin & Lee, 2008a, 2008c, 2011) such as connectivism (Siemens, 2005) that encourages ‘learner choice and self-direction as well as engagement in flexible, relevant learning tasks and strategies’ (McLoughlin & Lee, 2008d, p. 15). The key to implementing and operationalising the design elements outlined in Table 2.9 is, however, dependent on the role of the learner in the process. Whitworth (2008) argues that while a learning task or activity may be designed to encourage learner participation based on constructivist views of learning, the learners may, however, remain ‘consumers [of content] in a context designed for rather than by them’ (p. 62). As such, the design guidelines in Table 2.8 portray elements that enable active learner participation and provide autonomy to the learner to help them find, guide, enable, create and construct knowledge in a participatory digital environment using social media affordances. Pedagogy 2.0 as a result aims to explicate active learner components that focus on exploiting the affordances of social media tools to enable learner-centred
and driven tasks with explicit learning outcomes—participation, personalisation and productivity (3Ps) (Figure 2.5) leading to learner-generated content (McLoughlin & Lee, 2008d, 2011).

Figure 2.5 – The three critical elements of Pedagogy 2.0 (McLoughlin & Lee, 2008d, p. 16)

The design guidelines for Pedagogy 2.0 provide educators with a roadmap or a blueprint that helps design and facilitate a learning process and environment that gives learner freedom, choice and ability to capitalise on social media affordances which enable the learner to direct and determine their learning through participation, personalisation, and productivity enabling learner-generated content in the learning process (JISC, 2009; McLoughlin & Lee, 2011).

The construct of Pedagogy 2.0—*productivity, participation* and *personalisation* are examined in the sections below through the lens of their informing learning theories and views—social constructivism, knowledge creation metaphor, navigationism and connectivism.
**The 3Ps of Pedagogy 2.0**

**Participation**

The participation element of Pedagogy 2.0 emphasises the increased ability of the learner to socialise with others, as such the design of the curriculum and the learning process is less focused on ‘prescriptive curriculum’ rather an emphasis is placed on enabling ‘teacher-student partnerships in learning, with the teachers as co-learners’ (McLoughlin & Lee, 2008d, p. 16). The participation element of Pedagogy 2.0 also views the increased capability of the learners to connect and communicate with the outside world as an affordance for learning, where the learners are able to seek ‘scaffolding linkages, dialogue, and connections in and across communities and global distributed networks for the purposes of idea sharing, inquiry, and problem solving’ (McLoughlin & Lee, 2008d, p. 15). The learner’s role within the participation element of Pedagogy 2.0 is captured by the ability to communicate, collaborate and connect and the ability to access communities online. As a result, learners are able to inform their learning by accessing, participating and collaborating ‘with their peers, instructors, other subject matter experts, and the community at large’ (McLoughlin & Lee, 2008d, p. 15).

According to Rahimi et al. (2014), the learner may also be viewed as a ‘socialiser’ within this domain where social media tools:

- enable learner-centred instructions—where the learner seeks guidance and support to grow his/her knowledge by engaging in ‘deep and active interactions with the teacher’ (p. 65)
- increase and create opportunities for social learning between the students
- enable the learner to connect and elicit guidance and feedback from experts or the ‘knowledgeable others’ (Vygotsky, 1978) outside the classroom context.

In the participation element of Pedagogy 2.0, learning and learner role are viewed through the social constructivist or social learning theory which are ‘based on the premise that our understanding of content is socially constructed through conversations about the content and through grounded interactions especially with others, around problems and actions’ (Brown & Alder, 2008, p. 18). In social learning, the main focus
of learning is not on what is being learnt, but on how we are learning (Dron & Anderson, 2014a; Vygotsky, 1978). The participatory and situated nature of learning (Barab & Duffy, 2000; Brown, Collins, & Duguid, 1989) in the participation element of Pedagogy 2.0 (McLoughlin & Lee, 2008d) shifts the attention from learning the content ‘to the learning activities and human interactions around which that content is situated’ (Brown & Alder, 2008, p. 18). A particular factor within the participation element is the learner’s ability to connect, communicate, collaborate and draw upon expertise and support to scaffold their own learning ‘in and across communities’ (McLoughlin & Lee, 2008d, p. 15). This enables learning to move beyond ‘learning about’ to ‘learning to be’ (Brown & Alder, 2008, p. 16) and the learner from ‘knowing’ to ‘being’ (Siemens & Tittenberger, 2009, p. 7) outlining an ontological shift. The learner’s participation in and across communities help bridge the values of professional practice and informal learning, where learning extends beyond the ‘time and place of study to become the tool that forms and cements values, attitudes, connections and friendship’ (Dron & Anderson, 2014b, p. 9).

Pedagogy 2.0 also finds an alignment with the connectivist view of learning (Siemens, 2005), particularly within the participation element of the framework. Siemens (2005) argues that the influence of technology that provides the learner the ability to connect and network in the learning process shifts our understanding of how learning eventuates and moves it into a digital era. He argues that ‘we can no longer personally experience and acquire learning that we need to act. We derive our competence from forming connections’ (para. 13). In connectivist learning, knowledge is stored in multiple digital formats and is distributed across the network where knowledge is the product of mutual agreement over disagreements in a community referred to as a node which is a part of the larger network (Kop & Hill, 2008; McLoughlin & Lee, 2008d; Siemens, 2005).

The Participation element of Pedagogy 2.0, as a result endeavours to enable learning that reflects the social, participatory and networked nature of social media that goes beyond the simple transfer of knowledge to learning how to learn and offers opportunity for the learner to learn the art and practice of the profession they are studying towards—moving them from knowing to becoming.
Productivity

In addition to the learner participating in and across communities and learning through ‘legitimate peripheral participation’, ‘enculturation’ and ‘guided participation’, the ‘learners are also capable of creating ideas, concepts and knowledge’ (Lee & McLoughlin, 2007, p. 4). Pedagogy 2.0, as a result seeks to move beyond the participation metaphor for learning to acknowledge that learners are also capable of creating knowledge (McLoughlin & Lee, 2008d) and draws an alignment with the ‘knowledge-creation metaphor’ of learning (Paavola & Hakkarainen, 2005). The knowledge-creation metaphor according to Paavola and Hakkarainen (2005) is ‘trailogical’ (p. 539), where the focus of learning is not on the individual or the individual’s participation in a community but also on the collaborative and social processes through which the learners create digital content. The key affordance of social media is that it enables ordinary users to create multiple and varied forms of content, referred to as learner-generated content (Bower, 2015a; Dron & Anderson, 2015) and has the potential to encourage innovation and creativity in learning and teaching (McLoughlin & Lee, 2008d, 2011). According to McLoughlin and Lee (2011), the knowledge-creation paradigm of learning is conducive to learning environment and designs that promote learner autonomy and self-directedness as it allows the learner ‘to move beyond mere participation in groups and communities to become active creators of ideas, resources and knowledge artefacts’ (p. 47).

The productivity element of Pedagogy 2.0 hence focuses on enabling learner-generated content either by the individual learner or in collaboration with others—a process that encourages learner innovation and creativity and the creation and sharing of knowledge mediated by the social media affordances in the process. While the end product created by the learner is in the form of a digital artefact, McLoughlin and Lee (2011) state that ‘it is debatably the creative and generative processes involved and the knowledge construction that occurs that are of chief importance in terms of preparing students for work and life in the Web 2.0 era’ (p. 54).
**Personalisation**

According to Anderson (2004) ‘the greatest affordance of the web for education use is the profound and multifaceted increase in communication and interaction capability’ (p. 10). He argues that social media enable increased learner interaction that facilitates a process through which the curriculum design and facilitation can be customised based on teacher interactions and conversations with the learner. On the other hand, social media tools also allow learner autonomy over the learning by enabling access to ‘ideas, resources, and communities’ and help the learner to build self-directed learning skills (McLoughlin & Lee, 2008d, p. 15). The learner’s ability to determine and drive the learning process according to their learning needs by effectively exploiting the affordances of social media tools characterises the personalisation element of the Pedagogy 2.0 framework. Apart from the learner having autonomy over the learning path, process and the resources they could use in their learning, social media also provides the learner with choice over the format and tool they could use to effectively access, capture and communicate their ideas (Dron & Anderson, 2014b, 2015; McLoughlin & Lee, 2011). In relation to this, Pedagogy 2.0 draws on the constructs of navigationism (Brown, 2005; T. H. Brown, 2006). In navigationist learning, the learner is actively engaged in exploring, evaluating, manipulating, integrating and navigating through the resources on the web and digital communities to solve problems situated in real world contexts through communication and collaboration (Brown, 2005). Navigationism as a result emphasises that the learner’s ability to navigate the vast and rapidly growing amount of data and information is critical and central to learning in a digital age (Brown, 2005). The learning principles implicit within this process of navigationism resonates with the personalisation element of Pedagogy 2.0, where the learner is central and the main agent in determining and directing their own learning. The increased learner autonomy and personalisation of the learning and content capture and creation process have given rise to personal learning environments (PLE) (Attwell, 2007; McLoughlin & Lee, 2011). PLEs are a further development to the personalisation of learning through social media tools, where learners are able to create personalised learning environments to collect, capture, create and share knowledge within the learning process (Attwell, 2007; Buchem & Attwell, 2011; Dabbagh & Kitsantas, 2011).
The *Personalisation* element of Pedagogy 2.0 advocates active learner role in the learning process to enable student-directed learning, self-regulation, learner choice and customisation. The precursor to enabling personalised learning according to McLoughlin and Lee (2011), is to ensure that learners are capable of making informed decisions about their learning and learning process, are able to diversify and recognise different forms of skills and knowledge needed in a self-directed learning process and have the ability and knowledge of how to create personal or diverse learning environments and teaching and assessment focuses on providing the learner formative feedback to enable and inform their learning (p. 53).

As with using any technology in learning and teaching, implementing Pedagogy 2.0 also raises issues and challenges that need to be considered and planned for.

**Challenges to implementing Pedagogy 2.0 for learning and teaching**

**The learner**

Pedagogy 2.0 aspires towards enabling many forms of participatory learning that is learner driven, regulated and determined through effective use of social media tools. These aspirations have to be similarly accompanied by a collection of innovative approaches to help and equip the learners with the skills needed to effectively drive their own learning in a content rich and participatory digital environment (Bates, 2011; Cigognini, Pettenati, & Edirisingha, 2011; McLoughlin & Lee, 2011). Similarly, Siemens (2006) argues that equipping learners with the skills to effectively use the tools is a part of a bigger more complex and multifaceted problem that also requires social, cognitive and personal attributes and competencies for effectively utilising and repurposing the use of social media tools for learning. According to Cigognini et al. (2011) just as Web 2.0 tools and affordances are constantly evolving and lead to the creation of complex and multifaceted learning environments, the learners similarly have to be equipped with skills and competencies that allow them to evolve with the growth and evolution of social media tools while having the ability to make meaning and to construct knowledge in an ever changing environment. The lack of learner digital and literacy skills is also a challenge in implementing Pedagogy 2.0 in learning and teaching situations (Bates, 2011; Cigognini et al., 2011; Conole, 2011; Schoenborn, Poverjuc, Campbell-Barr, & Dalton, 2013). In relation to this, Bates (2011) notes that while Web
2.0 houses a plethora of information, data and knowledge, he questions how ‘learners differentiate between reliable, accurate, authoritative information and inaccurate, biased, or unsubstantiated information’ (p. 29). He further asks ‘What are the implications for expertise and specialist knowledge, when everyone has a view on everything?’ (p. 29). These statements highlight the gravity of the problem ill equipped learners could face learning in a digital realm full of user voice and opinions (McLoughlin & Lee, 2008a; Schoenborn et al., 2013). The issue is further complicated with the labelling of the current generation of learners as ‘ millennials’ or ‘digital natives’ (Oblinger & Oblinger, 2005; Prensky, 2001) along with many other connotations (refer Conole & Alevizou, 2010, pp. 18-19) that perpetuates unsubstantiated views regarding the capability and skills of the learner. It creates a false illusion that students do not require digital competencies or literacy skills to navigate and learn using the web (Laurillard, 2012; Schoenborn et al., 2013). While social media enable the learners to create and build knowledge together, Conole (2011), highlights that they also have the ability to promote negative social practices such as ‘cyberbullying and online grooming’ (p. 410). She also reports that ill prepared students who lack information literacy skills and the etiquettes of online information and data sharing may unknowingly share sensitive and personal data about their lives putting them at an increased risk of online abuse and bullying.

Another issue that poses a challenge to the use of social media tools in learning is in the way the learners perceive and understand social media affordances (Stewart, 2016). According to McLoughlin and Lee (2011), the integration and use of social media in learning may be viewed by the students as ‘intrusions into their space’ (p. 57). This view may be perpetuated by the learners’ different use and appropriation of social media tools in and out of formal learning environment referred to as ‘digital dissonance’ (Clark, Logan, Luckin, Mee, & Oliver, 2009, p. 56). In order to overcome the digital dissonance in the implementation of Pedagogy 2.0, Schoenborn et al. (2013) propose that learners need to be scaffolded from their current use of social media tools to effective and appropriate use in learning and teaching—as such there is a need to reshape the learners’ attitude and motivation. They propose a set of guidelines to help learners reconceptualise their use of social media, where the teacher plays a critical role in:
• encouraging a culture of collaboration and co-creation
• modelling the use or applied use of social media from former students or industry experts
• integrating social media in the course criteria and assessment
• gradually increasing the learners use and role in learning with social media
• introducing learning to social media tools through demonstrations
• incentivising student work done with social media
• planning the assessment and learning tasks in a timely manner
• providing the learners with guidelines and exemplars
• modelling group work. (p. 14-15)

They further elaborate and provide a set of guidelines for teachers to help learners conceptualise the use and re-use of the content created in the learning process:

• provide the learner opportunity to show/demonstrate their work in class
• model the re-use of content in class
• provide formative feedback to the learner
• use the rating functionalities offered by social media tools to motivate the learner. (p. 15)

A core affordance with the use of social media is the learner’s ability to create and remix content and information shared by other people. This, however, could raise ethical issues in academia such as academic integrity, ‘ownership, copyright and intellectual property’ (Lee & McLoughlin, 2007, p. 8). In using social media in learning and teaching, the digital divide is still an issue that could have an adverse effect on learners if they do not have access to the required infrastructure to operate and use the tools (McLoughlin & Lee, 2011).
Teachers, assessment and institutional policies

The way in which social media is perceived in academia is reflective of the understanding of teachers, policy makers and institutes. Cook and Santos (2014) scathingly state:

Rarely does a day go by without dire warning and overt action to either ban …access to social networks from workplace or school, or for the monitoring of some description to be put in place to “police” behaviour. Put simply, social networks stand accused of being the so-called “weapons of mass distraction” or worse. (p. 2)

According to Jimoyiannis, Tsiotakis, Roussinos, and Siorenta (2013) none of the social media tools are specifically designed for use in education and this perhaps exaggerates and explains the resistance and lack of uptake of social media in academia. As a result, just as students need to gain and develop skills in relation to the use of social media for learning purposes, teachers similarly need better systems and mechanism to learn about, gain and develop skills for using social media for teaching purposes (Conole, 2011; McLoughlin & Lee, 2011; Roads, 2016). Conole (2011) states that ‘the majority of teachers lack any personal direct experience of Web 2.0-based social software, and there are no institutional incentives for them to try out and experiment with these tools’ (p. 410). She further argues that the institutional professional development opportunities for staff are mostly based on the workshop model, where staff are given an overview of the concept and the functions of the tools and pedagogies. Another hurdle for implementing Pedagogy 2.0 in learning and teaching is the lack of teacher knowledge on the affordances and range of social media available to them for design and use in teaching practice (McLoughlin & Lee, 2008d; Stewart, 2016).

The learner’s use of social media tools to create content may not always be creative and innovative, and hence teachers play a critical role in the process where they engage in conversations and collaborate with the learners to ‘review, edit, and apply quality assurance mechanisms’ (p. 19), while encouraging students to use connections and expertise available online to improve and inform their learning (McLoughlin & Lee, 2008d). As a result, teachers need to move beyond the myths and connotations attached with millennial learners and critically reconceptualise their own role in teaching with social media as learners are ‘not simply mediating the knowledge already articulated’ (Laurillard, 2012, p. 4). The increased involvement of the teacher in the learning process is another issue the teachers have to grapple with. According to Jimoyiannis et
al. (2013), technology driven learning ‘often demand extra time and efforts for their design and preparation, at both a technical and pedagogical level’ (p. 250). They suggest that a more systematic and planned approach is warranted to help the teachers manage the process and expectations in technologically rich learning environments (Beetham, 2013; JISC, 2009).

Whitelock (2011) agrees by arguing that a major event in learning and teaching is the assessment, which ‘has remained largely transmission orientated’ (p. 320). Schoenborn et al. (2013) in their implementation of Pedagogy 2.0 state that the design of the assessment holds prime focus as it is the creative driver in the process and if the assessment event(s) are not properly planned, the entire environment designed for innovative use of technology may fail. Suggesting that learner activities and tasks in the course should be closely aligned with the assessment event and requirements (McLoughlin & Lee, 2008d, 2011) and learner contributions should count towards the final grade (Cochrane, 2010; Schoenborn et al., 2013). McLoughlin and Lee (2011) state that there is a need to revisit and repurpose the role of assessment to an event that is ‘meaningful and authentic’ (p. 57). Which according to Whitelock (2011) can be achieved by designing ‘assessments for learning’ as it aligns with the affordances and opportunities offered by social media. Furthermore, Elliot (2007) states that the design of assessment that capitalises on the use of social media affordances (such as learner participation, networking, content creation, open access to data and information, collaboration and communication) should be:

- authentic and involve learning and knowledge construction in real world context
- personalised according to the learner’s interest, knowledge and skills
- negotiable, where the learner and the teacher are able to mutually agree on the assessment deliverables
- problem oriented, where the learners are able to apply their knowledge and skills to solve a genuine or real world problem
- knowledge is socially constructed and enables the learner to use his/her networks
- knowledge and artefacts should be collaboratively produced with peers in class
- and recognises the learners existing skills. (p. 183-184)
McLoughlin and Lee (2011), however, state that more needs to be done to realise the potential of Pedagogy 2.0 in learning and teaching. ‘University leaders must act swiftly to address the four important yet potentially conflicting areas … accreditation frameworks, external stakeholders’ expectations, endorsement of learning processes and activities, and concerns in regard to intellectual property’ (p. 57). While these issues form the backdrop to ever growing problems related to teaching with technology in general, enthusiastic educators have always found noble and effective ways of teaching with technology in general. Pedagogy 2.0 is no different and is evident in work done by many around the world, such as Cigognini et al. (2011), Lee and McLoughlin (2010), Lee and McLoughlin (2008), Cochrane (2010), Schoenborn et al. (2013) and continues to inform and enhance other learning and teaching practices with social media, such as heutagogy (Blaschke, 2014; Blaschke & Hase, 2015) and mobile learning (Cochrane & Bateman, 2010).

While Pedagogy 2.0 and heutagogy discussed in the previous sections provided a potential framework for designing a learning solution for the practitioners in the Principles of Journalism (PoJ) course there is still a need for another framework that provides guidance and design ideas that would allow students mobility to learn in real world and authentic contexts—a key design and learning factor that the practitioners in the PoJ course wanted to implement.

**The search widens …**

While social media provides the learner the ability to capture, create, co-create, share, collaborate, communicate and participate with others and communities, mobile devices are argued to have added a further ubiquitous factor.

> Web 3.0 is the next generation for the web and has already happened while moving to the smart phone era, whereby billions of users can be connected to the internet by their smart and portable devices that can connect them to different types of apps, services and communication. (Newman, Chang, Walters, & Wills, 2016, p. 596)

As a result, mobile learning (Cook et al., 2007; Sharples et al., 2010; Traxler, 2012) as a framework for learning and teaching is discussed as the third framework informing the design of the learning intervention for the PoJ practitioners. Mobile learning provides an additional layer of technological and pedagogical principles for designing a solution
for the PoJ practitioners. It completes the equation, where heutagogy provides a framework for allowing learner mobility and ability to create and learn from meaningful contexts, Pedagogy 2.0 provides a framework for teaching the learner the skills and knowledge to capture, participate, collaborate and share content using social media, while mobile learning operationalises the core tenets of heutagogy and Pedagogy 2.0 by allowing the learner mobility and the ability to use social media in situ.

**Mobile Learning**

**Overview**

Mobile learning as a concept has a long history dating back to the early 1970s when Alan Kay presented an idea and a sketch of a personal mobile computer—the Dynabook (Naismith & Corlett, 2006; Parsons, 2014; Sharples, 2002). Kay’s conception of the Dynabook in 1972 was a revolutionary idea and ahead of its time offering ‘affordances for a mobile learning device that we now take for granted’ (Parsons, 2014, p. 3) that only came into existence in early 2000 (Crompton, 2013; Naismith & Corlett, 2006).

Motorola created the first mobile phone in 1973 and it was not until 1983 that mobile phones were commercially available. Between 1980 and 1989 a significant number of companies started exploring and creating their own brand of mobile phones such as Sanyo, Toshiba and Panasonic (Crompton, 2013). It was between these years, in particular 1984 when mobile devices were first explored and implemented for learning and teaching purposes (Parsons, 2014). A small portable device called Microwriter was implemented in infant schools that allowed the learner ability to input text up to 8,000 characters and this was the only function enabled by the device at the time (Microwriter, 2015; Parsons, 2014). The first true use of a mobile device in learning was in 1991 in the Apple Classrooms of Tomorrow (ACOT) project, where students used the mobile device on a field trip that enabled ‘collaborative, inquiry-based, and knowledge-building tasks’ (Ringstaff, Yocam, & Marsh, 1996, p. 1). In the 1990s, the first digital camera was invented, the web browser and graphical calculators were developed where many schools had started using a computer and computer-assisted instruction programs (Crompton, 2013, p. 94).
In late 1990s and early 2000, Palm distributed personal digital assistants or PDAs as educational grants to provide a mobile and portable device for the K-12 that ran basic programs such as a calculator, tests, calendar, contacts, and notepad (Crompton, 2013, p. 94; Parsons, 2014). Around the same time, the Handheld Learning Resource (HandLeR) project led by Sharples (2000) attempted to recreate the principles espoused in the conception of Dynabook by designing a learning environment capable of running across platforms to aid lifelong learning (Crompton, 2013). The early 2000s in particular, 2002 was a pivotal year for mobile devices ‘as technology developed, more ambitious forms of mobile learning became possible’ (Parsons, 2014, p. 5), which also show the rise and further development of Wi-Fi networks and phone connectivity (Crompton, 2013). Since 2003, mobile devices and accompanying infrastructure such as mobile Internet connectivity (from GPRS->2G->3G->4G and beyond) had undergone a fast and a rapid development phase.

**Defining mobile learning or mlearning**

The understanding and conceptualisation of mobile learning has evolved from the early stages, when the definition of mobile learning focused on the technological attributes of mobile devices for learning and teaching (Bannan et al., 2015; JISC, 2011). Sharples, Milrad, Arnedillo, and Vavoula (2007) defined mobile learning as ‘the processes (both personal and public) of coming to know through exploration and conversation across contexts amongst people and interactive technologies’ (p. 5). Pachler, Cook, et al. (2010), however, state that while they find this definition of mobile learning ‘attractive’ (p. 6) it may be too narrowly focussed on conversation, whereas they view the process of ‘coming to know’ more aligned with communication and the importance of the learner’s ability to create, connect and elicit knowledge in socio-cultural contexts and from systems and media platforms such as Twitter and YouTube.

Capturing an apt definition of mobile learning is difficult because it is ‘essentially personal, contextual, and situated, this means it is “noisy”’ (Traxler, 2009, p. 10). Mobile learning unlike elearning and other forms of invention witnessed in academia that eventuate and grow within the formal boundaries of an institute, ‘are a massive social and popular phenomenon’ (Traxler & Koole, 2014, p. 292) that is impacting upon social and cultural human values and beliefs (Bannan et al., 2015). Against this
backdrop, Traxler (2009) espouses that “mobile” is not merely a new adjective qualifying the timeless concept of “learning”, rather “mobile learning” is emerging as an entirely new and distinct concept alongside the mobile workforce and the connected society’ (p. 14).

While a mutually agreed definition of mobile learning may still be evolving (Traxler & Koole, 2014), current definitions of mobile learning interweave notions of ubiquity (Kukulska-Hulme et al., 2009; Traxler & Koole, 2014), learner mobility (Sharples et al., 2007), space, technology, time, formal and informal learning, contextual learning (Kearney, Schuck, Burden, & Aubusson, 2012; Sharples, 2016; Traxler, 2016a), situated learning (Pachler, Bachmair, & Cook, 2010a), personalised learning (Traxler, 2009), learning that focuses of collaboration, communication and connectivity (Bachmair & Pachler, 2014), learning that enables access and enables identity formation (Bannan et al., 2015), serendipitous learning (Traxler, 2009) and immediacy (Baran, 2014; Pachler, 2007; Palalas & Anderson, 2013). These informing notions outline the interwoven construct of mobile learning—pedagogy, technological affordances, context and social interaction (Crompton & Burke, 2014), which are underpinned by the key affordance—learner mobility (Bannan et al., 2015; Baran, 2014; Cook, 2010; Naismith, Lonsdale, Vavoula, & Sharples, 2004; Palalas & Anderson, 2013; Sharples, 2013; Vavoula & Sharples, 2009). These mobile affordances and the pedagogies for use with mobile learning are discussed in the sections below.

The mobilised learner

Mobile Affordances

Modern mobile devices such as smartphones and tablets are assembled with features such as high speed Wi-Fi and Internet connectivity, high resolution touch screen, web browsing capabilities and sophisticated capabilities (Baran, 2014). This allows the learner the ability to run social media apps, communicate, collaborate and to access, create and capture data in multiple format such as audio, text, images, location and contextually rich data by using built-in GPS and tagging functionalities (Cook & Santos, 2015; Pachler, 2007). According to Traxler (2010), mobile devices are ‘pervasive and ubiquitous, conspicuous and unobtrusive’ (p. 3), and as a result have the potential to easily become embodied in our daily live. Mobile devices perpetuate
different user actions and interactions compared to other older forms of technologies, where access to information, conversations and interactions have become embedded in daily routines of user life (Sharples et al., 2007; Traxler, 2010). The affordances of mobile devices provide the user the ability to ‘create, store and transmit information, images, ideas, resources, and knowledge, and to connect to communities and to each other and hence, in very different senses, to engage in learning’ (Traxler, 2010, p. 3). The affordances of mobile devices combined with the hardware capability and the form factor significantly empower the learner by ‘increasing portability, functionality, multimedia convergence, ubiquity, personal ownership, social interactivity, context sensitivity, location awareness, connectivity and personalisation’ (Cook, 2010, p. 2).

These unique mobile affordances encourage a number of different learning behaviours such as: increased communication and collaboration in different contexts, lifelong learning, learner interactivity and learning across contexts, ability to access and create multimedia and multimodal content, nonlinear learning, learning opportunities situated in real world contexts leading to authentic and contextualised learning, and empowerment of the learner to take ownership of the learning process (Bannan et al., 2015; Baran, 2014; Klopfer, Squire, & Jenkins, 2002; Pachler, Evans, Pedondo, & Fisher, 2014; Parsons, 2014). The increased learner control and ownership over the learning process motivates the learner and can make learning ‘fun’ (Laurillard, 2007; Sharples, 2007; Traxler, 2009).

The underpinning mobile learning affordance according to Sharples (2002), however, is that it enables the learner to learn everywhere at anytime. The affordances allow learning in and across contexts by empowering the learner ‘to access internet resources and run experiments in the field, capture, store and manage everyday events as images and sounds and communicate and share the material with colleagues and experts throughout the world’ (p, 222). Learner mobility and the ability to create contexts using the unique affordances of mobile devices could be deemed as core constructs of mobile learning (Cook, 2010; Herrington, Herrington, & Olney, 2012; Sharples, 2016; Sharples et al., 2007; Traxler, 2016a).
Mobility
In order to draw a distinction and to elaborate the uniqueness of mobility in mobile learning, some leading authorities in the field (Pachler, 2007; Traxler, 2009, 2016a) provide a comparison with desktop computers. According to Traxler (2016a), entering the web on a desktop computer ‘takes place in a bubble, in dedicated times and places where the user has their back to the world for a substantial and probably premeditated episode’ (p. 195). The learner’s behaviour navigating the web using a mobile device is significantly different where the act is woven across the time, place and space barrier. There is another stark difference between these tools—the tethered nature of the desktop computer imposes a defined context within which the learner can operate, whereas a mobile device allows the learner the ability to navigate across virtual, conceptual and real world contexts (Sharples, 2016; Traxler, 2009, 2010, 2016c). The effect of mobility thus redefines the notion and understanding of context, where ‘Mobile technologies erode the ideas of physical time as the common temporal context, and this temporal context, the way we understand the where and when of everyday life…can instead be socially negotiated…alongside the softening of schedules’ (Traxler, 2016a, p. 195). Hardless, Lundin, Loof, Nilsson, and Nulden (2002) similarly argue that the first mobile devices are the people on this planet. Humans are mobile devices who interact in and cross multiple contexts, social, virtual and real, a mobile device as a result is a perfect companion to mobile people and its actions and interactions which are distributed across different time and space (Peng, Su, Chou, & Tsai, 2009). The mobility of the learner is not limited to virtual, social and real contexts. Sharples et al. (2007) provide an overview of the different concepts of mobility enabled by mobile devices and its implications on learning:

• the mobile nature of humans—as such learning happens on the ‘go’ and fits into the ‘gaps of daily life’ (p. 3), where location is the enabling factor of a backdrop for reflection
• the mobility of the technology—the learner is able to connect to create, share and carry resources needed and also being able to work across different or alternate platforms, for example an iPad for creating and a laptop for editing
- mobility in conceptual space—a learner may go through several conceptual changes in a short duration that is driven by curiosity, learner interest and commitment
- mobility in social space—a learner’s interaction in different social settings such as family, work and classroom
- learning over a continuum of time—learning eventuates through the learner’s engagement in formal (classroom) and informal (in the real world) contexts.

Taking into account the affordances of mobile devices, Kearney et al. (2012) propose a mobile learning framework (Figure 2.6) that is underpinned by the learner’s ability to overcome the time and space barrier, allowing them to collaborate, personalise and participate in authentic learning activities. The collaboration element of the framework encourages learning through learner interactions such as conversations with others and the sharing of data. The personalisation of learning in the framework is underpinned by increased learner autonomy and the authenticity in learning is provided by the learner’s ability to act and create knowledge in situ and in authentic learning contexts.

Figure 2.6 – Time and space mobile learning framework (Kearney et al., 2012, p. 9)

The affordances of untethered mobile devices provide the learner mobility that enables learning through personalisation, collaboration and engagement, and participation in authentic contexts (Cook et al., 2011; Luckin et al., 2011; Narayan & Herrington, 2014; Pachler, Bachmair, & Cook, 2010b).
Context

Sharples (2010) espouses ‘learning not only occurs in a context, it also creates context through continual interaction’ (Sharples et al., 2010, p. 90). The meaning of context thus moves beyond the perception of virtual or physical space or location to ‘that which weaves together’ (Sharples, 2005, p. 6). Sharples et al. (2007) outline two constructs that play an important role in the process—exploration and conversations. Exploration, he argues, is ‘mobile’ in nature that transcends the physical, virtual and conceptual boundaries and allows the learner to build a link between experience and concept to create new knowledge and meaning. Similarly, conversation is an act that is mobile and hence is able to help the learner connect the different contexts through discussions, creation of digital artefacts and other forms of communication. Traxler (2016a) agrees by stating that context as such does not have a form or a shape nor is it static—he argues that context is something that is dynamic, is a product of user actions and activities at any one particular time, and that context and content are two heavily intertwined processes that enable collaboration between the learners and problem-solving. According to Sharples (2016) learning in relation to context can be viewed as learning through, in and about context—discussed in Table 2.9 below.

<table>
<thead>
<tr>
<th>Category</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning through a context</td>
<td>The learning is situated in a context where the learner intentionally manipulates the elements and entities available within the space to achieve the set learning goals and tasks.</td>
<td>Learning in a classroom as a context and learning eventuates as the learners interact with peers and other resources such as books and technology.</td>
</tr>
<tr>
<td>Learning in a context</td>
<td>The learner is situated in a context that is designed or specifically chosen to enable a particular type of learning.</td>
<td>Learners visiting a museum where the learning is the learner’s act of collecting from the entities and resources available.</td>
</tr>
<tr>
<td>Learning about a context</td>
<td>The learner’s natural surrounding becomes the main driver of the learning process.</td>
<td>Learners on a field trip where the learners task is to utilise the affordances of the mobile device to collect, document and interpret the information to inform its learning.</td>
</tr>
</tbody>
</table>

Sharples (2016), however, cautions that while the three perspectives help us understand the notions of context, they should not be viewed as processes working against each other, rather the challenge is to perceive them as a cohesive process working together.
A key concept that captures the unique affordances of mobile learning and learning in and across contexts is the notion of ‘learner-generated context’ (Cook et al., 2007; Cook et al., 2011; Luckin, 2010b; Luckin et al., 2007; Luckin et al., 2011; Pachler, Bachmair, et al., 2010b; Whitworth, 2008). Learner-generated context (LGC) is particularly cognisant of the implications and the ability to create context using mobile affordances for learning and teaching (Luckin, 2010b; Luckin et al., 2011). LGC acknowledges that context is ‘something that is centred around an individual’ (Luckin, 2010b, p. 155), that context is personal to a learner and is created by the learner’s actions and interactions (Luckin et al., 2011). As a result, context in learning is ‘fully integrated with cognition, the making of meaning and understanding’ (Whitworth, 2008, p. 63). LGC aims to capitalise on the fact that learners use technology in a more effective and creative manner outside the school than within it (Luckin et al., 2011). LGC attempts to reconceptualise the learners’ role from content consumers to producers by enabling learners to create their own contexts through the use of mobile devices and available tools like social media for learning (Luckin et al., 2007). LGC is defined ‘as a context created by people interacting together with a common, self-directed learning goal’ (Luckin et al., 2007, p. 91). In order to scaffold the learner into learning the skills for self-created context within LGC, Luckin et al. (2011) propose the notion of learner centric ecology of resources model—resources that are put together by the teacher, an expert or group of students to meet the learning needs. The ecology of resources model is based on the zone of proximal development concept central to social constructivist learning theories, which espouses that learners are capable of gaining knowledge and skills through the help of ‘the knowledgeable other’ who acts as scaffold to help the learner in the learning process (Luckin, 2010a; Vygotsky, 1978).

Within the wider context of learning, LGC puts pedagogy, andragogy and heutagogy on a continuum where pedagogy allows the learner an opportunity to build an understanding of the subject, andragogy allows the learner to build skills about how to manage, understand and negotiate the learning process (metacognition) and heutagogy as a construct to allow the learner to create meaningful contexts to apply the knowledge and skills in order to gain capability (Luckin, 2010b). Luckin et al. (2007) provide the key design considerations for designing learning for LGC—discussed in Table 2.10 below.
### Table 2.10 – Design considerations for LGC adapted from Luckin et al. (2007)

<table>
<thead>
<tr>
<th>Elements</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner are creator</td>
<td>The design of the learning process enables the learner to create their own learning space or context through co-configuration, co-creation and co-design of learning.</td>
</tr>
<tr>
<td>Reconceptualising the learner’s role</td>
<td>The design of the learning process is learner-centred and allows the process to be driven by learner interest as such, the learning process allows the learner to take ownership of its own learning and actions in the world.</td>
</tr>
<tr>
<td>Design for collaborative learning</td>
<td>The design of the learning process is learner-centred and participatory in nature, thus allows the learner to collectively create a context for learning and scaffold.</td>
</tr>
<tr>
<td>Consider the affordances of mobile devices</td>
<td>Embed the use of mobile devices and social media to enable learners to collectively define and realise their own learning needs. Embed the use of mobile devices and social media to enable learners the ability to create their own contexts for learning – this also promotes active learning.</td>
</tr>
</tbody>
</table>

Along with LGC, several other pedagogies have been utilised in mobile learning over the years—these are discussed in the section below.

**Teaching and mobile learning**

According to Traxler and Koole (2014), ‘theorizing about mobile learning … is problematic’ (p. 292). Mobile learning they argue is an emergent and an evolving juggernaut that is transpiring as a global phenomenon influencing and impacted upon by a number of factors driving significant social changes. They note: ‘Although the last thirteen years has brought important advances, at this juncture we recommend a re-examination of what mobile learning theory is and could be’ (p. 292). Sharples (2007), however, emphasises that ‘mobile learning is not something people do; learning is what people do’ (p. 5). With this view of learning, a number of theories and frameworks have been applied in mobile learning. In a meta-analysis study of mobile learning, Naismith et al. (2004) reported six broad categories of learning theories and frameworks applied in mobile learning—behaviourist, constructivist, situated, collaborative, informal and lifelong learning. In a recent meta-analysis study of mobile learning, Parsons (2014) provides a list of theories applied (Figure 2.7) within mobile learning in the past decade.
While a number of theories have been applied in mobile learning (Figure 2.7), learning with mobile devices has remained a reflection of past pedagogies that view learning as a transfer of knowledge and content process (Traxler, 2016c; Traxler & Kukulska-Hulme, 2016), as such fails to capitalise on the affordances of mobile devices. In recent years, due to better understanding of the implications of mobile devices in learning and theories that focus on learning in contexts have underpinned effective use in learning and teaching. In particular, social constructivist and sociocultural view of learning such as authentic learning (Herrington & Oliver, 2000; Herrington, Reeves, & Oliver, 2010) that have their roots in situated learning (Brown et al., 1989; Lave & Wenger, 1991) have been widely utilised (Bannan et al., 2015; Cochrane, 2012a; Pachler, Cook, et al., 2010; Traxler, 2009).

Situated learning is defined by Collins, Brown, and Newman (1989) as ‘the notion of learning knowledge and skills in contexts that reflect the way the knowledge will be useful in real life’ (p. 2). Situated learning thus emphasises the learner’s action and interactions in authentic contexts (physical, cultural and social) that have real world relevance where knowledge ‘becomes known in terms of its use in a variety of context’ (Collins et al., 1989, p. 3). Based on the tenets of situated learning, Herrington and Oliver (2000) developed a framework of nine elements of authentic learning. In authentic learning learners ‘engage in an inventive and realistic task that provides opportunities for complex collaborative activities’ (Herrington et al., 2010, p. 1).
According to Traxler (2009), authentic learning provides a good fit for use in mobile learning, and states:

By authentic learning, we mean learning that involves real world problems and projects that are relevant and interesting to the learner. Authentic learning implies that learning should be based around authentic tasks, that students should be engaged in exploration and inquiry, that students should have opportunities for social discourse, and that ample resources should be available to the students as they pursue meaningful problems. Mobile learning enables these conditions to be met, allowing the learning task built around data capture, location-awareness, and collaborative working… (Traxler, 2009, p. 18)

Herrington, Herrington, Mantei, Olney, and Ferry (2009), cognisant of the affordances of mobile devices and their ability to encourage learning in and across learner-generated contexts, applied the same authentic learning design principles in a number of case studies over three years (2006-2008) and continued to refine the principles for use with mobile learning (Herrington & Herrington, 2006; Herrington & Herrington, 2007; A. Herrington et al., 2009; J. Herrington et al., 2009; Herrington et al., 2012; Herrington, Ostashewski, Reid, & Flintoff, 2014). J. Herrington et al. (2009) provide design principles that help embed authentic learning through mobile learning, specifically:

1. enable the use of mobile devices in authentic real world contexts
2. design for the use of mobile learning in contexts where learners are mobile
3. provide time for exploration of mobile technologies
4. blend mobile and non-mobile technologies
5. design for spontaneous use of mobile learning
6. design for use of mobile learning in non-traditional learning spaces
7. design for individual and collaborative mobile learning
8. exploit the affordances of mobile devices
9. encourage the learner to use his/her own device
10. use mobile devices to mediate knowledge construction
11. use mobile learning to produce and consume knowledge. (p. 134)

According to Pachler, Cook, et al. (2010), a sociocultural view of mobile learning encompasses the interrelationship between three components, learner agency (the learner’s ability to act on the world), cultural practices (embedded everyday routines enabled by mobile devices) and sociocultural and technological structures (established cultural practices and social media tools) (p. 9). They argue that the learner’s ability to
engage in tasks and activities enabled by mobile devices in everyday live such as physical sociocultural settings and in online environments enabled by social media, in fact engages the learner in a cultural transformation. The transformational process enabled by mobile learning and the ability to cross, participate and create multiple contexts allows the learner to build new knowledge and meaning in everyday cultural and social setting, which also creates a sense of belonging and shapes the learner’s identity (Bannan et al., 2015; Cook et al., 2011; Pachler, Cook, et al., 2010; Pachler, Cook, et al., 2010a). Table 2.11 provides an overview of the critical elements of the sociocultural view for mobile learning and its impact on the learner and the learning process.

Table 2.11 – Elements of a sociocultural view of mobile learning adapted from Pachler, Cook, et al. (2010, pp. 9-10)

<table>
<thead>
<tr>
<th>Domains</th>
<th>Impact elements</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agency - The learner’s ability to act on the world</strong></td>
<td>Habitus of media use</td>
<td>Learners express their views and feeling by creating content such as text, video and audio and by participating with others and in communities.</td>
</tr>
<tr>
<td></td>
<td>Habitus of learning</td>
<td>Learners personalise their own learning by curating and accessing resources and content according to their own learning needs.</td>
</tr>
<tr>
<td></td>
<td>Expertise</td>
<td>Learners gain lifelong skills by the content and context creation process.</td>
</tr>
<tr>
<td><strong>Cultural practice</strong></td>
<td>Media use in everyday life</td>
<td>Learners create contexts by participating in existing networks and socialising through communication and by sharing artefacts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The learner is able to capture their life story through content creation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The learner is able to work across contexts regardless of the time and space barrier by appropriating the use of social media tools and other technologies.</td>
</tr>
<tr>
<td><strong>Institutional learning (educational institute)</strong></td>
<td>Learning and teaching is viewed as a conversation.</td>
<td>The curriculum is open and negotiable to allow the learner autonomy over his/her learning.</td>
</tr>
<tr>
<td><strong>Sociocultural and technological structures</strong></td>
<td>Social media and mobile devices allows the learner access to sociocultural milieus</td>
<td>Learners are able to negotiate the learning outcome.</td>
</tr>
<tr>
<td></td>
<td>Learners are able to negotiate the learning outcome</td>
<td>The learners capitalise on the learning affordances in informal spaces/contexts in order to learn.</td>
</tr>
<tr>
<td></td>
<td>Change in the way learners use and interact with mobile and social media tools</td>
<td>The learner’s role is reconceptualised from being a consumer of knowledge and content to being a producer and creator of content.</td>
</tr>
<tr>
<td></td>
<td>Learner’s ability to work/learn across context</td>
<td></td>
</tr>
</tbody>
</table>
In a longitudinal study, spanning six years, Cochrane (2012a) investigated the use of mobile devices in a participatory action research study (Cochrane, 2010; Cochrane & Bateman, 2010). In his study, Cochrane implemented and investigated several courses within a university setting, designed according to social constructivist theory and principles of authentic learning, that encouraged students to use multiple social media tools across several mobile devices including PDAs, Nokia N80, XM5800, iPhones, iPods, iPads, and other student owned devices such as laptops. Cochrane’s study investigated the use and impact of mobile and social media tools for learning across several disciplines, such as product design, landscape design, contemporary music, architecture, performing and screen arts, and communication. In a comprehensive synthesis of the study, Cochrane (2012a) provides a set of critical success factors for use in designing learning and teaching with mobile devices, comprising:

1. pedagogical embodiment of technology in course design
2. pedagogical modelling of the tools by the teacher
3. establishment of a learning community for facilitating conversations as a catalyst for change, both for the student, and the teacher
4. appropriate choice of tools (mobile and social media) for use within the course context
5. continued pedagogical and technological support within the learning community which is inclusive of the teacher. (p. 73)

While mobile learning offer unique opportunities to design innovative learning, they also pose significant challenges for the teachers, students and institutes.

**Challenges in mobile learning**

The inevitable surge and use of learner-owned devices in formal learning contexts create significant challenges and disruptions for teachers, affecting how they teach and conflicts for educational institutions. These challenges and issues are discussed in the sections below.
Teachers, pedagogy and institutional policies

According to Baran (2014), teachers are at the forefront of implementing the use of mobile learning, however, they fail to conceptualise the role of mobile devices in learning and teaching. Similarly, Khaddage et al. (2015) argues that due to the lack of understanding and knowledge about mobile learning, teachers ‘still see a sharp distinction between formal and informal learning’ (p. 627)—thus the capability of mobile learning to encourage learning in informal contexts is generally not recognised and is viewed as a disruption in formal settings (Mehdipour & Zerehkafi, 2013).

Cochrane (2012b), however, argues that pedagogical use of mobile devices may be an epistemological issue. Cochrane in his longitudinal study on mobile learning supported a number of staff over six years in several research projects between 2006-2012 using a community of practice model. In his approach, Cochrane facilitated an intentional community of practice that enabled the staff members involved in the projects to collaboratively exploit, discuss and learn about mobile learning affordances to enhance their own pedagogical practice. According to Cochrane, the staff, however, ‘defaulted to established workflows rather than maximising mobile affordances’ (p. 127). He proposes that for mobile learning implementations in learning and teaching to be successful, teachers need to achieve an ontological shift that reconceptualises their role as being enablers of learning. According to Baran (2014), lack of institutional support and policies lower the teachers’ value and perception of mobile learning as a tool for pedagogical practice. This issue is further complicated by insufficient institutional funding, resulting in the lack of professional development opportunities for the staff for sustained investigation and exploration of mobile learning in teaching (Baran, 2014; Burden & Hopkins, 2016).

The key pedagogical issues for viewing mobile learning as a credible process of learning and teaching are also reflected at an institutional level, where most schools and institutions ‘forbid the use of mobile phones in the classroom’ (Kukulska-Hulme et al., 2009, p. 14). In a 2015 study that investigated the use of information technology in 11 countries, Dahlstrom, Brooks, Grajek, and Reeves (2015) found that majority of student-owned devices such as smartphones, tablet, laptop and wearable technologies were either banned from use in school or discouraged. In particular, a staggering 63% of students in the study reported that their schools or faculties either banned or
discouraged the use of smartphones in class. Furthermore, Khaddage et al. (2015) state that many institutions have policies in place that restrict or prevent students from joining the institutional Wi-Fi service and the use of mobile devices in class. They claim that while educational institutes acknowledge that learners need digital literacy skills in terms of using social media and web resources, there is a lack of understanding and knowledge of what constitutes mobile skills and literacy in education. They argue that while learners are using mobile devices in creative ways in informal contexts, it is not clear how the learners are applying these skills in formal learning spaces. They elaborate ‘Simply owning mobile technologies does not guarantee their use in education by students and teachers. Students have to be trained on how to use the device in pedagogical context; also teachers …’ (Khaddage et al., 2015, p. 628).

A similar concern is echoed by Cochrane (2012b), who states that just as teachers need to reconceptualise their role in mobile learning, students have to do the same and need to be scaffolded through the process of moving from content consumers to producers in the learning process. The reconceptualisation of the teachers’ and learners’ roles also has implications for assessment in a course (Cochrane, 2012b; Herrington et al., 2012; Khaddage et al., 2015). According to Herrington et al. (2012) and Cochrane (2012a), assessments in mobile learning have to be pedagogically and seamlessly integrated in the learning process that focuses on authentic and real world contexts, through authentic learning activities that encourage collaborative knowledge creation (Ozverir, Herrington, & Osam, 2016). They emphasise that mobile and social media tools play an important role in the creation and capture of content and data in the learning journey, as a result portfolio based assessments are a critical design element that needs to be considered (Cochrane, 2012a; Cook & Santos, 2015; Herrington et al., 2012).

Another challenge in mobile learning, in particular the mobility of the learner and their ability to navigate between contexts is—how to design for learning in learner determined and created contexts? García-Cabot, de-Marcos, and García-Lopez (2015), ask if mobile affordances and learning contexts are not static and are constantly changing according to learner needs, then what is the best way to capture this in the design of a learning environment? Sharples (2016) poses a similar question and proposes that the most effective way to capture the universality of mobile learning and
rapid change ‘is to embed the practice of design into education so that the teachers and educational leaders do not just react to innovations in technology and pedagogy, but take an active role in designing new ecologies for learning’ (p. 151)—advocating a design-based research approach to learning and teaching (Reeves, 2006).

A recent and rapidly growing practice in educational institutes for learning and teaching with technology is to encourage the students to bring your own device (BYOD). BYOD for learning is viewed as a sustainable approach, in contrast to institutionally owned and supplied services and technologies that are impersonal and inadequate (Traxler, 2016b). The growing uptake of BYOD, however, has brought into the spotlight technological challenges and issues in relation to mobile learning in particular.

**Technological challenges**
Traxler and Kukulska-Hulme (2016) report that due to the universality of mobile devices, the learner cohort in a class may own several different devices running several different operating systems, some with identical features and some without, many resulting in fragmentation. According to Garcia-Cabot et al. (2015) the fragmentation of mobile devices occur at two levels, hardware and software. The fragmentation of the hardware means the ability or inability to run an application due to differing hardware specifications and software fragmentation means different operating system and user interface (Garcia-Cabot et al., 2015). The hardware fragmentation as stipulated by Traxler and Kukulska-Hulme (2016) can be problematic because the contextual affordances of the devices in the class may not be the same for all students. The fragmentation of the device in a class may create further problems for the teacher in dealing with any technical issues and in designing and implementing a specific teaching approach (Garcia-Cabot et al., 2015). The backbone of mobile learning is the ability to use social media tools and applications on the device (Cook & Santos, 2015). However, due to hardware fragmentation, not all devices may be capable of running all the applications, this further complicates the process of designing for mobile learning (Khaddage et al., 2015). In particular, ensuring the same learning experience for all the learners regardless of the device they own (Traxler, 2016b).
As a countermeasure, Looi et al. (2010) state that the selection of mobile devices is important in mobile learning and propose that the cost, connectivity, data subscription plan, the availability of applications for the mobile device, the portability factor and built-in features such as GPS and camera are essential as a check list. Mehdipour and Zerehkafi (2013), however, proposition that digital divide is a prevailing issue in the use of technology in learning and teaching as not all students have access to the required device and infrastructure needed to facilitate a standardised technology enhanced learning approach. BYOD model for learning, as a result offers a sustainable approach that has the potential to bridge the digital divide, as it does not impose a particular device for use in learning rather accommodates what the students already own. Traxler (2016b), however, proposes that institutes and teachers need to respect and acknowledge the ‘private and personal’ nature of mobile devices and provide ‘choice with equality of access to educational experiences and opportunities, and to inclusion’ (p. 10) and to ensure equity to the learner in terms of hardware and connectivity without ‘stigmatising the recipients’ (p. 11).

The personal and private nature of mobile devices creates significant research challenges, while engaging with the learner and for collecting data. These challenges are discussed below.

**Research challenge**

Traxler and Bridges (2004) espouse that due to the situated and contextualised nature of mobile learning, there are significant challenges for researching in this domain. They outline specific elements of ethical conduct in mobile learning as:

- informed consent – due to the contextualised nature of learning, the learner may be collecting sensitive data and content, hence they need to be fully aware and consent to data being collected for research
- confidentiality and anonymity – mobile learning is transparent hence the learner’s identity and actions are visible. The researcher needs to ensure that the learner’s identity is protected in the research
• private and public – learners interactions in the digital world are either public or private. The researcher needs to ensure that learners understand the appropriateness of each at any given time
• status and power – the process of gaining consent from the learners should be an open, transparent and power neutral process and the researcher needs to be cognisant of this
• cultural and socio-economic background – the researcher needs to respect and acknowledge the different socio and cultural backgrounds of the learner. (Baran, 2014; Vavoula & Sharples, 2009)

The implications of the research challenges pertaining to mobile learning are addressed in Chapters 3, 4 and 5 as part of research design and the creation of the learning environment.

**Conclusion**

Over the course of this literature review, three frameworks for learning and teaching and learning with social media and mobile devices were explored.

The first framework, heutagogy, provided a holistic framework for developing learning capability and skills that also enable lifelong learning. Heutagogy advocates that learners are the agents of choosing and creating the contexts that they acknowledge is conducive to their learning.

The second framework was Pedagogy 2.0 that is underpinned by social constructivist theory of learning. Pedagogy 2.0 focuses on exploiting the affordances of social media tools to enable social learning processes where the learner is the creator of knowledge and content through participation, personalisation and productivity. Pedagogy 2.0, similar to heutagogy, advocates increased learner autonomy in the learning process where the learner has the ability to determine and direct their own learning through the use of social media tools.

The last framework that was reviewed was mobile learning. The principal focus in mobile learning is the mobility of the learner and the ability to create and participate in
and across contexts. In mobile learning, knowledge is created by the learner by engaging in social processes and creating content using the affordances of mobile devices across time and space.

The three frameworks reviewed are overtly pragmatic and they view the agency of the learner in the learning process as a critical element in the construction of knowledge. The key to learner agency in the learning process is the learner’s ability to drive their own learning, which is underpinned by the affordances of mobile and social media tools. While learner autonomy is a high priority in the three frameworks explored as part of the literature, teachers also play a critical role in enabling learning by undertaking the role of being a creative partner in the learning process through collaboration with the learner and by providing formative feedback. In the three informing frameworks heutagogy advocates learner freedom in the creation of contexts, Pedagogy 2.0 enables the learner to create and capture content by exploiting the affordances of social media, and mobile learning enables learner mobility to create and participate in and across contexts. The three frameworks have significant overlap between their constructs that help operationalise the key tenets of each. Figure 2.8 represents a mobile learning framework that was derived from the literature reviewed.
The intersecting elements of the framework are described in Table 2.12.

<table>
<thead>
<tr>
<th>Elements</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabling participation, personalisation and productivity</td>
<td>The affordance of mobile devices in particular ‘mobility’ enables learner participation, productivity and personalisation regardless of time and space barrier in formal and informal contexts.</td>
</tr>
<tr>
<td>Creation of content in context</td>
<td>The use of social media affordances underpinned by the principles of participation, productivity and personalisation enable the learners to capture content and construct knowledge in context.</td>
</tr>
<tr>
<td>Enactment of practice</td>
<td>Through the use of mobile affordances the learner is able to explore and experiment with the skills and knowledge in context to build new capability.</td>
</tr>
<tr>
<td>Embodiment</td>
<td>The composite effect of the affordances and the constructs of the underpinning frameworks enable a situated and contextualised learning experience.</td>
</tr>
</tbody>
</table>

Overall, the three frameworks discussed in the literature review capture the needs and requirements of the PoJ practitioners—to facilitate a learning experience that is hands-on, practical, situated, authentic and contextualised to provide the learners an opportunity to act in meaningful and real world contexts in order to explore, enact, experience and reflect while constructing knowledge and applying the skills of
journalism and being a journalist. It also highlights the gap in literature: What role does mobile and social media tools and affordances play in enabling and facilitating a student-determined and driven learning?

Following this broad review of literature a more in-depth and targeted literature review was conducted to elicit the draft design principles to inform the design of the learning intervention for PoJ. This is discussed in Chapter 4. The following chapter discusses the research methodology that was used in this design-based research study to answer the research questions and to help inform theory, which may help other practitioners with implementing a situated and contextualised learning experience using mobile and social media tools.
CHAPTER 3

Research approach

Introduction
This chapter discusses the research methodology and methods used in this study. First, an overview of the current state of educational research and research design is provided and issues and factors that limit its impact on practice are discussed. It then provides a holistic overview of DBR and how it helps remedy these issues. Further associations between DBR and its appropriateness for researching mobile social media and heutagogy are discussed—providing a rationale for the use of design-based research (DBR) as a research approach in this study. The chapter then discusses how the four phase DBR approach guided the study, including detailed information on participants, data collection and analysis methods, ethical issues and trustworthiness.

Educational research and practice
In over a century of research, it has been argued that, unlike in other fields, educational research has had very little impact on practice (Amiel & Reeves, 2008; van den Akker, Gravemeijer, McKenney, & Nieveen, 2006). Similarly, Lagemann (2002) notes that educational research has failed to create transferable knowledge and hence has limited usability (Hoadley, 2004; Sandoval & Bell, 2004). Research in education has had a prolonged focus on evaluating traditional teaching paradigms (Barab & Kirshner, 2001), where learning is viewed as transmission of knowledge, or as an individual and isolated process within the learner (Barab & Plucker, 2002). Hattie and Marsh (2004) in a meta-analysis study of the relationship between research and teaching found that there was ‘zero relationship’ (p. 1)—the subjects taught by a teacher and the research they undertook had no correlation between them (Hattie & Marsh, 1996). They conclude their findings by stating ‘the origins of universities came from the transmission of knowledge, culture and values (i.e., from a teaching role)’, and that research was not seen as an integral part of teaching or a teacher’s role (Hattie & Marsh, 2004, p. 10). The recursive and stagnated relationship between research and practice has perpetuated decades of research that has failed to acknowledge the complex nature of learning and
teaching (van den Akker et al., 2006), and fails to consider the ‘importance of affect (or feeling) and conation (or will) as well as the role of context’ (Barab & Plucker, 2002, p. 177). At a fundamental level, van den Akker et al. (2006) argue that the key issue in educational research is the limited or complete lack of collaboration between researcher and teachers, resulting in little change or improvement in practice (Reeves, 2006).

Over the last decade, education has seen drastic changes due to the rapid advancement and affordance of technology (Beetham, 2013; Laurillard, 2009; McLoughlin & Lee, 2008a). The integration of technology in education and research in this domain has been an equally contested area (Amiel & Reeves, 2008; van den Akker et al., 2006; Wang & Hannafin, 2005). Some of the main issues that plague research in educational technology are the lack of theoretical underpinnings that inform the use and design of technologies and learning environment, and appropriate choice of research methodologies (Holmberg, 2014). The overarching problem with research in education and educational technology is that ‘education research is often divorced from the problems and issues of everyday practice’ (The Design-Based Research Collective, 2003, p. 5). The lack of consideration given to context in which research is conducted often fails to ‘speak directly to the problems of practice’ that ‘lead to the development of usable knowledge’ (cf., Lagemann, 2002; The Design-Based Research Collective, 2003, p. 5). Amiel and Reeves (2008) propose that ‘educational researchers of all areas should be encouraged to move towards more systematic and collaborative methods of investigation that can promote research that makes a difference’ (p. 31). An approach that promises to bridge the gap between research and practice and is capable of producing transferable knowledge is design-based research (Reeves, Herrington, & Oliver, 2005; van den Akker, 1999b).

**Design-based Research**

A research approach that addresses the issues outlined in educational and educational technology design is *design-based research* (Reeves, 2006; Reeves et al., 2005; The Design-Based Research Collective, 2003; van den Akker, 1999b). Design-based research (DBR) is also referred to as *design experiment, formative research, design research, educational design research and development research* (van den Akker et al., 2006; Wang & Hannafin, 2005) and defined as:
A systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real world settings, and leading to contextually-sensitive design principles and theories. (Wang & Hannafin, 2005, p. 6)

According to Wang and Hannafin (2005), DBR is an approach that is pragmatic, grounded, interactive, iterative and flexible, integrative and contextual (discussed in Table 3.1)—that is woven together by ‘combining the process of learning and the means that support that process’ to create empirically grounded theories (van den Akker et al., 2006, p. 3).

Table 3.1 – Characteristics of design-based research

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Brief explanation</th>
<th>Supporting references</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pragmatic</td>
<td>It is practical in nature where the theory informs practice and vice versa resulting in theory enhancement.</td>
<td>(Bell, 2004), (diSessa &amp; Cobb, 2004), (Reeves et al., 2005), (Reeves, 2006), (Bannan et al., 2015), (Wang &amp; Hannafin, 2005)</td>
</tr>
<tr>
<td>Grounded</td>
<td>Research is conducted in situ informed by past theories, practice and research.</td>
<td>(Barab &amp; Squire, 2004), (diSessa &amp; Cobb, 2004), (Reeves et al., 2005), (Reeves, 2006), (Bannan et al., 2015), (Wang &amp; Hannafin, 2005)</td>
</tr>
<tr>
<td>Interactive, iterative, and flexible</td>
<td>It is a collaborative endeavour between the researcher, the practitioners and any other stakeholders. The initial design solution is open and cyclic in nature and harnesses reflections and relevant data from each iteration to inform the next.</td>
<td>(Collins, Joseph, &amp; Bielaczyc, 2004), (The Design-Based Research Collective, 2003), (diSessa &amp; Cobb, 2004), (McKenney &amp; Reeves, 2013), (Reeves et al., 2005), (Reeves, 2006), (Bannan et al., 2015), (Anderson &amp; Shattuck, 2012), (Wang &amp; Hannafin, 2005)</td>
</tr>
<tr>
<td>Integrative</td>
<td>Multiple methods are used to collect information at various points to gain a better understanding of the underpinning design frameworks and to provide further guidance.</td>
<td>(Reeves et al., 2005), (Reeves, 2006), (Bannan et al., 2015), (McKenney &amp; Reeves, 2012), (Wang &amp; Hannafin, 2005)</td>
</tr>
<tr>
<td>Contextual</td>
<td>Every step of the process is documented to paint a rich picture of the processes and implications including design, development and implementation. This helps make the findings transferable to other studies and situation.</td>
<td>(Bell, 2004), (Dede, 2004), (Reeves et al., 2005), (Reeves, 2006), (Bannan et al., 2015), (Harpur &amp; de Villiers, 2015), (Wang &amp; Hannafin, 2005)</td>
</tr>
</tbody>
</table>

A defining characteristic of DBR is that it endeavours to ensure that research has an impact on practice—promising to bridge the widening gap between research and practice (Anderson & Shattuck, 2012; van den Akker et al., 2006). Cober, Tan, Slotta, So, and Könings (2015) contest that due to the participatory nature of DBR, there is an opportunity for capability building through increased collaboration, communication and
co-creation. Similarly, Joseph (2004) argues that collaboration between the researcher and practitioner allows the researcher to understand and explore the issues of practice, while allowing the practitioner to build an understanding of the implications of the research.

At the core of DBR is the emphasis on context (Barab & Squire, 2004), where consideration to the social surrounding, including the historical and cultural environment is taken into account in order ‘to engage, understand, and influence [contextual variables] in an act of co-design with teachers and students’ (Kelly, 2006, p. 175). The ‘naturalistic context’ in which DBR operates allow the researchers and the practitioners to study the ‘naturally occurring variables and the complexity of the natural contexts’ (Cober et al., 2015, p. 208). This leads to the creation of new knowledge that is grounded in authentic educational contexts and is applicable elsewhere and has direct impact on educational practice, differentiating it from other approaches, such as action research (Barab & Squire, 2004; McKenney & Reeves, 2013).

In DBR, an educational problem or issue is identified and explored in collaboration with practitioners. A literature review is conducted to investigate any existing guidance or theory applicable to the design of a solution. As a result, draft design principles are established, and if the solution involves the use of technology, the affordances of selected technologies are then explored to understand how the design principles may be operationalised in the design of the solution or intervention. In collaboration with the practitioners, the solution (intervention) is designed and implemented with the target audience in a real world setting or naturalistic context. The solution is evaluated and refined through iterative cycles of implementation. The last stage of DBR requires the researcher to reflect on the entire process to refine the initial set of guiding principles and produce a set of final design principles that may guide future implementation and development, and contribute to theory (Cober et al., 2015; Herrington et al., 2010; Reeves, 2006; van den Akker, Bannan, Kelly, Nieveen, & Plomp, 2007).

DBR, as a result provides a pragmatic research approach that weaves theory and practice to produce refined design principles that are transferable and have the potential
to provide guidance to practitioners in similar learning contexts. DBR thus offers a framework to explore new and unrealised potential for enhanced learning and teaching, in particular with mobile and social media tools.

**DBR, mlearning, Pedagogy 2.0 and heutagogy**

Over the last decade, the effectiveness of mlearning and mlearning research has been questioned (Wingkvist & Ericsson, 2011; Wu et al., 2012). In a recent article, Traxler (2016c) professes that the potential perceived in the early days of mlearning has not been realised. Traxler (2016) outlines the lack of ‘scalability’ and the focus on content delivery as two main factors hindering the effectiveness and growth of mlearning. In a meta-analysis of 114 mlearning published articles, Wingkvist and Ericsson (2011) concluded that due to poorly conceived research approaches ‘it is hard for research in mobile learning to transfer already obtained knowledge as the starting point for new efforts’ (p. 11).

Similarly, Wu et al. (2012) in the most recent meta-analysis on mlearning trends, found that majority of research focused either on evaluating the effectiveness of the mlearning approach or on designing a mobile application. An overwhelming theme that emerges from current review on the state of mlearning, and aptly summed up by Wingkvist and Ericsson (2011, p. 10) is that ‘there is little reflection by revisiting results, or evaluation of the effort compared to other efforts…much of the research is done to describe, not understand or evaluate’.

In outlining the challenges of conducting mlearning research, Vavoula and Sharples (2009, p. 54) in turn provide guidelines that could inform the selection of the research approach. They propose that an appropriate research approach should be capable of:

- capturing and analysing learner activity data cross multiple contexts
- measuring and understanding the processes of mlearning
- ethically handling the processes and activity of the learner
- understanding the affordance of mlearning and devices
- embodying the real world context that considers the socio-cultural context, organisational setting and assessment.
Recently, there have been increasing calls for mlearning researchers to embrace DBR for its pragmatic yet rigorous approach to providing new paradigms that embody the complex interactions and affordances provided by mobile devices (Bannan, 2009a; Bannan et al., 2015; Cook, 2010; Cook & Santos, 2014; Sharples, 2013).

Thüs et al. (2012) state that the key affordance and the uniqueness of mlearning in education is the ability to create contextual knowledge. Heutagogy is a pedagogical approach that provides a framework for exploiting context to facilitate learning. Cook et al. (2007) acknowledge that ‘learner-generated context…is a more generic way to conceptualise pedagogically effective ways to design [m]learning activities that embed digital interactions’ (p. 57). While, Blaschke (2012) argues that the affordances of social media tools are at the core of enabling a heutagogical learning approach (Blaschke, 2013, 2014). She further argues ‘missing in the current literature is research into how the combination of heutagological educational approach and the use of social media can support development of student competencies and, by extension, capabilities’ (Blaschke, 2014, p. 3). The inter-connectedness between mlearning, heutagogy and Pedagogy 2 highlights that there are unexplored opportunities for enhanced learning and teaching practices. With regard to this, Bannan et al. (2015) argues that the ‘design research approach allows us to systematically seek out never-seen before possibilities to inform learning and research in these messy, mobile learning contexts’ (p. 8).

**The design-based research (DBR) approach**

While there are several conceptual models of the design-based research approach (e.g., Bannan et al. (2015), McKenney and Reeves (2012), Bannan-Ritland (2003), van den Akker (1999a), Bannan (2009b)), it was Reeves’ (2006) four phase of design-based research model (Figure 3.1) that was chosen to guide the study due to its appropriateness and specific inclusion of educational technology—discussed next.
Each phase is briefly defined below:

- **Phase 1 – Analysis of the practical problems by the researchers and practitioners in collaboration**

There are three defining elements in Phase 1—identification of the problem, literature review and involvement of the practitioners. In collaboration with the practitioners, an educational problem is identified and this creates the purpose of the research. The involvement of practitioners is critical at this stage to fully understand and explore the issues and problems faced by the students or practitioners themselves. Following this, the researcher conducts an in-depth analysis of the literature relating to the issues identified. At the end of Phase 1, the researcher should have identified and explored the problem area, consulted with practitioners, and conducted an initial literature review, and would thus be able to formulate the research questions to guide the study (Herrington et al., 2010; Reeves, 2006).

- **Phase 2 – Development of solutions informed by existing design principles and technological innovations**

The focus in Phase 2 of DBR is on creating a solution to the problem. In order to do this, a second more concise literature review is conducted to identify relevant theories and existing design principles pertaining to the problem and research aim. This helps guide the design of the solution and also acts as the ‘lens through which the problem will be investigated’ (Herrington, McKenney, Reeves, & Oliver, 2007, p. 6). At this stage, preliminary design principles or guidelines are also formulated that help inform the design of the intervention or proposed solution. In particular, the selection, use or design of the learning environment (solution or intervention) takes into consideration the affordances of technology that help operationalise the design principles (Reeves, 2006). The conclusion of Phase 2 marks the end of the design phase where the solution
or the intervention is developed and is ready to be implemented and evaluated (Herrington et al., 2007; Herrington et al., 2010; Reeves, 2006).

- **Phase 3 – Iterative cycles of testing and refinement of solutions in practice**
  In this phase, iterative cycles of the intervention designed in Phase 2 is implemented and evaluated in practice. The solution is implemented in a real world context with the target group, and evaluated to gain a better understanding of the intervention to improve on the initial design and design principles (Herrington, 2012; Reeves, 1999). The main focus for the researcher with the help of the practitioners and the target group is not to simply seek explanations on the implemented solution but to move beyond and elicit formative data to help improve its ability to address the problem (Barab & Kirshner, 2001; Herrington et al., 2010). A typical DBR approach will consist of two or more iterations, where revisions and improvements are made either to the design principles, the learning environment or both. By the end of this phase, the researcher will have collected and analysed data and drawn conclusions on findings from the iterations, and be in a position to reflect on the entire journey.

- **Phase 4 – Reflection to produce ‘design principles’ and enhance solution implementation**
  The final phase of DBR focuses on researcher reflections on the entire process to create a refined set of design principles and guidelines. This process of DBR ensures that the findings are useful and applicable in other academic settings to help inform the design and facilitation of student learning experiences, and to contribute to theory (Herrington et al., 2007; Herrington et al., 2010). By the end of Phase 4, the researcher will be in a position to report the findings to the wider academic community (Herrington et al., 2007; Reeves, 2006).

The four phases of DBR that guided the methodology used in this study are described in the sections below.

**Phase 1: Analysis of the problem**

In order to understand and clarify the problematic areas of the course and to inform the formulation of the initial design principles for the intervention, three higher education practitioners—lecturers in Journalism—were consulted. The findings from the consultation were discussed in Chapter 1. The overarching issue identified by the
practitioners was how to design and facilitation of a contemporary semester long journalism course using mobile and social media tools. Due to the affordances of mobile and ubiquitous technologies, journalism as a practice has undergone drastic changes in the way news is produced, shared and consumed. The fast changing face of journalism practice requires journalists to be resourceful, creative and independent with the ability to work, produce and share news on the move. The practitioners expressed a desire to design and facilitate a course that provided students with a contextually embodied learning experience through the use of mobile devices. In particular, the design of any intervention needed to consider mobile and ubiquitous technologies and learning situated in a real world setting underpinned by the affordances of social media tools.

A literature review (refer Chapter 2) was conducted to identify sources and to consult any work that would have already been done to address the problem area. As a result, three underpinning frameworks were identified that could provide guidelines for designing a solution for the problem identified by the practitioners: Pedagogy 2.0 heutagogy, and mobile learning or mlearning.

Research questions were created based on information gained through consultations and suggestions from the practitioners and literature review. The overall research question was:

How can mobile and social media tools enable learner-generated content and context (heutagogy) for enhanced learning?

In order to further explore the overall enquiry of the research, the following secondary research questions were formulated:

1. What are the pedagogical affordances of mobile and social media tools that enable the design and implementation of heutagogic learning?
2. How did the use of mobile and social media tools within a heutagogical framework enhance the learning and learner experience in an undergraduate journalism course?
3. What is the role of the teacher in facilitating a heutagogical learning experience using mobile and social media tools in a course?

At the end of Phase 1, a clear understanding and description of the problem was gained in collaboration with the practitioners, a literature review was conducted, and the research questions were formulated.

**Phase 2: Development of the intervention**

In Phase 2, a second, more in-depth examination of the literature (refer Chapter 4) was conducted focusing on the three frameworks: Pedagogy 2.0, heutagogy and mlearning. The second literature review helped identify existing design principles and advice that had been applied to similar problem areas. This facilitated the formulation of the draft design principles that would help inform the design and development of the intervention for the problem identified in Phase 1.

Using the draft design principles, an intervention for learning and teaching was designed (Chapter 5). An existing journalism semester course was re-evaluated and redesigned by the practitioners (the teachers of the course) assisted by the researcher—guided by the draft design principles and the affordances of mobile and social media tools. Elements of the course were redesigned, such as the assessment items, the learning context, activities, and the role of the teachers. As a result, an intervention in the form of a 'situationally embodied curriculum' (Barab et al., 2007, p. 753) was designed. The critical aspects in the design of the intervention focused on situating learning in real world that is determined by the learner and the integration of the use of mobile and social media affordances in the curriculum. The researcher, due to the close collaborative relationship with the practitioners, was invited onto the team as a technology steward. The role encompassed technological and pedagogical advice and support to the practitioners on an on-going basis and technological support to the students as and when required.

The semester long (12 week) learning and teaching intervention (the course) aimed at creating opportunities to teach journalism using contemporary mobile and social media technologies. At the same time, it explored new methods for empowering learners in the
learning process through communication, collaboration and co-creation in authentic learner-generated contexts.

Table 3.2 provides an overview of how the course in Principles of Journalism (PoJ) was structured in the first iteration.

<table>
<thead>
<tr>
<th>Structure</th>
<th>Time and grade allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>2 hour lecture per week</td>
</tr>
<tr>
<td>Tutorial session</td>
<td>1 hour tutorial per week</td>
</tr>
<tr>
<td>Assessments</td>
<td></td>
</tr>
<tr>
<td>• Investigative report</td>
<td>40%</td>
</tr>
<tr>
<td>• Reflective diary</td>
<td>40%</td>
</tr>
<tr>
<td>• Multimedia news story</td>
<td>20%</td>
</tr>
</tbody>
</table>

The design of the intervention is described in more detail in Chapter 5.

The journalism course was selected as suitable for the study because the practitioners had a keen desire to push forward with exploring and implementing new pedagogies suitable for journalism education in the twenty-first century. Journalism—the act of news reporting—was chose in particular because it is a mobile act that involves processes such as seeking, collecting, editing in order to report events, people or an issue. Being or learning to become a journalist requires a person to engage with entities and information in real world or authentic contexts. The nature of journalism implicitly embodies the adherent principles of heutagogy and the affordances of mobile and social media tools in the creation of authentic products, and this provided a suitable context to implement and evaluate this study.

By the end of Phase 2 of the study, the intervention (the revised course) was ready for implementation and evaluation in Phase 3.

**Phase 3: Iterative cycles of implementation and testing**

The intervention designed in Phase 2 was implemented and evaluated with the target group in iterative cycles (Chapter 6 and 7).
Two iterations of the designed intervention were implemented over two consecutive years with the target group in collaboration with the practitioners. Table 3.3 provides an overview of the overall number of practitioners and participants involved in each iteration.

<table>
<thead>
<tr>
<th>Table 3.3 – Practitioner and participant overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iteration</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>Number of practitioners (teachers)</td>
</tr>
<tr>
<td>Number of participants (students)</td>
</tr>
</tbody>
</table>

Data were collected during each iteration to help evaluate and improve the initial design. Student feedback and artefacts, researcher reflections and practitioner artefacts from each iteration were analysed to inform the design of the intervention prior to the next implementation.

**Participants**

**Students**
First year Principles of Journalism students enrolled in the Bachelor of Communication Degree at a university in Auckland, New Zealand were invited to participate in the study in both iterations.

In the first week of the semester, the researcher invited the participants in person, addressing them in the first lecture and inviting them to the study. An overview of the study was provided and the Information Sheet (Appendix 2) and Consent Form (Appendix 3) were given to all interested students at the time. Students were given one week to consider the invitation. In order to volunteer for the study, the students were required to sign the consent form acknowledging they had read and understood the implications of the research, their role and rights in the process, and their consent for the data to be collected. This was done to ensure that students understood the study and their role and to clarify any other concerns and issues. The signed consent forms were collected in the tutorial sessions. Of 174 participants invited to participate in the first iteration, 70 agreed; and of 162 participants in the second iteration, 98 agreed to participate in the study.
Table 3.4 provides an overview of the total number of participants who were invited and the number who volunteered for the different data collection methods.

Table 3.4 – A break down of volunteering participants in the study

<table>
<thead>
<tr>
<th>Volunteering numbers for:</th>
<th>Iteration 1</th>
<th>Iteration 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of participants invited</td>
<td>174</td>
<td>162</td>
</tr>
<tr>
<td>Volunteering numbers for:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Artefacts - Portfolio</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>• Survey</td>
<td>44</td>
<td>40</td>
</tr>
<tr>
<td>• Volunteers for focus group at the start of the semester</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>• Post semester sign up and attendance for focus group</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>• Numbers per focus group</td>
<td>6, 6, 6</td>
<td>7, 10, 5</td>
</tr>
<tr>
<td>• Interview</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Practitioners

The practitioners involved in teaching the Principles of Journal (PoJ) course were similarly invited to participate in the research. The researcher provided an overview of the research and presented the draft design principles with an explanation of what each design principle meant. In the first iteration, all three practitioners were invited—the programme leader (course coordinator) and two lecturers. The Information Sheet (Appendix 4) and Consent Form (Appendix 5) were emailed to the lecturers and hard copies were provided one week before the start of the semester. The practitioners were given one week to consider the invitation. All three practitioners volunteered to participate in the study for the first iteration.

The same approach was taken for the second iteration. Four staff—two from the first iteration (including the course coordinator) and two new staff joined the team. All the practitioners volunteered to participate in the study, and signed Consent Forms were collected.

Table 3.5 – Practitioner numbers in the study

<table>
<thead>
<tr>
<th></th>
<th>Iteration 1</th>
<th>Iteration 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of practitioners invited</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Total number accepted</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Qualitative data were collected from the participants in the study to understand and evaluate the solution in practice. The data collection and analysis method used in the study are discussed below.

**Data collection methods**

Qualitative research methodologies were selected for this study, as these methods ‘provide the means to seek a deeper understanding and to explore the nuances of experience not available through quantification’ (Darlaston-Jones, 2007, p. 25). Research in mlearning has been defined as ‘messy’ (Bannan et al., 2015, p. 2) primarily due to the notion of the ‘mobilised learner’ and his/her role in and across context while learning with a mobile device (cf., Vavoula & Sharples, 2009). As such, the main issue that arises is how to capture the data while the learners are continuously on the move across multiple social, cultural and digital contexts (Bannan, 2009a). McKenney and Reeves (2012) outline several data collection methods that could be considered during analysis and evaluation, such as interview, focus groups, observations, questionnaires, test, logbooks and document analysis. Similarly, Looi et al. (2010) outline methods that could be used for collecting data for learning in-situ, such as observations, audio and video recording, interviews, and student artefacts.

Considering the research questions, the informing theories, mobile affordances, the nature of the design of the intervention, mobile ethical issues and in keeping with the ethos of DBR, the following data collection methods were utilised in the study for the two iterations:

- A voluntary and anonymous online questionnaire (Appendix 6) was distributed at the end of the semester. The online questionnaire was designed using Google Forms. An invitation to the students was sent using the institutional learning management system (LMS) and shared on Twitter using the course hashtag. The online questionnaire was designed to obtain participants’ background information, ownership of the type of technologies and usage and to identify areas of improvement for the next iteration.
- Focus groups (Appendix 7) were held at the end of the semester. Students were invited to volunteer for the focus group in person by the researcher at the end of
the semester. A sign-up form was circulated in the tutorial sessions with the
time, date and venue for the focus groups. The volunteering students were again
provided with a consent form to sign in order to participate in the focus group.
The researcher conducted the focus group with 18 students in Iteration 1 and 22
students in Iteration 2. Three focus groups were conducted at the end of each
iteration with 5-10 participants per cohort. The focus groups were audio
recorded to enable transcription and the duration of each focus group was
approximately one hour and twenty minutes. The focus groups were conducted
to probe and understand student experience of the intervention, the learning
benefits and to explore any unanticipated issues.

- **End of the semester Interviews** (Appendix 8) were conducted with volunteering
  students. A theory-driven sampling approach (Miles & Huberman, 1994) was
  used to select the interview participants. The participants for the interview were
  selected in consultation with the practitioners, and 21 participants were
  identified in each iteration. An email invitation to participate in the interview
  was sent using the LMS. The first eight students to accept the invitation were
  interviewed. The interviews were scheduled according to the time the students
  were available. Eight interviews were conducted at the end of each iteration. The
  interviews were audio recorded for transcription and lasted between forty
  minutes to one hour and twenty minutes. Interviews with the participants were
  conducted to gain an in-depth understanding of the influence and impact of the
course design and activities on student learning, and how the participants
responded to the use of mobile social media and the heutagogical approach in
the course. A recursive interview method was used to explore and understand
the experiences of the learner. This helped build an understanding of the impact
the designed learning intervention had on the learner and the learning experience
(Darlaston-Jones, 2007; Hall, 2008).

- **Student created artefacts and reflections** were collected from student portfolios
  at the end of the course. Student artefacts were captured in two forms:
communicative artefacts and assessment artefacts.
  
  o Communicative artefacts consisted of content created and shared by the
    students on the core course tools such as tweets using the course hashtag
    on Twitter, and blog posts and comments on WordPress blog.
Assessment artefacts were content generated and shared on student-owned portfolios on WordPress. These were inclusive of but not limited to: videos, audio recording, pictures, text, and any other digital content created and shared on the portfolio as part of the assessment and learning design.

The digital artefacts were collected with permission from the volunteering participant portfolios in each iteration – 28 in the first iteration and 29 in the second iteration. The end of the semester reflective posts, (12 in the first iteration and 41 in the second) were also collected. All Twitter activity on the course hashtags for the two iterations were archived using TAGS (https://tags.hawksey.info/). End of semester student reflective blog posts and Twitter activity were collected to understand and explore the impact of the learning design and the learning contexts and to identify areas of improvement for the next iteration.

- **A log of scheduled weekly meetings with the practitioners (Appendix 9).** The weekly log recorded the pedagogical and technological ‘thinking’ of the practitioners and the interventions made by the researcher. The log was kept in the format of brief meeting minutes on Google Docs and captured any key decisions and conversations relating to the activities or task for the following week in PoJ.

- **Researcher reflections** – were recorded to capture observations, issues, concerns and conversations regarding the design and implementation of the intervention to help improve future iterations. The reflections were recorded using Google Docs—shared with the practitioners. Critical incidents were noted as reflections, such as practitioner discussions and mutual agreement on a tool or teaching, and facilitation approaches during the weekly meetings. Other triggering events for reflections captured by the researcher included pedagogical decisions informing the design of the tutorial activities, the use of mobile and social media tools by the practitioners and conversations regarding learning and teaching with the technology steward (researcher’s role in the intervention). As a collaborative partner in facilitating the course, the technology steward (the researcher) was occasionally invited to talk to the students about a chosen technology or a
feature of a mobile device. The reason for the invitation, and any arising issues in conversation with the students in class or on Twitter, were reflected upon and recorded. In the first iteration, the technology steward was occasionally invited to the tutorial sessions, or to briefly talk about technology and its use in the lecture. In the second iteration, the technology steward was assigned 10-20 minutes at the end of every tutorial session to talk about the pedagogical use of mobile and social media technologies in learning, specifically in journalism. As a result, the researcher attended seven tutorial sessions every week for 10-20 minutes for the entire semester (12 weeks). The role of the researcher in this process was only as technology steward, not as a teaching member or assessor on the PoJ course.

In preparation for analysis, data were downloaded from the various sources. Table 3.6 provides an overview of the different data types, data sources and actions taken to prepare the data for analysis.

<table>
<thead>
<tr>
<th>Data type</th>
<th>Data source</th>
<th>Data preparation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online questionnaire</td>
<td>Google Forms</td>
<td>Data were downloaded in Excel format for analysis. Open-ended question responses were copy-pasted into Word and converted into a pdf format for coding.</td>
</tr>
<tr>
<td>Student artefacts</td>
<td>Twitter</td>
<td>Twitter archives from TAGS for course hashtags were downloaded in pdf format for coding.</td>
</tr>
<tr>
<td></td>
<td>WordPress Blog - Student eportfolio</td>
<td>Participant blogs were saved as a single pdf (to capture written text) and downloaded for coding. End of the semester reflective blog posts were copy-pasted in Word and saved as a pdf for analysis.</td>
</tr>
<tr>
<td></td>
<td>YouTube and Vine Videos SoundCloud (audio files) and other multimedia file formats</td>
<td>Pictures from student eportfolios were downloaded. Audio, video and other multimedia files (such as, YouTube videos, Vine and Vimeo and time lapse) were downloaded from the eportfolios and transcribed.</td>
</tr>
<tr>
<td>Researcher reflections</td>
<td>Google Docs</td>
<td>The entire Google Doc was downloaded as a pdf for coding.</td>
</tr>
<tr>
<td>Focus Groups</td>
<td>Recorded audio file</td>
<td>Audio files were transcribed for coding.</td>
</tr>
<tr>
<td>Interviews</td>
<td>Recorded audio file</td>
<td>Audio files were transcribed for coding.</td>
</tr>
</tbody>
</table>

Pseudonyms were assigned to practitioner and student participants for confidentiality in both iterations.
**Data analysis methods**

Miles and Huberman’s (1994) process of data reduction, data display and conclusion drawing and verification was used as the governing approach for data analysis. Interview and focus group transcripts, open-ended questions from the online questionnaire, researcher reflections and other documentary evidence were analysed using the first two phases of this process. This data was then compiled and analysed using a constant comparative method (Glaser, 1965; Glaser & Strauss, 1967). The constant comparative approach is made up of four processes:

(i) comparing incidents applicable in each category
(ii) integrating categories and their properties
(iii) delimiting theory
(iv) writing the theory. (Glaser, 1965, p. 439)

The joint coding and analysis implicit within constant comparative method provided a systematic way for participant data to be categorised and analysed. This allowed themes and issues to be identified, which were subsequently integrated by grouping similar themes into broad categories (Glaser, 1965).

The method is linear in nature where one process builds upon the other, while the previous stays active throughout the analysis process to help grow the next until the conclusion of the analysis process (Glaser, 1965; Glaser & Strauss, 1967)—outlined in Figure 3.2.

![Figure 3.2 – Constant comparative method based on (Glaser & Strauss, 1967, p. 105)](image-url)
The same data analysis method was used for the two iterations of the study. Table 3.7 provides an overview of the different types of data collected in the study and how each data set was analysed.

<table>
<thead>
<tr>
<th>Data</th>
<th>Analysis method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anonymous online questionnaire: Closed-ended questions</td>
<td>Closed-ended questions provided profile and demographic data, such as student age and the types of mobile devices, internet connection and social media tools the participants used. Closed-ended questions also provided data for elements in the designed intervention that worked and helped identify areas that needed improvement. Closed-ended data were analysed using Microsoft Excel to make statistical interpretations through tabulation and graphical representation of data.</td>
</tr>
<tr>
<td>Anonymous online questionnaire: Open-ended questions</td>
<td>Open-ended questions were coded and analysed, first using data reduction and data display process, this data was then compiled and analysed using constant comparative method.</td>
</tr>
<tr>
<td>Focus group</td>
<td>Focus Group transcripts were coded and analysed, first using data reduction and data display process, this data was then compiled and analysed using constant comparative method.</td>
</tr>
<tr>
<td>Interview</td>
<td>Interview transcripts were coded and analysed, first using data reduction and data display process, this data was then compiled and analysed using constant comparative method.</td>
</tr>
<tr>
<td>Student artefacts</td>
<td>Blog posts and transcribed artefacts (student videos, audio and other multimedia files) from student eportfolios were coded and analysed, first using data reduction and data display process, this data was then compiled and analysed using constant comparative method. Twitter activity on the class hashtags were analysed using TAGS and further analysed first using the data reduction and display process, this data was then compiled and analysed using constant comparative method. Student created pictures shared as artefacts on the eportfolio was coded using NVivo to the relevant codes.</td>
</tr>
<tr>
<td>Researcher reflections</td>
<td>Reflections were coded and analysed, first using data reduction and data display process, this data was then compiled and analysed using constant comparative method.</td>
</tr>
</tbody>
</table>

Student-created digital artefacts shared on student portfolios, interactions between students and facilitators of the course regarding learning and teaching on Twitter, questionnaire data and researcher reflections were all analysed to identify areas for improvement within iteration and next. Tabak (2004) speculates that within DBR, specifically within Phase 3, we engage in two types of design and analysis that could inform the ‘tweaking’ and ‘refinement’ of the design—microcycles and macrocycles. In microcycles, the practitioners and researcher make subtle changes to the initial design based on the data and observations after ‘orchestrating the day-to-day learning interactions’ (p. 229). Macrocycles are major changes made at the end of the iteration and are informed by data collected using appropriately designed research methods.
Table 3.8 outlines how the micro and macrocycles helped inform the design and redesign of the intervention.

<table>
<thead>
<tr>
<th>Within design</th>
<th>Microcycle data</th>
<th>Macrocycle data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Real-time student activities on student portfolios</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Twitter interactions between students and between practitioners and the students</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Practitioner conversations in class and observations on student portfolios.</td>
<td></td>
</tr>
<tr>
<td>Future iteration</td>
<td></td>
<td>• End of the semester published student portfolio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Interview and focus group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Researcher reflections</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Questionnaire data.</td>
</tr>
</tbody>
</table>

The data collected at the end of each iteration were analysed to identify areas for improvement for the next iteration and to evaluate the impact of each draft design principle on the learner and the learning experience. The data analysis and findings for each iteration are discussed in Chapters 6 and 7 respectively.

Due to the large amount of data collected in each iteration, the use of computer assisted qualitative data analysis (CAQDAS) was considered in the study. In particular, NVivo (QRS International, 2016) was utilised during the data analysis phase of the study.

**NVivo**

Computer Assisted Qualitative Data Analysis (CAQDAS) is a generic term used to address the many off-the-shelf computer applications available for use for analysing qualitative data (Bringer, Johnston, & Brackenridge, 2006). The use of CAQDAS enhances the efficiency and productivity of the researcher by providing appropriate tools within the context of what was said, and when, while analysing the data (Leech & Onwuegbuzie, 2007). In analysing transcribed data in qualitative research, such as interview and focus group recordings, Wainwright and Russell (2010) argue that there is a gap between the recorded speech and transcribed text. They explain that the researcher is empowered to think more analytically by being immersed in the flow of the data, and that the researcher is ‘sensorially closer to the data’ (p. 3).
One such CAQDAS software, utilised in this study for analysis, is NVivo (QRS International, 2016). In a typical qualitative research, the wide range of data collected in the process namely talk (videos, audio recording), observations, drawings/photographs and documents can be analysed using NVivo at any length (Leech & Onwuegbuzie, 2007). The reasons for using NVivo, which resonated with the research design, include the following. NVivo:

- provides an overall management process for documents and analysis in studies involving large amounts of data
- is perceived to be faster when compared to manual analysis methods
- facilitates iterations within data coding and analysis
- increases the rigor of the study
- has facilities for writing memos in context allowing the researcher to move beyond conceptual ideas to analytic thinking
- is mostly used for doing constant comparative analysis. (Bringer et al., 2006; Halcomb & Davidson, 2006; Leech & Onwuegbuzie, 2007; Wainwright & Russell, 2010; Welsh, 2002; Weng, 2012)

Alternative methods to using CAQDAS in this research were also explored, such as data analysis using Microsoft Word (La Pelle, 2004) and analysis though developing a Codebook (DeCuir-Gunby, Marshall, & Culloch, 2011). However, both methods either replicate the analysis features already found in NVivo or they would have ultimately required the use of a CAQDAS to categorise and theorise the research.

**Ethical considerations and trustworthiness**

Considering the standard and conditions set out in the Australian Code for the Responsible Conduct of Research, the National (Australia) Statement of Ethical Conduct in Human Research, and Murdoch University’s Responsible Conduct of Research Policy, the proposed research was reviewed and granted approval by Murdoch University’s Human Research Ethics Committee (HREC). Due to the researcher’s dual role, as a student at Murdoch University (Perth, Australia) and a staff member where the
research was implemented, a separate ethics approval was needed and granted from the hosting university in New Zealand.

Darlaston-Jones (2007), however, professes that the real act of ethically conducting research requires more than just following the code of conduct. She speculates that ‘it requires that we examine our motives and scrutinise our actions and our research processes for foreseeable and perhaps unforeseeable consequences that might affect our participants’ (p. 23). In particular, research in mlearning is deemed problematic because of the ubiquitous capability of creating contextually rich data and due to the type of data needed for effective mlearning research (data created by the learners in-situ) (Baran, 2014; Dyson, Andrews, Smyth, & Wallance, 2013; Looi et al., 2010; Traxler & Bridges, 2004; Vavoula & Sharples, 2009). Table 3.9 summarises some of these issues that warrant an examination of the motives and scrutiny of the actions in the research process to enhanced participant safety.

<table>
<thead>
<tr>
<th>Potential risk</th>
<th>Potential ways of mitigating these risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collection of data</td>
<td>• Self-documented by the learner him/herself (Looi et al., 2010; Traxler &amp; Bridges, 2004)</td>
</tr>
<tr>
<td></td>
<td>• Informed consent (Traxler &amp; Bridges, 2004)</td>
</tr>
<tr>
<td></td>
<td>• Participant withdrawal (Traxler &amp; Bridges, 2004)</td>
</tr>
<tr>
<td></td>
<td>• Anonymity and confidentiality (Traxler &amp; Bridges, 2004)</td>
</tr>
<tr>
<td></td>
<td>• Positive ethic of inclusion and personal responsibility (Dyson et al., 2013)</td>
</tr>
<tr>
<td></td>
<td>• Public vs Private (Baran, 2014; Chen &amp; Bryer, 2012)</td>
</tr>
<tr>
<td>Cyberbullying</td>
<td>• Identified as knowledge gap (Chen &amp; Bryer, 2012)</td>
</tr>
<tr>
<td>Cheating and collusion</td>
<td>• Focus on ethical behaviour (Dyson et al., 2013)</td>
</tr>
<tr>
<td>Netiquettes</td>
<td>• Guidance (Chen &amp; Bryer, 2012)</td>
</tr>
<tr>
<td>Socio-economic backgrounds</td>
<td>• Affordability of required mobile device (Traxler &amp; Bridges, 2004)</td>
</tr>
<tr>
<td>Role: researcher, teacher, student,</td>
<td>• Increased need to maintain a distinct role within a mlearning project. (Traxler &amp; Bridges, 2004)</td>
</tr>
<tr>
<td>manager</td>
<td></td>
</tr>
</tbody>
</table>

In relation to conducting the research ethically, an overview of the research was given to the students in the first week of class. Interested students were handed the Information Sheet about the research and given one week to consider if they wanted to participate. Signed Consent Forms were collected the following week in class.

To ensure confidentiality, all participant data was de-identified and pseudonyms were assigned to all participants in the research. Some of the issues highlighted in Table 3.9
were clearly identified and discussed during the informed consent process to mitigate the risks (participant withdrawal, anonymity and confidentiality) to the students. Table 3.10 briefly discusses the designing for ethically responsible mlearning elements, which are discussed in more detail in Chapter 4 and 5.

Table 3.10 – Designing for an ethically responsible mlearning

<table>
<thead>
<tr>
<th>Ethical design elements</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-documented by the learner Private vs Public</td>
<td>Achieved through pedagogical design of the assessment and the learning activities and tasks. Students had to create a blog as part of the course (Abrami et al., 2008; Dyson et al., 2013) that allowed for self-documentation of the learning process and choosing what to share publicly and what to keep private.</td>
</tr>
<tr>
<td>Positive ethical inclusion and responsibility Knowledge gap and focusing on ethical behaviour Netiquettes</td>
<td>Achieved through pedagogical scaffolding, modelling and supporting the use of mobile social media tools for learning purposes.</td>
</tr>
<tr>
<td>Affordability of required mobile device</td>
<td>Bring your own device (BYOD). Students were encouraged to use any device they owned in the course, an element consciously designed while creating the mobile learning for the students.</td>
</tr>
<tr>
<td>The role of the researcher</td>
<td>The researcher in this study was solely a collaborative partner and did not teach the course in which the study was implemented.</td>
</tr>
</tbody>
</table>

At the conclusion of the study in 2016, there were no reported cases of harm or ethical breaches associated with the research.

**Trustworthiness**

Validity and reliability of a research are fundamental concerns in a quantitative study. The application of the same judgement criteria in a qualitative research can be blurry and confusing (Krefting, 1991; Shenton, 2004; Sinkovics, Penz, & Ghauri, 2008). Creswell and Miller (2000) propose several methods that can help achieve trustworthiness in a qualitative approach, such as triangulation, prolonged engagement in the field with the participants, collaboration, and thick and rich description (p. 128).

The following design and analysis elements (discussed in Table 3.11) were utilised to ensure trustworthiness in the study.
<table>
<thead>
<tr>
<th>Elements</th>
<th>Meaning</th>
<th>Application in the study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triangulation</td>
<td>The themes and categories in the study are created using multiple and different types of data.</td>
<td>Data used in this study were collected using multiple methods, such as, interviews, focus groups, student created artefacts (blog posts, video, pictures and audio), survey and reflections over two iterations. Triangulating this data created the themes and categories, which were derived as part of this study. &lt;br&gt;The iterative cycles of triangulation and collaboration within DBR also increases the trustworthiness of the findings (Kennedy-Clark, 2013; The Design-Based Research Collective, 2003).</td>
</tr>
<tr>
<td>Prolonged engagement</td>
<td>Sustained engagement enables the researcher to ‘build trust with participants, find gatekeepers to allow access to people and sites, establish rapport so that participants are comfortable disclosing information, and reciprocate by giving back to people being studied’ (Creswell &amp; Miller, 2000, p. 128).</td>
<td>Close collaboration with the practitioners is central to design-based research approach. Engagement with the practitioners over two iterations helped build sustained engagement enabling ‘true’ collaboration and participation.</td>
</tr>
<tr>
<td>Collaboration</td>
<td>Credible data can also be attained through close collaboration with the participants as co-designers in the research. This helps build participants views into the research.</td>
<td>The practitioners and participants (students) within design-based research are viewed as co-designers of the learning experience or the intervention. This ensured that all participant views were taken into consideration over two iterations of the study.</td>
</tr>
<tr>
<td>Thick and rich description</td>
<td>The research setting, participants and the themes of the study are described in rich detail.</td>
<td>Rich descriptions of the research setting are given in Phases 1 and 2 of DBR in this study (Chapters 1, 3, 4 and 5). While Phase 3 (Chapter 6 and 7) reports the findings where verbatim quotes are used to ensure participants’ voices are accurately represented, although hesitations, such as ‘um’ and ‘like’ have been removed for ease of reading.</td>
</tr>
</tbody>
</table>

**Phase 4: Design principles**

The draft design principles (discussed in Chapter 4) helped guide the creation of the intervention for the first iteration. All the data that were collected between the two iterations provided feedback on the initial intervention and also informed the refinement the initial set of design principles. The initial set of principles was reviewed between iterations, and at the conclusion of the study, to provide a final set of refined design principles. The final design principles along with the recommendations to inform theory can help other academics with ‘transferable knowledge’ that can act as a framework or guidelines for them to apply in the growing domain of pedagogical practice in
mlearning, social media and heutagogy. The final design principles and guidelines are reported in Chapter 8.

**Conclusion**

This chapter described the methodology used to conduct the study. It commenced with an argument for a new approach to research, one that is socially responsive and creates shareable knowledge through its findings. The chapter also explained the four phases of DBR approach, the target audience, data collection and data analysis methods. The next chapter provides an overview of the draft design principles, which were created in consultation with the practitioners and through the review of literature.
CHAPTER 4
Design principles

Introduction
In design-based research (DBR) specifically in Phase 2, an emphasis is placed on the formulation of draft design principles (Reeves, 2006) to provide a strong theoretical foundation for an intervention or solution to the problem. The draft design principles are derived from the researcher’s exploration of the learning problem in consultation with the practitioners (discussed in Chapter 1) and from existing literature and solutions that are already in practice. These principles were used to guide the design of the intervention or ‘solution in practice’ (Reeves, 2006, p. 56).

This chapter provides a list and description of the draft design principles, which were identified from a targeted and concise review of literature relating to the learning problem identified in Phase 1 (discussed in Chapter 1). The guiding principles are discussed according to the three learning and teaching frameworks identified for using mobile and social media technologies in learning and teaching context: Pedagogy 2.0, heutagogy, and mobile learning.

Pedagogy 2.0
Pedagogy 2.0 is a term used for defining the pedagogy for the use of Web 2.0 tools in facilitating a learning experience that is characterised by learner productivity, personalisation and participation (McLoughlin & Lee, 2008d, p. 15). The actions and interactions of the learner with the 3Ps in a learning process result in learner-generated content. A wide range of literature was consulted to understand and identify how Web 2.0 tools and their affordances could be effectively integrated in learning and teaching context. Specifically, design elements were identified that provided guidelines or strategies that could help with the design of the intervention. Table 4.1 outlines the key elements that emerged from the review of literature on the use of Pedagogy 2.0 in learning and teaching.
Table 4.1 – Underpinning principles of Pedagogy 2.0

<table>
<thead>
<tr>
<th>Design elements</th>
<th>Explanation of the element</th>
<th>Source reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personalisation</td>
<td>The design of the learning activities and tasks enables the learner choice over his/her learning path according to his/her needs in terms of support, resources and communities.</td>
<td>(McLoughlin &amp; Lee, 2008c, 2008d, 2010), (Lee &amp; McLoughlin, 2008), (Cigognini et al., 2011), (Buchem &amp; Attwell, 2011)</td>
</tr>
<tr>
<td>Productivity</td>
<td>The design of the learning activities and tasks enables the learner to create knowledge through social processes rather than knowledge as transfer of content.</td>
<td>(McLoughlin &amp; Lee, 2008c, 2008d, 2010), (Lee &amp; McLoughlin, 2008), (Cigognini et al., 2011), (Buchem &amp; Attwell, 2011), (Laurillard, 2009)</td>
</tr>
<tr>
<td>Participation</td>
<td>The design of the learning activities and tasks enables the learner to create knowledge and self-identity through sharing of ideas, communication and collaboration in and across communities.</td>
<td>(McLoughlin &amp; Lee, 2008c, 2008d, 2010), (Lee &amp; McLoughlin, 2008), (Cigognini et al., 2011), (Buchem &amp; Attwell, 2011), (Conole &amp; Alevizou, 2010), (Dron &amp; Anderson, 2015)</td>
</tr>
<tr>
<td>Provide authentic learner-centred tasks</td>
<td>The design of the learning tasks should be learner-centred, authentic, contextualised, and should encourage learner-generated content.</td>
<td>(McLoughlin &amp; Lee, 2008c, 2008d), (Blaschke, 2014), (Buchem &amp; Attwell, 2011), (Conole et al., 2004), (Beetham, 2013)</td>
</tr>
<tr>
<td>Provide thought provoking learning resources or content</td>
<td>The learning resources used in the facilitation of a learning experience are not a complete learning pack but rather encourages learner participation that invokes thinking processes leading to learner generated content. As a result, the learners consume content in an act to gain understanding and produce content in order to grow and create new meanings, also referred to as ‘produse’.</td>
<td>(McLoughlin &amp; Lee, 2007, 2008a, 2008d), (Bruns, 2007)</td>
</tr>
<tr>
<td>Provide blended learning contexts</td>
<td>The learning is anchored in authentic formal and informal contexts. The context ‘operationalises’ participation, productivity and personalisation that encourages thinking and reflection.</td>
<td>(McLoughlin &amp; Lee, 2008d), (Cigognini et al., 2011), (Buchem &amp; Attwell, 2011), (Conole et al., 2004)</td>
</tr>
<tr>
<td>Design a flexible curriculum</td>
<td>The design of the curriculum is not fixed but should be open for negotiation with the learner as co-designer in the learning process.</td>
<td>(McLoughlin &amp; Lee, 2007, 2008a, 2008d), (Bruns, 2007), (Cameron &amp; Tanti, 2011), (Blaschke, 2013), (Schoenborn et al., 2013)</td>
</tr>
<tr>
<td>Expectations</td>
<td>Make the use of social media in the course clear and explain the rationale for creating a learning environment that utilises social media tools.</td>
<td>(Beetham, 2013), (Blaschke, 2014), (Schoenborn et al., 2013)</td>
</tr>
<tr>
<td>Provide scaffold</td>
<td>The teacher provides support in the learning process and encourages support and scaffold from the peers, other experts and communities.</td>
<td>(Blaschke, 2014), (Borthick, Jones, &amp; Wakai, 2003), (Buchem &amp; Attwell, 2011), (McLoughlin &amp; Lee, 2007, 2008a), (Higgins, Xiao, &amp; Katsipataki, 2012), (Schoenborn et al., 2013)</td>
</tr>
<tr>
<td>Provide expert modelling</td>
<td>The teacher provides technological support by modelling or sharing exemplary use of social media tools for learning.</td>
<td>(Rahimi, van den Berg, &amp; Veen, 2015), (Blaschke, 2014), (Borthick et al., 2003), (Schoenborn et al., 2013)</td>
</tr>
</tbody>
</table>
Heutagogy

The central tenet of heutagogy is the active and proactive role of the learner in terms of determining and directing their own learning (Blaschke, 2013; Hase & Kenyon, 2000). Heutagogy is also sometimes referred to as learner-generated context – creation of knowledge and content in authentic contexts (Blaschke & Hase, 2016). Table 4.2 provides a list of elements related to heutagogy or learner-generated context.

<table>
<thead>
<tr>
<th>Design elements</th>
<th>Explanation of the element</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable learner autonomy and ownership in the design of the curriculum</td>
<td>The curriculum is non-linear, open and flexible and allows the learner to explore and experiment with new knowledge in different context (formal and informal contexts). This helps the learner to build capability by operationalising the knowledge.</td>
<td>(Blaschke, 2012, 2013), (Blaschke &amp; Hase, 2015, 2016), (Hase &amp; Kenyon, 2007), (Hase, 2011, 2014, 2016)</td>
</tr>
<tr>
<td>Integrated and negotiated assessment</td>
<td>Assessment events are seamlessly embodied in the learning process and are supported through formative feedback. The teacher seeks details and elicits learner feedback on the learning process to promote reflections that informs learner choice and direction in learning. The learner is viewed as a co-designer of the assessment tasks and has flexibility over what is to be learnt (acquiring knowledge) and where (context).</td>
<td>(Blaschke, 2012, 2013, 2014), (Blaschke &amp; Hase, 2015, 2016), (Hase &amp; Kenyon, 2007), (Hase, 2014, 2016)</td>
</tr>
<tr>
<td>Opportunity to reflect</td>
<td>The design of the learning activities and tasks encourage learner reflection in the learning process, where the learner reflects upon what has been learnt and how.</td>
<td>(Blaschke, 2012, 2013), (Blaschke &amp; Hase, 2016), (Hase, 2011, 2014, 2016)</td>
</tr>
<tr>
<td>Integrate affordances of technology</td>
<td>The use of social media affordances are embedded within the design and facilitation of the learning experience that encourages content-creation, collaboration, sharing, and enables the learner to build new connections.</td>
<td>(Blaschke, 2013, 2014), (Blaschke &amp; Hase, 2016), (Blaschke &amp; Brindley, 2015)</td>
</tr>
<tr>
<td>Design for active learner engagement and choice</td>
<td>The design of the learning activities and processes actively engages the learner in the learning process where the learner is an active agent of his/her own learning, as such has control over the context and learning path.</td>
<td>(Blaschke, 2012, 2013), (Hase, 2011, 2014, 2016)</td>
</tr>
<tr>
<td>Design activities and tasks for individualised learning</td>
<td>The design of the learning tasks and activities focuses on enabling individual learning as much as possible.</td>
<td>(Hase, 2014, 2016)</td>
</tr>
<tr>
<td>Provide a social learning environment</td>
<td>Learning is viewed as an outcome of the learner’s participation in social processes such as collaboration, communication, co-creation and sharing where the teacher acts as a facilitator or a guide.</td>
<td>(Blaschke, 2013, 2014), (Blaschke &amp; Hase, 2016), (Hase &amp; Kenyon, 2007), (Hase, 2014, 2016)</td>
</tr>
<tr>
<td>Design elements</td>
<td>Explanation of the element</td>
<td>Source</td>
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</tr>
<tr>
<td>Recognise informal learning</td>
<td>The design of the learning activities and tasks acknowledges, considers and enables learning in informal contexts.</td>
<td>(Hase, 2014, 2016)</td>
</tr>
<tr>
<td>Recognise that learning is non-linear</td>
<td>The learning and learner actions in heutagogy learning are non-linear where learning is an event that could occur at anytime or place and is not something that can be caused.</td>
<td>(Hase, 2014, 2016)</td>
</tr>
<tr>
<td>Enable learning in context</td>
<td>The design of the learning process allows the learner to apply the skills and knowledge in different contexts in order to build capability.</td>
<td>(Hase, 2014, 2016)</td>
</tr>
<tr>
<td>Provide abundant learning resources</td>
<td>The teachers provide the learner with access to abundant resources and allow time for them to explore and learn from it.</td>
<td>(Hase, 2014, 2016)</td>
</tr>
<tr>
<td>Provide support and scaffolding when needed</td>
<td>Scaffold and support is provided to the learner in context and when needed, this enables true collaboration between the learner and the teacher and helps build skills for learner autonomy.</td>
<td>(Blaschke, 2013, 2014), (Hase &amp; Kenyon, 2007)</td>
</tr>
<tr>
<td>Design learning activities that encourage double-loop learning</td>
<td>The learners are psychologically and behaviourally engaged where the process and path of creating new knowledge influences their values and belief system (Blaschke &amp; Hase, 2016, p. 28).</td>
<td>(Hase &amp; Kenyon, 2000), (Blaschke, 2012), (Hase, 2014, 2016)</td>
</tr>
</tbody>
</table>

**mLearning**

Mobile learning is a term identified with learning that is mediated through mobile devices across contexts (Traxler, 2016a). mLearning facilitates learning in both formal and informal contexts (Traxler, 2010). The learners interaction with everyday entities, artefacts, and situations in real world contexts afforded by the ubiquitousness of both the mobile device and the learner provide a contextually rich learning environment that is learner determined and enables knowledge creation in situ (Cook et al., 2008; Luckin et al., 2011; Pachler, Bachmair, et al., 2010b; Sharples, 2016; Traxler, 2016a). The intertwining of the mobility of the learner and the affordances of mobile devices result in situationally embodied learning experience, where the context of learning holds the key for how new knowledge and understanding is constructed by the learner (Barab & Plucker, 2002; Pachler, Bachmair, et al., 2010b; Sharples, 2016; Traxler, 2016a; Wang, 2004).

Table 4.3 provides a list and description of mlearning design considerations.
### Table 4.3 – Underpinning principles for mobile learning

<table>
<thead>
<tr>
<th>Design elements</th>
<th>Explanation of the element</th>
<th>Source</th>
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</thead>
<tbody>
<tr>
<td>Acknowledge and involve the learners</td>
<td>Acknowledge and recognise existing learner practices with mobile devices and involve the learner, learner views and feedback in co-designing a learning environment.</td>
<td>(Kukulska-Hulme &amp; Traxler, 2013), (Harpur &amp; de Villiers, 2015)</td>
</tr>
<tr>
<td>Design for learner mobility and autonomy</td>
<td>Situate learning in authentic contexts that is inclusive of informal learner-generated contexts mediated by mobile devices. The teachers of the course collaborate with the learners in these contexts as facilitators and co-learners.</td>
<td>(A. Herrington et al., 2009), (Sharples et al., 2007), (Harpur &amp; de Villiers, 2015), (Bachmair &amp; Pachler, 2014), (Bannan et al., 2015)</td>
</tr>
<tr>
<td>Integrate affordances of technology</td>
<td>Design for and work with the devices the learners own and use and encourage bring your own devices (BYOD) for learning.</td>
<td>(Kukulska-Hulme &amp; Traxler, 2013), (A. Herrington et al., 2009), (Naismith &amp; Corlett, 2006), (Alrasheedi &amp; Capretz, 2015)</td>
</tr>
<tr>
<td></td>
<td>Select appropriate social media tools and devices that are appropriate to the learning context.</td>
<td>(Cochrane, 2012a)</td>
</tr>
<tr>
<td></td>
<td>Enable the learner autonomy in the learning process to create and participate in meaningful learning contexts to create knowledge.</td>
<td>(Sharples, 2016), (Traxler, 2016a), (Pachler, Cook, et al., 2010), (Luckin et al., 2011)</td>
</tr>
<tr>
<td></td>
<td>Explore the affordances of mobile devices to enhance learning by enabling learner consumption and production of content in context.</td>
<td>(Kukulska-Hulme &amp; Traxler, 2013), (A. Herrington et al., 2009), (Naismith &amp; Corlett, 2006)</td>
</tr>
<tr>
<td></td>
<td>Design a blended learning environment that is not platform centric and provides a seamless user experience and access to relevant course information and content between mobile devices, laptops and desktops.</td>
<td>(Kukulska-Hulme &amp; Traxler, 2013), (Palalas &amp; Anderson, 2013), (Harpur &amp; de Villiers, 2015), (Alrasheedi &amp; Capretz, 2015), (A. Herrington et al., 2009)</td>
</tr>
<tr>
<td>Provide a social learning environment</td>
<td>Facilitate a social learning environment that encourages learner collaboration, sharing, communication and co-creation.</td>
<td>(Cochrane, 2012a), (Harpur &amp; de Villiers, 2015), (Naismith &amp; Corlett, 2006), (Alrasheedi &amp; Capretz, 2015)</td>
</tr>
<tr>
<td>Design a pedagogically informed curriculum that enables learner autonomy and considers the affordances of mobile devices</td>
<td>Design a curriculum that is learner-centred and open and flexible to provide learner choice and direction.</td>
<td>(Sharples, 2007), (Naismith &amp; Corlett, 2006)</td>
</tr>
<tr>
<td></td>
<td>The affordances of mobile devices and the learning processes are pedagogically interwoven to seamlessly align and integrate the learning activities, course content, the assessment events and the role of the learner to enable learner-generated context and content and creation of new knowledge and understanding.</td>
<td>(Naismith &amp; Corlett, 2006), (Harpur &amp; de Villiers, 2015), (Cochrane, 2012a), (Alrasheedi &amp; Capretz, 2015)</td>
</tr>
<tr>
<td></td>
<td>Designing for learning with mobile devices may not always deliver the expected result as such be prepared to trial, refine and discard learning activities and design.</td>
<td>(Kukulska-Hulme &amp; Traxler, 2013)</td>
</tr>
<tr>
<td>Provide modelling of tools</td>
<td>The teachers provide pedagogical modelling of mobile social media tools for learning.</td>
<td>(Cook, 2010), (Cochrane, 2012a), (Chen, Seilhamer, Bennett, &amp; Bauer, 2015)</td>
</tr>
</tbody>
</table>
Provide scaffolding

The teachers provide pedagogical and technological support and scaffolding to the students to enable learning.

(Cochrane, 2012a), (Palalas & Anderson, 2013), (Bannan et al., 2015), (Bachmair & Pachler, 2014)

<table>
<thead>
<tr>
<th>Design elements</th>
<th>Explanation of the element</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide scaffolding</td>
<td>The teachers provide pedagogical and technological support and scaffolding to the students to enable learning.</td>
<td>(Cochrane, 2012a), (Palalas &amp; Anderson, 2013), (Bannan et al., 2015), (Bachmair &amp; Pachler, 2014)</td>
</tr>
</tbody>
</table>

The draft principles

From the underpinning principles for each informing theory in Tables 4.1, 4.2 and 4.3, six draft design principles were formulated to guide the design of the intervention that would help overcome the issues and problems identified in Chapter 1.

The draft design principles are presented (Table 4.4) tagged according to the elements that may apply while designing the intervention. The elements identified for each draft design principle in Table 4.4 such as design, technology, learning tasks and activities, and facilitation highlight the important processes of learning and teaching and emphasise the target areas that need to be considered in the application of the principle to the learning solution. Any draft design principle tagged as Design has a twofold application—in the design of the tasks and activities, and their facilitation (pedagogical application), and in the creation of the learning environment (technological consideration and application). Design principles tagged Tasks and Activities suggest they need to be considered while creating the learning tasks and assessment activities in the course. Similarly, any design principle tagged Facilitation indicates that teachers have to implement appropriate teaching strategies that encourage and support students to achieve the tasks and activities proposed by the principle using the affordances of chosen technologies for use in the course. And a design principle tagged Technology indicates the teachers, when designing the course and learning tasks and activities need to explore, investigate and integrate the technological affordances that will help the learner achieve the desired learning outcomes.
### Table 4.4 – The draft design principles used in this study

<table>
<thead>
<tr>
<th>Design Principle</th>
<th>Meaning</th>
<th>Source/Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DP1.</strong> Design learning activities, tasks and a learning environment that encourage elements of learner participation, personalisation and productivity underpinned by the affordances of mobile and social media tools.</td>
<td>The affordances of mobile and social media tools are explored and exploited to pedagogically design learning activities, tasks and a learning environment for learner productivity, personalisation and participation. <strong>Productivity</strong> – learners as creators of knowledge or content through social processes rather than just being passive consumers of teacher-generated content. <strong>Personalisation</strong> – learners have access to a wide range of resources and ideas such as online communities, subject experts, and a wealth of online content to seek and guide learning according to their needs. <strong>Participation</strong> – learners are able to seek scaffolds for learning through collaboration with peers and teachers in a learner community and through linkages, connections and interactions across communities by sharing ideas, inquiry and problem solving.</td>
<td>(McLoughlin &amp; Lee, 2007, 2008a, 2008c, 2008d, 2010), (Lee &amp; McLoughlin, 2008), (Cigognini et al., 2011), (Buchem &amp; Attwell, 2011), (Laurillard, 2009), (Conole &amp; Alevizou, 2010), (Dron &amp; Anderson, 2015), (Luckin, 2010a), (Naismith &amp; Corlett, 2006), (Harpur &amp; de Villiers, 2015), (Cook, 2010), (Blaschke, 2013), (Buchem &amp; Attwell, 2011), (Kukulsa-Hulme &amp; Traxler, 2013), (A. Herrington et al., 2009), (Blaschke, 2012, 2013, 2014), (Blaschke &amp; Hase, 2015, 2016), (Blaschke &amp; Brindley, 2015), (Hase &amp; Kenyon, 2007), (Cook, 2010), (Blaschke, 2013), (Buchem &amp; Attwell, 2011), (Kukulsa-Hulme &amp; Traxler, 2013), (A. Herrington et al., 2009), (Naismith &amp; Corlett, 2006), (Alrasheedi &amp; Capretz, 2015), (Palalas &amp; Anderson, 2013), (Bannan et al., 2015), (Bachmair &amp; Pachler, 2014), (Borthick et al., 2003), (Higgins et al., 2012), (Hase, 2011, 2014, 2016)</td>
</tr>
<tr>
<td><strong>DP2.</strong> Facilitate learning using tools that are open, platform independent and learner owned devices.</td>
<td>The facilitation of learning should consider tools that are open and accessible on learner-owned devices.</td>
<td>(Cook, 2010), (Blaschke, 2013), (Buchem &amp; Attwell, 2011), (Kukulsa-Hulme &amp; Traxler, 2013), (A. Herrington et al., 2009), (Naismith &amp; Corlett, 2006), (Alrasheedi &amp; Capretz, 2015), (Palalas &amp; Anderson, 2013), (Harpur &amp; de Villiers, 2015)</td>
</tr>
<tr>
<td><strong>DP3.</strong> Situate learning in authentic contexts decided by the learner to enable exploration and experimentations.</td>
<td>The design of learning activities considers the uniqueness and affordances of mobile learning and heutagogy - enabling learner mobility and participation in contexts and the ability to create contexts for learning (learner-generated context).</td>
<td>(McLoughlin &amp; Lee, 2007, 2008a, 2008d), (Luckin et al., 2011), (Blaschke, 2012, 2013, 2014), (Buchem &amp; Attwell, 2011), (Conole et al., 2004), (Beetham, 2013), (Cigognini et al., 2011), (Buchem &amp; Attwell, 2011), (Cameron &amp; Tanti, 2011), (Blaschke &amp; Hase, 2015, 2016), (Hase &amp; Kenyon, 2007), (A. Herrington et al., 2009), (Sharples et al., 2007), (Sharples, 2007), (Harpur &amp; de Villiers, 2015), (Bachmair &amp; Pachler, 2014), (Bannan et al., 2015), (Herrington &amp; Hase, 2007), (Herrington &amp; Kervin, 2007), (Herrington &amp; Oliver, 2000), (Hase, 2011, 2014, 2016)</td>
</tr>
<tr>
<td>Design Principle</td>
<td>Meaning</td>
<td>Source/Reference</td>
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</tr>
<tr>
<td><strong>DP4.</strong> Design formative assessment events that encourage learner participation and reflection in the process.</td>
<td>The assessment in the design of the course is viewed as 'assessment for learning' where the entire learning journey of a student is viewed as an assessment event and formative feedback and inquiry from the teachers play an important role in enabling reflection and building learner autonomy skills.</td>
<td>(Hase, 2011, 2014, 2016), (Blaschke, 2012, 2013, 2014), (Blaschke &amp; Hase, 2015, 2016), (Hase &amp; Kenyon, 2007), (Naismith &amp; Corlett, 2006), (Harpur &amp; de Villiers, 2015), (Cochrane, 2012a), (Alrasheedi &amp; Capretz, 2015), (Cameron &amp; Tanti, 2011), (Herrington &amp; Kenyon, 2007), (Herrington &amp; Oliver, 2000)</td>
</tr>
<tr>
<td><strong>DP5.</strong> Provide a clear explanation, expectation and the rationale for the use of the tools.</td>
<td>A clear, rational explanation of the use of the tools and devices is given to the learner.</td>
<td>(Cochrane &amp; Bateman, 2010), (Blaschke, 2013, 2014), (Borthick et al., 2003), (Cochrane, 2012a), (Beetham, 2013)</td>
</tr>
<tr>
<td><strong>DP6.</strong> Provide technological support and model pedagogical use of the tools.</td>
<td>Technological support and the use of mobile and social media tools are modelled to the learners on an on-going basis.</td>
<td>(Cochrane, 2012a), (Palalas &amp; Anderson, 2013), (Bannan et al., 2015), (Bachmair &amp; Pachler, 2014), (Cook, 2010), (Chen et al., 2015), (Blaschke, 2013, 2014), (Hase &amp; Kenyon, 2007), (Rahimi et al., 2015), (Borthick et al., 2003), (Buchem &amp; Attwell, 2011), (McLoughlin &amp; Lee, 2007, 2008a), (Higgins et al., 2012), (Cameron &amp; Tanti, 2011), (Herrington &amp; Kervin, 2007), (Herrington et al., 2010)</td>
</tr>
</tbody>
</table>

Each of these design principle is described in more detail below.

**DP1. Design learning activities, tasks and a learning environment that encourage elements of learner participation, personalisation and productivity underpinned by the affordances of mobile and social media tools.**

*Element: Design, Tasks and Activities, Facilitation, and Technology*

The teachers design learning tasks and activities that encourage learner participation in social spaces online and in the real world with people, artefacts and other entities. The design of the tasks and activities allow the learner to personalise the learning path and processes according to their learning needs and require the learner to create content as part of the process. During this process, the teachers identify the mobile and social media tools and their affordances that could be integrated in the course. These tools and the affordances are explicitly exploited and embedded within the design of the activities and tasks that help accomplish learner participation, productivity and personalisation. In
particular, the affordances are used in the design of the learning tasks and activities that enable:

- learner autonomy, collaboration, communication and creation, and sharing of content
- the creation of a learner community for social and collaborative learning where students are able to seek support and scaffolding through social processes with peers and from teachers, and by connecting and communicating with other experts in and across communities.

**DP2. Facilitate learning using tools that are open, and platform independent, and learner owned devices.**

*Element: Design and Technology*

The teachers design learning activities and tasks by selecting social media applications that:

- are open access - provide access to student work to other students and anyone around the world but also offer functionalities that provide the learner with the ability to control the visibility and privacy of the work that is created and shared
- work across platform - the social media application offers the same features and functionalities regardless of the operating system it is used on (mobile devices, laptop or desktop).

The teachers also take into consideration *student-owned devices*, in particular student-owned mobile devices such as an iPhone, Android or Windows phone and design for learning by integrating these devices.
DP3. Situate learning in authentic contexts decided by the learner to enable exploration and experimentation.

Element: Design, Facilitation, Task, Activities, and Technology

The design of the learning activities and task considers the unique affordances of a mobile device—mobility. The learner as a result has the autonomy to choose contexts, which are appropriate to their learning need or provides a meaningful environment for completing the learning tasks. Learning thus can eventuate in the classroom, in the real world, in the digital realm or a combination of all three – this choice is left to the learner to determine. The students having autonomy in the learning process and equipped with their mobile devices and knowledge of how to use selected social media tools experiment and explore with ideas and concepts when creating content in a chosen context while completing the learning tasks and activities.

The teachers as a result, design learning activities and tasks that have to be completed by the students in authentic contexts using the affordances of mobile and social media tools integrated in the course. The authentic context provides a meaningful setting in which the tasks and activities have to be completed. The context for learning could be created by the teacher that provides the students with the opportunity to think as if they are in a realistic and authentic context facing a real world problem.

DP4. Design formative assessment events that encourage learner participation and reflection in the process.

Element: Design, Facilitation, and Technology

The design of assessment tasks have defined boundaries with respect to the credentialing requirements of the course, however, the intricate makings of the assessment are made negotiable to the learner. For example:

- the students could be provided with a range of topics they could select from in order to complete the assessment
- the students could negotiate the deliverables in the tasks
- the students could choose the form in which the assessment tasks are delivered
• the students have openness to customise the process and path they take to complete the task

As a result, the learner is able to co-design elements of the assessment with the teacher. The learning tasks designed as part of the course and completed by the students also constitute as an assessed and graded event. This forms the basis for formative feedback that encourages learner reflection on the learning tasks and activities. The teachers provide feedback and inquire about the learners’ understanding of the topic and concepts. The guidance and feedback provided by the teacher encourages learner reflection, fosters learner autonomy skills and scaffolds the learning.

**DP5. Provide a clear explanation, expectation and rationale for the use of the tools.**

*Element: Facilitation*

The teachers provide a clear expectation of how mobile and social media tools are to be used in the course. This is done to initiate a conversation with the students to elicit any concerns and issues they may have about the use of any chosen technology in the course. At this time, any issues arising are discussed in detail and negotiated with the learners. Attempts should be made to provide the learner with a valid reason for designing a new learning experience. An explanation of the selection and use of each tool should be provided to help the learner build an understanding of why and how they should be using the tools in the course. Attempts should be made to invite the learners into a conversation and to include their view and opinions in the design.

**DP6. Provide technological support and model pedagogical use of the tools.**

*Element: Facilitation*

The learners are provided with or have access to technological support for the duration of the course. The teachers also pedagogically model the use of selected mobile and social media tools and affordances in the facilitation of the course. The pedagogical modelling of the tools and affordances help students to gain an understanding and application of their use for learning.
The support for the students may include help with setting up of the core tools for use in the course, an overview of how to use them and a demonstration of key affordances (or model pedagogical use of the tools). Acknowledging that not all learners are ‘tech-savvy’, technological support is provided to all students in using mobile and social media tools for learning. Support could be provided to the students through the use of instructional videos, a brief user manual and reference to user guides from the social media platform itself and by modelling the use of the tools to the students.

In order to set the expectation for the use of any technology in the design of a learning experience, the teacher should model the use of the technologies in their own teaching practice. The teacher models pedagogical use of the chosen technologies to the students and this could be done throughout the course or any time a new technology is introduced.

**Use of the design principles in design and facilitation of the course**

The draft design principles in Table 4.4 highlight the need for a tight alignment with different facets of learning and teaching. In particular, the design of the learning activities and tasks, and design of the learning process, the type of assessment, the selection of the tools, context for learning, the role of the learner, affordance of mobile devices and the role of the teacher all need to be seamlessly aligned and integrated — requiring the teachers or the course designers to think differently with regard to the affordances of mobile and social media tools and the new opportunities for designing creative learning experiences.

Beetham (2013) argues that if we continue to ground our practices in traditional pedagogies, the potential of digital technologies for learning will never be realised. She states that ‘design’ is perhaps a better term around which we can rethink learning and teaching practices when it comes to digital technologies and proposes the notion of ‘design for learning’. Design for learning is defined as ‘the process by which teachers and others involved in the support of learning arrive at a plan or structure or designed artefact for a learning situation or setting’ (Beetham, 2013, p. 5).
Also evident in almost all the draft design principles in Table 4.4 is the applicable category ‘technology’. While technology is not the emphasis, it acts as a constant variable that needs to be considered in every facet of design and planning. Technology here provides a reason to think differently to otherwise conventional everyday teaching methods (cf., Beetham, 2013). Laurillard (2012) argues that almost all of the learning technologies we consider or use in learning and teaching are not specifically designed for learning and teaching purposes and poses a question ‘How do we ensure that pedagogy exploits the technology and not vice versa?’ (p. 6), where the latter increases the risk of technology ‘being used merely to enhance conventional designs, rather than generate designs that are much more effective and innovative’ (Laurillard, 2009, p. 6). To avoid superficial use of technology in learning and teaching, Laurillard (2012) espouses that the:

academic community should challenge digital technologies, and we have to do that from a position of strength, with a clear and continually renewed understanding of what education requires of [technologies]’ and proposes that teaching should be viewed as a ‘design science’. (Laurillard, 2012, p. 3)

In teaching as a design science, the teacher plays the role of a designer who exploits the affordances of technology that is informed by reasons and requirements for their use based on effective pedagogical principles for embedded use in learning and teaching practices. At the same time, the teachers learn how technology influences the pedagogical principles (Laurillard, 2012). As such, the design principles derived in this study, from the three informing frameworks for learning and teaching, help exploit the affordances of technology to provide a framework for the design of the learning intervention for the PoJ course (Reeves, 2006). The role of technology, however, is to act as a platform that enables active learning and to provide the learner with the opportunity to be the main agent in the learning process.

Figure 4.1 provides a conceptual overview of the draft design principles in relation to the informing frameworks.
The draft design principles indicated in Figure 4.1 can be grouped into five broad categories, specifically:

- **Enabling participation, productivity and personalisation**—where the design of the learning activities takes into consideration the affordance of mobile devices and social media to encourage social learning processes.
- **Enactment of practice in context**—where the affordance of a mobile device is exploited to allow the learner opportunities to enact practice through exploration, experimentation and reflection in either a digital context or a real world context.
- **Creation of knowledge in context**—this is where the learner creates new understanding and meaning in a context conducive to their own learning needs.
- **Embodiment**—these are curriculum design and support elements that help embody meaningful learner driven contexts and the use of technology for learning and teaching.
• Implementation—these are strategies for supporting students in a curriculum that is contextual, learner driven and utilises mobile and social media affordances.

The draft design principles outlined in Table 4.4 and categorised into themes in Figure 4.1 provide a plausible design framework for mobile and social media enhanced learning. The draft design principles present explicit design ideas that help align the role of the learner and the teacher, curriculum, assessment, the learning process and facilitation with regard to the unique affordances of mobile and social media in the design of the intervention.

**Conclusion**

This chapter provided an overview of the guiding principles for the three underpinning frameworks, Pedagogy 2.0, heutagogy and mlearning. These draft principles were used to inform the conceptualisation and design of the intervention—a first year semester course in a Communication degree.

The next chapter discusses in detail the design of the solution—design of a curriculum for learning in Principles of Journalism (PoJ) that embodies contextualised learning through mobile and social media tools.
CHAPTER 5

Design of the learning solution

Introduction
This chapter discusses the development of the intervention—the design of the Principles of Journalism (PoJ) course by the practitioners assisted by the researcher—guided by the draft principles outlined and discussed in Chapter 4. An illustration of the designed solution for the first iteration of the implementation, and a description of how each draft design principle was instantiated in designing PoJ is given.

Course design and the instantiation of the design principles
It is argued that the rapid advancement of ubiquitous technologies such as mobile devices, accompanied by the power of social media technologies has reached a point that enables the design of an embodied learning experience (Farr, Price, & Jewitt, 2012; Price, Roussos, Falcão, & Sheridan, 2009). Embodied learning is described as learning that takes into account ‘the connection between the mind, the body and the wider environment’ (Reinders & Pegrum, 2015, p. 5). The pervasive nature of mobile and social media technologies provide a foundation for the creation of knowledge in contextually rich surroundings (Cook et al., 2011; Sharples, 2016; Traxler, 2016a). The act of creating knowledge in and across authentic contexts enabled by mobile and social media affordances embodies implicit user actions, interactions, communication and cognition thus creates an embodied learning experience (Sharples et al., 2010; Thüs et al., 2012). Contextually embodied learner interactions or ‘the creation, manipulation and sharing of meaning through engaged interaction with artefacts [in the physical world or in the digital realm]’ (Farr et al., 2012; Price et al., 2009, p. 2) provide unique opportunities for learning and teaching. Cognisant of these opportunities for mobile and social media based learning and teaching, the draft design principles were used by the researcher as a guide to help the practitioners design the PoJ intervention to facilitate a contextually embodied learning experience.
The field of Journalism was chosen because it is appropriate for the introduction of mobile devices and social media, largely due to the industry’s rapid shift to using these tools for news collection, reporting and engaging with the audience. The PoJ course was chosen because the practitioners:

- were cognisant of the impact of mobile and social media tools on journalism
- wanted to explore, investigate and integrate the use of mobile and social media tools in their teaching and the course
- were willing to be collaborative partners in the study.

A first year journalism course (PoJ) was chosen over second or third year because it was mutually agreed by the practitioners and the researcher that the first year students would benefit most from this study as they would then be able to carry forward elements learnt in PoJ into the later years of the degree.

Figure 5.1 provides a snapshot of the decision making process for the selection of the course for use in the study with other practitioners teaching in the journalism course.

Figure 5.1 – The deciding process
During the first phase of the study, consultations were held with the practitioners (Chapter 1) and a literature review (Chapter 2) was conducted to identify and understand specific problem areas in PoJ. The following issues and suggestions extracted from this process were salient in guiding the design and implementation of the intervention. The factors included:

- providing students with a learning experience that moved beyond the transfer of knowledge model
- educating and providing space and time for collaborative, autonomous and self-directed learning
- providing students with an authentic learning experience that is reflective of real world journalist practice
- including the affordances of mobile and social media tools in teaching and learning in an attempt to provide the learners with the skills and knowledge needed to be a journalist in today’s world
- allowing time for students to explore and understand effective and purposeful use of mobile and social media tools for journalistic practice and learning
- allowing time and space for the students to reconceptualise learning and their role/identity in the course—from knowing (student) to being (acting like a journalist).

The practitioners developed the learning intervention (solution in practice) with pedagogical and technological help from the researcher—guided by the draft design principles formulated and discussed in Chapter 4 to remedy these problems and issues. The following section discusses the design of the learning solution and how each of the draft design principles was instantiated.

**Design of the PoJ course and learning environment**

The overall design of the PoJ curriculum was underpinned by three key assessment events: a reflective diary in the form of a blog (eportfolio), an investigative written report and the production of a web-based multimedia news story. The learning activities and tasks were similarly redesigned to align with the assessment events to scaffold the students through the learning process.
Task description and detail

The overall task in PoJ required the students to produce a news story. To scaffold and support the learner through the learning process, the overall task was divided into four sub tasks—and the students had to:

- search for a news story
- keep a reflective diary (a blog) that documented their journey in PoJ, and create multimedia content to document the progress of the selected news story
- produce an investigative report and
- create a contemporary web-based multimedia story.

To complete the tasks, students were encouraged to use a combination of processes that a journalist would undertake in writing a news story, such as searching for a lead and source, investigating the validity of the source, collecting related data and information, checking the news values, contemplating the appropriate form and style and finally assembling the news story. As a result, the students in PoJ needed to be mobile, creative, resourceful, thoughtful, reflective and self-directed.

In Task 1, the students had to search and identify a news story about a person, an issue or an event on their street. To complete the task, the students needed to actively seek possible leads, conduct a search, scope possible news stories and interact with people living on their street to collect and analyse the information to judge if there was a story worth telling.

For Task 2, the students were expected to keep a reflective digital diary in the form of a blog. To complete the task, the students had to reflect and create a blog post every week. In the reflective post, the students needed to document their progress and steps for creating the news story—this included defining a topic, checking its news values, conducting research, talking to people, assembling a story, thinking about its form and style, reflecting on networking and sharing information with peers and their audience on social media tools. In the process, the students were encouraged to create multimedia content using mobile and social media tools (pictures, videos, audio recordings and any other digital format) to capture relevant data for the story and to evidence their learning.
The students in Task 3 produced an investigative report on one of six selected topics provided to them by the teacher in the course. Some of the topics the students could choose for the report included investigating the role of journalism in the contemporary society, or how technology contributed to the development of journalism. To complete Task 3, the students first needed to investigate and understand the values and principles of journalistic practice, and then apply this knowledge to investigate the topic they chose.

For the final task (Task 4) the students had to produce a contemporary web-based multimedia news story that included the digital content they created as part of searching, researching, investigating, collecting, and synthesising the news story during Tasks 1 and 2. In particular, the students needed to evaluate and synthesise the data and information they had collected over 12 weeks to assemble a trustworthy and newsworthy multimedia news story.

The use of mobile and social media tools were embedded within the learning process to assist the students with creating multimedia content needed for the news story and to enable learning in situ, to promote reflective thinking, collaboration and learner autonomy (Figure 5.2). All the students in PoJ had to create a WordPress blog (ePortfolio) and a Twitter account. The students were encouraged to blog and tweet about any content or information captured while composing the news story and to blog their learning journey as a student in the course. The students linked their WordPress blog to their Twitter account—this automatically updated their Twitter account with the link to their newly published post on the blog (blue arrow). This was done to encourage conversations amongst students by making individual posts visible to all students in class and to establish a learner community.
The students also created accounts on other core tools for use in PoJ for the duration of the semester. By the end of the semester, the students would have created and used the following applications for creating and sharing content: Vine (http://www.vine.co), SoundCloud (http://www.soundcloud.com), Google Maps (http://www.maps.google.com), Hyperlapse app on the phone to create time-lapse (https://hyperlapse.instagram.com/) and Piktochart (www.piktochart.com) — applications enclosed in the circle in Figure 5.2. The students were supported and encouraged to explore and use these applications to create relevant multimedia content for their news story. All the applications enclosed in the circle in Figure 5.2 could be used either on a mobile device or on a computer (orange arrows). Any content created using these applications, regardless of the platform it was used on, could be easily shared to the learner’s blog on WordPress or on Twitter — processes indicated by the red arrows in Figure 5.2. All the mobile and social media tools selected for use in PoJ respected the privacy of the content the students created and chose to share. Any content uploaded to these platforms could be kept private, unlisted (viewable and sharable only with the permission of the user) or public.
A Twitter hashtag was established for use in the course and students were encouraged to tag all their work that they chose to share on their blog and Twitter.

As part of the design (the black arrows), the three practitioners facilitating PoJ:

- created a blog and Twitter profile to guide, model and co-ordinate learning for the cohort of students they were assigned
- shared relevant learning resources to their cohort that included effective modelling of the core tools such as infographs, Twitter and WordPress, exemplar news articles, discussions and news videos on YouTube and other platforms
- provided generic class feedback and guidance on student blogs and through Twitter
- used the institutional learning management system to house all course-related documents and resources, student grades, and important notifications regarding important course events
- cross-posted the course resources onto their blog and Twitter account for the students to access.

**Task deliverables**

PoJ was a Level 5 course worth 15 credits and as such had three formal assessments. As deliverables for assessment tasks, the students had to:

- publish at least 10 blog posts
- submit a 1500 word investigative report
- publish a contemporary web-based multimedia story.

The students received on-going support and formative feedback on the progress of their news story and the digital diary through the individual student blog and in person in class. The students were also provided with formative feedback and guidance in Week 7 after Task 3 was assessed.
Teaching strategies, resources and support

To facilitate the learning in PoJ, one two-hour lecture and one one-hour tutorial session per week were designed. As an NZQA (New Zealand Qualifications Authority) requirement for a Level 5 course, the students spent another 10 hours per week on self-directed learning inclusive of the learning task and assessment activities in the course. The two-hour lecture over 12 weeks in PoJ was designed to provide the students with an overview of the journalism context, text and practice. Along with the practitioners of the course, journalism experts and journalists were invited as guest lecturers to share and discuss the conduct of journalism, providing students with an overview of journalistic practice in the real world.

Figure 5.3 is a picture from a lecture session, where an invited journalist shared his journey over 15 years and reflected upon how mobile and social media tools had increasingly impacted on his practice. Figure 5.3 depicts a mobile broadcasting unit that was used by the invited journalist five years ago. He, however, commented that the same was now achieved using a smartphone and a broadcasting application.

![Figure 5.3 – The mobile broadcasting unit](image)

The one-hour tutorial session was designed to scaffold student learning and to provide students with time and space to explore, build and practice the ideas and strategies covered in the lecture in relation to mobile and social media tools. Each practitioner was assigned between 2-3 tutorial sessions per week. Each tutorial session had 20-25 students per stream. The students attended one PoJ tutorial session per week.
The students in the course were also provided with but not limited to a suggested list of readings per week. The students were encouraged to research, access and read any other article relating to their story and to assimilate them in the reflective blog posts. The students also discussed their blog posts and reading in class during the tutorial session with the lecturer and other students to share and build an understanding together.

Some learning activities were also designed for the students to complete during the tutorial session with peers and the teacher to help them understand the use of mobile and social media tools. For example, the practitioners simulated a news conference, as it would happen in the real world. They played the role of convening a press release and created an incident to talk about. The students had to act like journalists and inquire about what happened and where, and all the necessary details to be able to write a news story. As part of this activity, the students were encouraged to tweet throughout the proceeding, ask questions through Twitter and the session activity was curated in real-time using the class hashtag.

Figure 5.4 provides an overview of the PoJ curriculum and the assessment activities.
The use of other tools such as YouTube Capture, Piktochart, Hyperlapse, SoundCloud, Google Maps and Vine were introduced to the students on a weekly basis over 12 weeks as possible platforms for them to create rich multimedia data using their mobile devices for the news story they were writing.

**Technology stewardship**
The lack of teacher knowledge and support is argued to be a major barrier to the adoption and effective use of learning technologies in learning and teaching (Baran, 2014; Buchem & Attwell, 2011; Cochrane, 2012a; Higgins et al., 2012). In particular, Cochrane (2012a, p. 73) states that to facilitate learning mediated by mobile devices there is a need for ‘sustained interaction’ that ‘facilitates the development of ontological shift, both for the facilitators and the students’, in the facilitators from being a ‘content deliverer’ to being a ‘facilitator of authentic learning’ and in the students from being a ‘passive participant’ to being an ‘active co-constructor of knowledge’. Similarly, Hase (2011) cautions that to facilitate a learner-driven and flexible curriculum crucial for a heutagogical learning experience, the facilitators have to first revisit and transform their own pedagogical practice.

A central tenet of design-based research (DBR) is the ‘tight relationship between the researcher and the teachers [practitioners]’ (Hoadley, 2004, p. 204) resulting in close collaboration and interaction between the researcher and the practitioners on an on-going basis on every facet of design and research (Reeves, 2006). In contrast to other research methods, DBR ‘places the researcher as an integral participant in the learning culture, helping to intentionally shape the learning environment through their participation’ (Barab & Kirshner, 2001, p. 11). The researcher cognisant of the critical role of support, guidance and the need for sustained interaction with the practitioners and the students for effective practice and implementation of technology played the role of a technology steward (Wenger, White, & Smith, 2009). Wenger et al. (2009) define the role of a technology steward as someone ‘with enough experience of the workings of a community to understand its technology needs and enough experience with or interest in technology to take leadership in addressing those needs’ (p. 25).

In PoJ, the researcher assumed the role of a technology steward to facilitate conversations amongst the practitioners and the students to help them understand and
apply the affordances of the tools and technologies. In particular, the technology steward provided the practitioners technological help and advice on the use and affordances of all the tools utilised in PoJ. A mutually agreed day, time and space was allocated for the practitioners and the researcher to meet on a weekly basis. This was done over coffee in an informal space with an agenda to explore, discuss and understand the application and the affordances of mobile and social media tools and technologies to inform and enhance their own pedagogical practice and learner experience. The practitioners were encouraged to use their mobile devices and the social media applications during the meeting to gain familiarity and confidence to use in class with the students and in the facilitation of the course.

Figure 5.6 depicts a tutorial outline that was collaboratively edited by the practitioners during one of the meet-up sessions for use in class. It also captures the planning for an in-class activity using Twitter and a news conference pertaining to a ‘suspect package found at a university campus’ and discussions on talking to the students about ethical use of social media in the course—designed by the practitioners, assisted by the researcher.
Similarly, the technology steward, in collaboration with the practitioners also provided the students with technological support and pedagogical modelling of the use of the affordances of mobile and social media tools for learning.
**Instantiation of the draft design principles**

The design of the PoJ course was guided by the draft design principles, which were formulated in Chapter 4.

Table 5.1 provides detailed information on how each of the draft design principles formulated in Phase 2 of the study was instantiated in the design of the curriculum and the learning environment created by the practitioners, assisted by the researcher. The draft principles are discussed in relation to the broad categories that help inform the design of a contextually embodied learning environment—enabling learner-generated content, enactment of practice, creation of content in context, implementation and embodiment.
Table 5.1 – Instantiation of the draft principles in PoJ

<table>
<thead>
<tr>
<th>Element</th>
<th>Draft design principles</th>
<th>How the principle was implemented in the course</th>
</tr>
</thead>
</table>
| Enabling participation, productivity and personalisation or learner-generated content | DP1: Design learning activities, tasks and a learning environment that encourages elements of learner participation, personalisation and productivity underpinned by the affordances of mobile and social media tools. | Core tools and affordances—The students created a personal blog using WordPress and Twitter. As part of the learning process, the students were required to create and include multimedia content in their reflective blog posts and the final news story using tools such as YouTube Capture, Piktochart, Hyperlapse, SoundCloud, Google Maps and Vine, which were introduced on a weekly basis as possible ways of creating rich multimedia data using mobile phones for the news story.  
Participation – Students interacted with peers in class and audience through their blog and Twitter throughout the course. The design of the assessment tasks encouraged the students to collaborate with the public and other entities and online resources to investigate and compose a newsworthy story.  
Personalisation – The main assessment task allowed the students to self-select the news story they were interested in investigating. Based on their choice for the type of news story they wanted to investigate, the students then had to determine and drive the learning and the assessment process to collect valid data and information to write a newsworthy and trustworthy multimedia story. The students were recommended a set of mobile and social media applications, which they could use while completing the assessment tasks and to inform and customise their learning.  
Productivity – The design of the learning and assessment tasks and activities encouraged the students to create content in the process. Students used their mobile devices and a set of social media applications to capture contextual data and information to advance their learning (create 10 reflective blogs) and write a news story (create a multimedia news story).  
Creating the learning environment - The design of the learning environment was underpinned by technologies that were social, collaborative and mobile friendly in nature (Twitter and WordPress). Students utilised these tools to create, share and comment on each other’s work and to seek scaffold and support for learning.  
Students were encouraged to use the class Twitter hashtag for sharing their work. Students also linked their WordPress blog to Twitter for automatic sharing of blog posts. The use of the hashtag, automatic sharing of the blog posts and the social affordances of Twitter and WordPress helped establish a learner community. |
<table>
<thead>
<tr>
<th>Element</th>
<th>Draft design principles</th>
<th>How the principle was implemented in the course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embodiment</td>
<td><strong>DP2. Facilitate learning using tools that are open, platform independent and learner owned devices.</strong></td>
<td>The selection of tools for use in PoJ had to meet the pre-requisites of being able to deliver a seamless user experience over different learner-owned mobile devices and desktop platforms and enabled sharing of data and information publicly and in private.</td>
</tr>
<tr>
<td>Enactment of practice in context</td>
<td><strong>DP3. Situate learning in authentic contexts decided by the learner to enable exploration and experimentation.</strong></td>
<td>As part of the assessment tasks, the students needed to investigate and compose a news story based on a person, an event, or an issue based in the real world. During the process of composing the news story, the students were encouraged to explore and experiment with different mobile and social media tools and affordances to create multimedia content needed for the story and to advance their learning.</td>
</tr>
<tr>
<td>Creation of content in context</td>
<td><strong>DP4. Design formative assessment events that encourage learner participation and reflection in the process.</strong></td>
<td>Providing the learner with a choice in selecting the type of news story they wanted to investigate and write as part of the assessment task made them the central agent in the learning process and the ability to determine what they needed and how they were going to achieve it—encouraging learner participation in customising the assessment elements and the processes. When selecting and gathering the data and information for the selected news story, the students were asked to publish and share reflective blog posts on their learning in the course, which was supported by formative feedback in class by the teachers and through student blog and Twitter.</td>
</tr>
<tr>
<td>Implementation</td>
<td><strong>DP5. Provide a clear explanation, expectation and the rationale for the use of the tools.</strong></td>
<td>Learning and learner requirements and expectations in the course were clearly outlined in the course handbook. A clear and concise explanation of the course set-up and expected use of the tools was given to the students in the first week of the lecture and iterated in the tutorial sessions. The first tutorial session was used to elicit and discuss any issues or questions the students had and to explain the assessment and course requirements clearly.</td>
</tr>
<tr>
<td>Embodiment</td>
<td><strong>DP6. Provide technological support and model pedagogical use of the tools.</strong></td>
<td>Students were supported in the first week of the course in setting up and familiarising themselves with the features of the core platforms in PoJ (WordPress and Twitter). Students were also provided with technological support as needed and upon discussion with the practitioners on a weekly basis. The technology steward and the lecturers modelled the use of any new technology or tool. Tools such as Piktochart, Hyperlapse, SoundCloud and Vine were introduced to the students for creating multimedia content in relation to their story in the tutorial sessions over 12 weeks.</td>
</tr>
</tbody>
</table>

The focus in the design of the intervention was to provide the students enrolled in PoJ with an authentic learning experience that encouraged learner autonomy over the learning process, self-directedness, and knowledge creation in meaningful learner-
generated contexts. The use of mobile and social media affordances was embedded within the design and facilitation of the course to enable a seamless learner-centred pedagogical approach. The design of the learning activities and tasks through embedded use of mobile and social media tools aimed at transitioning learners from passive consumers of knowledge to active collaborators and agents of their own learning resulting in a contextually embodied learning experience.

**Conclusion**

This chapter has described the use of the draft design principles to guide the design of a course as an intervention of solution in practice. At the conclusion of Phase 2 of DBR, a learning environment had been designed. This process took into consideration the findings from the consultations with the practitioners and an analysis of literature. The learning environment was ready for implementation and evaluation in Phase 3. The next chapter describes how the solution was implemented and provides an evaluation of the first iteration.
CHAPTER 6

Iteration 1

In Phase 3 of the study, the first iteration of the learning intervention designed in Phase 2 and discussed in Chapter 5 was implemented. Data were collected from the participants and analysed to evaluate the designed intervention and the design principles.

Chapter 3 described the research approach that underpins this study, ethics and the target audience. This chapter provides an overview of the implementation of the solution in the first iteration. An analysis of the data is then presented that identifies areas for improvement for the second iteration and how the draft design principles impacted on the learner and the learning experience.

Implementation of the solution
The first iteration of the Principles of Journalism (PoJ) course was implemented in the second semester at a University in Auckland, New Zealand. PoJ is a first year journalism course taught over 12 weeks and is open for enrolment to all students interested in journalism as an elective. PoJ is the first journalism course that students undertake to explore the discipline and if interested pursue further studies in Years 2 and 3 at the university to complete a degree in journalism.

A week prior to the start of the semester an informal meeting was held with the practitioners. In the meeting, the course coordinator discussed the course structure, assessment and tutorial criteria, and teaching expectations. The researcher also provided an overview of the study and the design of the learning environment (discussed in Chapter 5, Figure 5.2) to the practitioners and discussed any issues or comments.

An email was collaboratively drafted in this meeting to welcome the students in PoJ and it was posted on the institutional learning management system. The email provided an
overview of what the course entailed, and students were also requested to create free accounts on WordPress and Twitter.

In the first lecture of the semester the students were provided an overview of the core tools WordPress and Twitter. The technology steward was invited by the practitioners to assist with this process.

A hands-on setup time slot was put aside in each tutorial session in the first week to help the students sign up and get started using the core tools. After the students had signed up for the tools, they were asked to comment to their tutor’s blog with their blog address and Twitter username.

Netiquette was discussed with the students by drawing learner attention to examples of good and bad practice online. Exemplar artefacts and use of Twitter and WordPress by current journalists and news agencies were also discussed and shared with the students in class during the first week to help them gain an understanding of effective and appropriate use of these tools for journalism.

Other social media tools and applications were introduced to the students on a weekly basis for the duration of the PoJ course. This was done in the lecture and tutorial session in collaboration with the practitioners where the affordances of the tools and possible use in journalism were demonstrated and shared. The technology steward provided further help to the students in the tutorial sessions when requested by the practitioner. Informal weekly meetings with the practitioners were held on a regular basis to discuss, plan and examine the progress of the course, student learning, any issues and the use of mobile and social media tools.

Three practitioners (including the course coordinator) and 174 students participated in the first iteration of PoJ.

**Data collection methods**
The following data collection methods were used in the first iteration of the study: a voluntary and anonymous online survey (completed at the end of the course), interviews
and focus groups (conducted at the end of the course), researcher reflections and teacher and student created digital artefacts were collected (with permission) at the end of the course.

A detailed overview of the data collection methods and procedure was provided in Chapter 3.

**Use of pseudonyms**

Almost all the data collected in this study (i.e., focus groups, interviews, digital artefacts etc.) revealed the identity of the participants—therefore pseudonyms were used to protect their identity. All participant names were replaced with fictitious names in the reporting of data, and acronyms were added to identity the type of data. For example, (Tom_FG) where Tom is the pseudonym and FG is the focus group. Similarly, in (Tom_INT), Tom is the pseudonym and INT is interview data. Acronyms were further assigned to distinguish between the types of artefact as shown in Table 6.1. For the anonymous survey, pseudonyms were not required—hence respondents are referred to as Res_1, Res_2, … where numbers were assigned according to the timestamp given when Google Form saved the response.

<table>
<thead>
<tr>
<th>Data type</th>
<th>Acronym</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey</td>
<td>Not needed for the anonymous survey</td>
<td>Res_1, Res_2, … numbers were assigned in the order the response was saved by Google Form</td>
</tr>
<tr>
<td>Focus group</td>
<td>_FG</td>
<td>Anna_FG</td>
</tr>
<tr>
<td>Interview</td>
<td>_INT</td>
<td>Anna_INT</td>
</tr>
<tr>
<td>Digital artefacts</td>
<td>_ART</td>
<td>Anna_ART</td>
</tr>
<tr>
<td>Blog</td>
<td>_Blog</td>
<td>Anna_ART_Blog</td>
</tr>
<tr>
<td>Video and audio</td>
<td>_Mult</td>
<td>Anna_ART_Mult</td>
</tr>
<tr>
<td>Multimedia story</td>
<td>_Mult_St</td>
<td>Anna_ART_Mult_St</td>
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<tr>
<td>Pic</td>
<td>_Pic</td>
<td>Anna_ART_Pic</td>
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<tr>
<td>Tweet</td>
<td>_Tweet</td>
<td>Anna_ART_Tweet</td>
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</tbody>
</table>

The data were analysed to identify areas of improvement for the second iteration and to determine how the draft design principles facilitated the design and implementation of the learning solution.
Testing of the learning solution

Data coding and analysis

At the end of the first iteration of PoJ participant feedback, specifically data from the anonymous survey, focus groups and researcher reflections were analysed to identify areas of improvement. Miles and Huberman’s (1994) process of data reduction and display was used to analyse the focus group transcripts and open-ended survey questions. This data was then compiled and analysed using a constant comparative method (Glaser & Strauss, 1967). This joint coding and analysis method allowed the data to be systematically categorised and analysed using NVivo.

Survey data was analysed to understand student demographics—age group, the type of devices they owned, Internet connectivity, the social media tools they were using prior to enrolling in PoJ and how they were using these tools for learning. The findings are discussed in the section below.

Participant overview, device ownership, connectivity and use of the tools

The end of the course voluntary online survey included questions designed to elicit learner age (Q.1), understand the type of device ownership (Q.2), its use by the learner, the type and use of Internet connectivity (Q.3 and Q.4), social media platforms that they were using (Q.5) and how the students were using mobile and social media tools for learning prior to the experience in PoJ (Q.6 and Q.7).

Out of the possible 174 students who were enrolled in the first iteration of PoJ, 43 students (25%) participated in the voluntary survey. All 43 respondents who took part in the survey reported they were within the 18-25 year old age group. All respondents reported they owned a laptop, 91% owned a smartphone and a further 19% owned a tablet device. Most of the respondents (70%) reported they connected to the Internet on their devices using the university wireless network, while 21% stated they used their own 3G or 4G mobile plan to connect to the Internet. While a majority of the students preferred to connect to the Internet using the university wireless network, 79% of the respondents connected via their smartphone on a 3G or 4G mobile data plan. Figure 6.2 provides an overview of the use of social media tools by the students prior to enrolling in PoJ. Social media was predominantly limited to Facebook (98%) and watching
YouTube videos (84%). A further 28% of the students had used Twitter, 19% of the students were blogging, 16% of the students had uploaded videos to YouTube, and 14% of the students stated under the Other category of Q.5 that they were either using Tumblr or Instagram.

Students were asked in Q.6 if they were using social media tools for learning, to which 55% of them reported ‘No, I used it mostly for social purposes’ while 45% of them reported they used it ‘Both, for learning and social purposes’. In the follow up question, Q.7 students were asked to provide an example of how they had used social media for learning. An analysis of the responses given to the open-ended question indicated that students’ use of social media was limited to Facebook, YouTube, Twitter and Google Drive. Students used Facebook as a platform to subscribe to Group pages, ask students questions and to collaborate and communicate with group members. For example, one respondent wrote:

I usually use it to discuss assignments etc. with friends on Facebook, like if one person is stuck; it is an easy way to solve a problem. (Res_38)

Students used YouTube as a platform to access informative videos to learn content on a subject and to: ‘further [their] understanding of a topic’ (Res_37). The students used
Twitter to follow news agencies and journalists: ‘to keep up to date with current affairs’ (Res_9) and it led: ‘to papers and blogs about broadcasting and journalism studies’ (Res_6). Similarly, students used Google Drive as an alternative to storing files on a USB stick and for accessing the stored content anywhere for use when needed, as described by one student:

I used Google Drive to upload my work so I could access it anywhere. I did not have to worry about losing my USB. (Res_31)

The sample data provides a snapshot of the types of learner owned devices, use of social media, how social media is used for learning and the type of Internet connectivity. From the sample data it could be concluded that there was a high ownership rate of laptops and smartphones amongst the students, and a majority of the smartphones used were on a data plan. Most of the students preferred to use the institutional wireless network while on campus and Facebook was the dominant social media platform the students use. The use of social media for learning was predominantly limited to Facebook for communication and collaboration purposes and the students used YouTube for accessing and growing knowledge on a topic. The learner’s role outside of Facebook is predominantly that of a content consumer and the use of other social media tools for learning was driven by the convenience factor for easy access to content and support when needed.

The survey data, focus group feedback and researcher reflections were also analysed to evaluate the learning solution and to identify improvements for subsequent iteration—the findings are discussed in the section below.

**Participant feedback**

Participant feedback on the design and implementation of PoJ were sourced from the voluntary anonymous online survey that participants were requested to complete at the conclusion of the semester. This included one closed-ended question (Q.9) and five open-ended questions (Q.10, Q.11, Q.16, Q.18 and Q.19) to ascertain how the students perceived the learning experience (Q.9) in PoJ and to ascertain student feedback on elements they found useful (Q.10, Q.11, Q.16 and Q.18) and areas that could be improved in the second iteration (Q.10, Q.11, Q.16 and Q.19). Feedback on the design
and implementation of PoJ was also elicited from the three focus groups that were held at the conclusion of the course.

In response to Q.9 (Figure 6.2), 56% of the students indicated that their learning experience in PoJ was either ‘Good’ or ‘Very good’, 9% of the students indicated that the learning experience in PoJ was either ‘Poor’ or ‘Very poor’, while 35% were not sure about their learning experience in the course.

![Figure 6.2 – Q.9 How would you rate your experience in the PoJ course?](image)

Each individual response to Q.9 was then analysed in relation to the feedback provided by the students to questions 10, 11, 16, 18 and 19 to understand the influencing design and implementation factors. The individual themes arising from each response were then compared with other student responses to form themes and categories. The survey findings were then corroborated with the data from the focus groups. An overview of the positive categories and themes of the design and implementation of PoJ is provided in Table 6.2.

<table>
<thead>
<tr>
<th>Category</th>
<th>Themes</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course design (46%)</td>
<td>Social/collaborative learning</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td>Practical hands-on learning</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Self-directed learning</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Authentic tasks and activities</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>Assessment</td>
<td>3%</td>
</tr>
<tr>
<td>Facilitation (31%)</td>
<td>Lecture</td>
<td>28%</td>
</tr>
<tr>
<td></td>
<td>Feedback</td>
<td>3%</td>
</tr>
<tr>
<td>Learning environment (23%)</td>
<td>Mobile social media</td>
<td>23%</td>
</tr>
</tbody>
</table>
From the analysis of student feedback data, a number of elements relating to course design were identified. A majority of students (46%) indicated that the overall design of the course had a positive impact on their learning. In particular, the students identified the social and authentic elements of the learning design beneficial. The students valued the opportunity to be able to socially collaborate with their lecturers and peers in the learning process, for example, Res_9 stated the learning was: ‘lot more interactive and engaging’, similarly Res_13 commented:

The lecturers are engaged with the students, both in person and online which makes it easier to discuss and further our learning… the level of peer engagement and tutor involvement was a refreshing change from the standard lecture > notes > essay format.

(Res 13)

Students also valued the authenticity of the tasks and activities that allowed them to understand the role and experience of being a journalist. For example, Res_23 stated: ‘got a glimpse of what being a journalist feels like’, while Res_18 commented that it gave them an opportunity to: ‘learn what it is journalists really do’. Another theme alongside the social and authentic design of PoJ students valued was the practical and hands-on nature of learning: ‘less learning from the text and more learning from doing’ (Res_6). Res_31, however, commented: ‘…it was very practical but it also had a good balance of theory’. Similarly, Res_43 commented that the overall design of PoJ: ‘… encouraged me to do more stuff in the field that I feel I enjoyed doing and it gives me more knowledge and experience in dealing with my stuff’.

The students also valued the facilitation of PoJ. In particular, the students enjoyed the guest lectures where industry experts were invited every second week of the semester to share their experience and knowledge. The students appreciated the authenticity of the content shared in the guest lectures, for example, one respondent wrote that the: ‘lectures allowed the teaching of real life journalism’ (Res_17) and the authenticity of the experience shared enabled them: ‘… to apply some of the information in the lectures to my own personal work and news story’ (Res_6).

The use of mobile and social media tools in designing the learning environment for the students was an element that also impacted on student learning in PoJ. In particular, the students valued the social affordances of the tools for learning: ‘liked being in contact with the tutors through the blogs and Twitter, made feedback easy’ (Res_25), it allowed
access and connection: ‘the different platforms allowed me to access content and feedback’ (Res_33), provided a mechanism to translate journalism into practice: ‘the conversion of journalism through digital medium’ (Res_34) and acted as a cognitive tool in the learning process:

It [blog] helped me greatly, you don’t realise how much you are learning when doing your blog until you stop and think about it. (Res_38)

Areas for improvement were also identified from student feedback data (Table 6.3).

<table>
<thead>
<tr>
<th>Category</th>
<th>Themes</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning environment</td>
<td>Mobile social media</td>
<td>24%</td>
</tr>
<tr>
<td>Course design (51%)</td>
<td>Lecture-tutorial-assessment alignment</td>
<td>34%</td>
</tr>
<tr>
<td></td>
<td>Assessment</td>
<td>17%</td>
</tr>
<tr>
<td>Facilitation (25%)</td>
<td>Lecture</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Tutorial</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>Feedback</td>
<td>8%</td>
</tr>
</tbody>
</table>

A particular design element that many students commented upon was the lack of alignment between the lectures, tutorial sessions and the assessment (34%). Some of the students commented that the three elements were disjointed and did not provide them with a cohesive learning experience. While reflecting on the design of PoJ, Res_10 commented:

It was a little confusing having lecture/tutorial topics existing somewhat disjointedly from our news story task. There was a different topic for the lecture than there was for the tutorial and neither directly corresponded to our blog/story progress really. (Res_10)

A similar view was shared by Fiona:

I felt like it was a bit, kind of detached, the lectures said something and then it was only mentioned once, and not reinforced as much as I would have liked. (Fiona_FG2)

The students felt that the lack of coherence and flow between the lecture and tutorial did not help them prepare for the assessments (17%), for example, Res_41 shared:

The lectures and tutorials were pretty much irrelevant to the assignments. (Res_41).

Another area the students mostly commented upon was the two-hour lecture and one-hour tutorial time slot and proposed: ‘They should look at making it 1 hour lecture and 2 hour tutorial’ (Res_9), similar views were echoed in the focus group: ‘Longer tutorials, or maybe two tutorials a week that are broken up’ (Octavia_FG1).
practitioners also expressed a desire to change the lecture and tutorial format in the second iteration—decreasing the duration of the lecture and increasing the time allocation for the tutorial session. Another theme linked with the duration of the lecture and tutorial session was feedback (8%). Students felt that they did not have enough opportunity and time in the current setup to seek one-on-one feedback on their work from the lecturers:

I still do not have personal feedback on my blog because we ran out of time, and my name is at the bottom on the roll. (Clarke_FG1)

Similarly, Indra commented on the essence of having more time in the tutorial sessions:

It would be good to have a follow-up from the tutorial teachers quite constantly because we have so much going on’ and ‘it gives us more opportunity to ask questions. (Indra_FG1)

Along with the students, the practitioners also identified the need for more time in the tutorial session to allow for more face-to-face time with students and for providing formative feedback.

Another theme that emerged arising from lack of follow-up and feedback was procrastination. Due to the lack of feedback and follow-up, the students in the class knew that their work on the blog (assessment) was not being followed up and they left their postings to the last minute: ‘I think since a lot of students know they are not being followed up, they can slack off and leave it to the last minute’ (Octavia_FG1), while Finn shared: ‘I have definitely skipped a couple of questions [blog posts] and then done them next week, when I have had three or four to do at once’ (Finn_FG1). The practitioners also flagged this as an issue in a meeting at the end of the semester.

Another area for improvement identified from the feedback data was the use of mobile and social media tools for designing the learning environment (24%). Multiple sub-themes were identified, such as the conflict between social and academic use of social media, lack of network for collaboration, stronger pedagogical integration of the tools in class and technological support to help improve the integration of mobile and social media tools in PoJ.

When it came to using mobile and social media tools in PoJ, some students were conflicted between using the tools for social and academic purposes. Some students had
established personal behaviour and identity with social media tools prior to enrolling in PoJ, which was oriented for social and entertainment purposes. For example, one respondent stated: ‘I use it for friends not learning …’ (Res_22), while Lexar stated: ‘I made a twitter last year, so I could get Lady Gaga’s tweets on my phone’ (Lexar_FG3).

The students also shared concerns with regard to using Twitter as a platform for engaging and collaborating with the audience to seek feedback. For many students in the course, Twitter was a new social media tool they were required to sign up and use. The ‘challenge’ they alluded to in the focus groups and survey response was the lack of interaction or an already established network of people: ‘the use of Twitter for this project [assessment] was awkward, we tweeted and nobody replied’ (Res_2). While some students had been using Twitter for a while, they still found engagement on Twitter difficult, as described by Jaha:

> When I started [PoJ], I already had 150 followers. But I was still facing the same problems as everyone else. I have all these followers, but no one is talking. (Jaha_FG2)

A number of students stated that they would have liked more technological support and time to learn how to effectively use the mobile and social media tools integrated in the design of PoJ for learning. For example, students stated:

> …people are not aware about it and it is quite a lot to take on when you are learning WordPress. I feel like I am 75-year-old woman and I do not know what I am doing. (Octavia_FG3)

> Letting us know early, and actually teaching us how to use it a lot earlier on. (Indra_FG1)

Some students also shared that a tighter integration of the use of mobile and social media tools in class and activities would have helped them with understanding the use and application in learning. For example, Abby_FG3 shared an alternative approach to learning journalism ethics:

> We sit in class, and we talk about codes of journalism and ethics…But we do not actually go out as a class, and learn in the class, outside. It would be great if every couple of classes, it was like, ‘Right. You have to go outside and find a story. You have 15 minutes. Come back’. (Abby_FG3)

The researcher, in the role of technology steward, also identified areas for improvement. The researcher’s reflections are discussed in the following section.
Researcher's reflections

The researcher’s reflections were documented using Google Docs. The reflections were based on observations of the tutorial sessions that were attended on a weekly basis, the lecture sessions and questions received while with the students in tutorial sessions and lectures. Reflections also captured pedagogical discussions with practitioners, and student interactions and conversations on Twitter and blogs.

The researcher’s reflections resonated with many of the issues shared by the participants. In particular, the lecture-tutorial and assessment alignment issue, feedback and assessment issues and issues related to the use of mobile and social media tools were recorded.

It was noted in the researcher’s Google document that while the guest lectures were informative, the format was difficult to work with because the actual content of the lecture was not known until the day it was delivered. This caused further complications with planning for the tutorial sessions and it was hard to maintain continuity in the structure and flow of the information and content covered during the semester. While the need for a tight integration of the lecture, tutorial and assessment is highlighted here, it was also noted by the researcher that the lectures were not designed to ‘spoon-feed’ the students with information, rather to provide a narrative on which the students could build their own understanding and knowledge. As a result, lectures were designed to scaffold student learning—scaffolding at its highest level is not direct instruction (Verenikina, 2008), but this is perhaps what some of the students were expecting in the course. According to Verenikina (2008), ‘If scaffolding is understood as direct instruction, it can become a hindrance for children's development as active, self-directed learners.’ (p. 175)—learner competency that is critical in facilitating a heutagogic learning experience.

The one-hour tutorial sessions were also noted to be an issue because they did not allow enough time for any sort of engagement with the students apart from what was planned for the hour. This restricted the time the teachers had for feedback or to follow up with the students and the work they were doing. This also created a problem with providing students with technological help and guidance. A lot of information and help was
rushed in the couple of minutes at the end of every tutorial, which was not conducive for student learning. Due to the guest lectures, the tutorial sessions were noted to be doing a ‘patch-up’ job to cover the topics relevant for that week.

Two of the three lecturers in the first iteration of PoJ were part time staff, and the lack of time during the tutorial slots meant they did not have any further time allocation to follow up on student work and provide feedback.

A note was also made about the timing and the due dates of the assessment. While the students were expected to be blogging weekly and reflecting throughout the semester, the blog posts were not monitored until Week 8 and not assessed until Week 12. The weekly blog posts were meant to inform the final story but because there was no deadline set for the posts, many students procrastinated on posting anything until the second half of the semester. The researcher also noted that WordPress did not provide enough flexibility and customisation options to the students to be able to put together a published and refined web-based multimedia story. The students struggled to format the font and paragraph styling to personalise and emphasis elements of the news story they were reporting.

The students’ struggles to understand and use mobile social media was also noted. A key observation made by the researcher was that the students had preconceived ideas and established social identities on social media. The students hence had to first rethink and strategise about what they had to do differently in order to reconceptualise their use of mobile and social media tools for learning. It was also observed that students did not have any issues learning how to use the technology once demonstrated, but they struggled to understand the pedagogical use of it for learning. As a result, another observation noted was that the modelling of mobile and social media tools in class by the teachers and technology steward had a direct impact on the pedagogical use of the tools by the students.

The researcher also noted that the distributed support and modelling set-up where each practitioner had to set up and run their own WordPress site was not effective and led to uniformity issues with regard to information and resources shared with the students.
Recommendations for improvement

The findings from participant feedback data, practitioner and the researcher’s reflections were corroborated to identify the areas for improvement for the second iteration. The issues and recommendations for improvement of PoJ are described in Table 6.4.

Table 6.4 – Issues and areas for improvement in the second iteration

<table>
<thead>
<tr>
<th>Issues</th>
<th>Recommendations for improvement</th>
</tr>
</thead>
</table>
| Lack of structure and continuity between the lectures, tutorial and assessment events | Minimise the number of guest lectures to allow more time to convey the important elements of a given topic to the students.  
Relate the weekly readings to the content covered in the lecture.  
Plan the tutorials to reflect the narrative conveyed in the lecture and what the students were asked to read and research.                                                                                                                                                               |
| Assessment – the timing and deadlines of the assessment               | Put a deadline for the weekly blog posts required from the students to ensure work is done on time and not left to the last few weeks of the semester.  
Rearrange the assessment deadline and split the news story into two assessment events:  
• students to submit a draft of the news story in Week 6  
• feedback to be provided to the students on the draft news story and blog posts after the mid-semester break in Week 7  
• push the due date for investigative report from Week 6 to Week 10  
• the assessment (the web based multimedia news story) revised with the feedback received in Week 7 and blog posts to be submitted in Week 12.                                                                                   |
| Lecture and tutorial time slots                                        | The time allocation for the lecture and tutorial sessions to be revised. The lecture sessions were to be allocated one hour, while the tutorial time allocation was to be made two hours to allow time for an interactive and informative tutorial session.                                                                                             |
| The students felt they were not being supported in their learning through feedback and follows | More time during the tutorial sessions to be utilised for overall class feedback on weekly blog posts and individual student feedback.  
Explore avenues to increase part-time lectures’ hours to allow time for blog follow-up and feedback.                                                                                                                                                                                     |
| Students felt there was a need for better technological support       | 15-20 minutes to be set aside in each tutorial session to help students with any technological problem and to support them with any other technological need.  
Send a welcome email and instructions for setting up and using the core tools in PoJ (WordPress and Twitter) a week before the semester starts.  
Support the students with setting up the core tools in the first 2-3 weeks of the semester.  
Set up a technology ‘How to …’ web page or blog for students to refer to when needed.  
Update the course handbook with a link to the website/blog address.                                                                                                                                       |
<table>
<thead>
<tr>
<th>Issues</th>
<th>Recommendations for improvement</th>
</tr>
</thead>
</table>
| Failure to understand and conceptualise the use of mobile and social media tools in learning. | Help students understand and transition from social use of mobile social media to the application and development of technological and pedagogical knowledge for learning by:  
  • clearly stating and explaining expected use of mobile and social media tools early in PoJ in lectures and tutorials  
  • planning tutorial activities that engage the students to use mobile and social media tools in class  
  • getting the practitioners to demonstrate and model effective use of mobile and social media tools for learning in collaboration with the technology steward  
  • sharing and discussing exemplars of appropriate use of mobile and social media tools by journalists and news agencies in tutorial sessions as a mechanism to help students conceptualise pedagogical use of the tools  
  • setting up a PoJ webpage or blog and Twitter account as a platform for scaffolding student practice through collaborative modelling of the tools on these platforms  
  • providing a list of 5-10 journalists on Twitter from around the world for the students to follow. |
| Students had difficulty in establishing a network for collaboration and communication | Encourage the students in PoJ to follow each other.  
Explore ideas and tools to collate and display all student blog posts as a class list to increase blog visibility to students to increase opportunities for collaboration.  
Share techniques with the students on how to publicise and amplify the network effect of Twitter in order to build a network of people for collaboration and communication. |
| The students faced customisation and formatting limitations with using WordPress to compose the final web-based multimedia new story | Explore alternatives to using WordPress for creating the final multimedia based news story that allows learner freedom to create a published product (news story) as part of the assessment. |

Data, in particular the survey, focus group and interview data, and student and practitioner artefacts were further analysed to evaluate the impact of the draft design principles on the learner and the learning experience.

**Evaluating the design principles**

**Data coding and analysis**

Iterative rounds of data reduction and display began with analysing and coding the data based on the priori themes for each draft design principle using NVivo. The units of data coded to each theme were then compared for similarities and differences. Finally, the patterns in the codes were combined to form categories and their properties—these are discussed in the following section.
Design principle 1: Learning as participation, personalisation, and productivity

As elements of the first design principle, the use of the affordances of mobile and social media tools (such as learner owned mobile devices, WordPress and Twitter) were embedded within the design and facilitation of the PoJ course. This provided the students with an opportunity to utilise the affordances in the learning process over 12 weeks. A particular emphasis in the design and facilitation of PoJ was placed on integrating mobile and social media affordances that encouraged elements of learner participation, personalisation and productivity (McLoughlin & Lee, 2008d).

The themes that emerged from the analysis of the data relating to each of the elements are discussed below.

Participation
All the students in PoJ were required to sign up for the core tools in the course – WordPress and Twitter. The students were encouraged to post updates on Twitter during the course using the class hashtag and to link their blog and Twitter account to enable automatic status update every time a blog was published. The design of PoJ placed an emphasis on enabling a learner-driven process where students had the autonomy to determine their own learning path enabled by mobile and social media affordances. From the analysis of the data, emerging themes provided an overview of how the participation element of PoJ impacted on the learning process and the learner. Each of these themes – Enabled the formation of an organic learner-community, Enabled collaboration with experts and Enabled true-collaboration with the teacher – are discussed below in detail.

Enabled the formation of an organic learner-community
Over the duration of the course, the use of the class hashtag helped build an online learner-community. The learner-community organically evolved over the duration of the course through learner participation and interaction. All Twitter hashtag activity over the 12 weeks was archived and analysed using Tags (Hawksey, 2015) to understand learner interaction and activities within the community. The network
The network diagram (Figure 6.3) provides an overview of the level of engagement and interaction between the members in the community. The solid line in the diagram represents conversations between the members, the grey dotted lines represent a reply in response to a tweet where other members of the community were included in the conversation and a blue dotted line represents tweets that were re-tweeted or re-shared by a member in the community. The size of the font in the network diagram indicates how active the member was in the community. A total of 997 tweets were shared in the community over 12 weeks with an average of six tweets per learner in the class. This
number excludes Twitter updates personally shared between the members without the hashtag.

An analysis of the use of the hashtag and data from the interview and focus groups indicated that the learner-community that evolved as a shared space created by the learners in PoJ was beneficial in the learning process. One participant commented that: ‘it enabled a greater degree of interaction and communication between the learners’ (Finn_FG1), while another added that the interaction and communication between the students led to: ‘increased interconnectedness between the students’ (Clarke_FG1).

**Collaboration beyond boundaries**

From the analysis of the Twitter hashtag archive (Figure 6.3), a total of 220 people participated in the community that was created. These 220 people referenced or invited another 368 people as collaborators who were indirectly related to the community.

An analysis of the tweet and location of the people participating indicated that the community had a world presence. People from across the world were conversing and informing student work by engaging with the Twitter hashtag. Participant addresses were mapped onto a Google Map to identify the spread of the members across the globe (Figure 6.4).

![Figure 6.4 - Members in the Twitter community from across the world](image)
The majority of the people who engaged with the hashtag were based in New Zealand, however, several people based in England, Ireland, the Netherlands, Egypt, Canada, Australia, Philippines, China and Japan also formed a part of the community.

**Provided opportunity for sharing ideas**
The learner-community provided space and opportunity for the students to share and exchange resources and ideas to support learning. The following is an extract from a student’s blog that was cross-posted to the learner-community using the hashtag. It discusses ideas for assembling the final news story including examples of how a similar news story was composed by the Guardian (www.theguardian.com) and Brightside (www.brightknowledge.org):

I will be referring to this Guardian (http://www.theguardian.com/lifeandstyle/2009/sep/30/children-leave-home-university) news story from 2009 as well as an article from Brightside, should you stay or go (http://www.brightknowledge.org/knowledge-bank/independent-living/starting-university/should-you-stay-or-go). These two articles are both similar to the idea of the story I am working on … (Chris_ART_Blog)

Similarly, Siti shared ideas and tips for writing an investigative report (the first assessment) with other students in PoJ:

While writing a report, many aspects are important to provide the reader with a clear and strong argument. A good introduction should outline the topic, and provide a thesis statement regarding the report’s stance … (Siti_ART_Blog)

**Enabled collaboration between students**
The learner-community acted as a platform that enabled collaboration amongst the students to help inform each other’s news stories and learning. An instance of the collaboration between the students in PoJ to build a story was captured in a reflective blog post that was shared by Tara:

Here’s an example of some great feedback [Figure 6.5] from my peers on a question I posed… (Tara_ART_Blog)
Similarly, Teresa shared another instance of collaboration with a peer in the class for building the news story:

Fellow journalism student [Hillary] has been researching a company called Global Mode. There has been a major shift in how people are obtaining their TV shows and their movies. [Hillary] led a discussion via Twitter that highlighted some of the effects that online media is having on broadcast television. As I have an interest in the subject, I decided to participate. (Teresa_ART_Blog)

The learner-community also enabled the students to provide and seek feedback from other students in class when direct feedback from the teachers was not available. The students were able to message other students in class requesting them for their opinion and feedback on their work:

In my particular tutorial group, we haven't had a really high level of feedback on our blogs, and so I've been seeking opinions from other students, ... I've kind of driven my own feedback too. (Maya_INT)

Another student mentioned:

I found Twitter useful to help other people with their stories. I used it to tweet other people about their news stories and see what's going on with them and how their story is developing. (Nia_INT)
Visibility of student work as a catalyst for collaboration and higher cognitive processes

The learner-community resulting from student interaction and sharing of work on a daily basis created a high degree of visibility—visibility of student work and content to everyone in PoJ. The students felt that the visibility and ability to access other students’ work encouraged collaboration and provided scaffolding:

…it creates a bubble of information, rather than you going at it alone trying to get information that you're looking for, you're connected constantly through your peers, who are doing the same thing. It brings connectivity to everybody and makes it easier to get the things that you need. (Bellamy_FG2)

One student commented that visibility enabled scaffolding, as he was able to look at what others had shared and use the information to move forward in his learning:

I follow students on the [class Twitter] hashtag. I'd go and read their blog posts. If it's one of the compulsory questions, if I was a bit stuck I was able to easily go and read what another student had done. … it was just giving me an idea, jogging thoughts and stuff. Everyone was able to help everyone through the social media. (Chris_INT)

The visibility of all student work in PoJ also provided students with the ability to examine their work in relation to others. Herrington et al. (2010) state that when students explore a task or a problem from multiple perspectives it broadens learner understanding and engages higher cognitive processes. The visibility of student work in blogs and tweets in the PoJ community provided students with a range of different learner opinions and perspectives that created ‘cognitive conflicts’ (Piaget, 1952). This widened learner understanding and acted as a catalyst that provoked higher cognitive processes in the students. One student commented that the visibility of shared student work allowed her to look, analyse and model ideas to integrate in her own work:

…looking through some of their stuff. I wasn't copying, but they gave me ideas, the way they did it, something they said. I was like, okay I can do this as well but in another way. I think that everyone else doing it gives you ideas as well, you feed off everyone. (Indra_FG1)

Other students expressed the view that looking at others’ contributions informed their own learning:

I liked being able to look at other people's work, even though it's not really relevant, it's nice to see what other people are doing especially with the weekly questions, to see what they've written, you can learn from other people quite easily. (Emori_INT)

Another element related to the visibility of peer work in the community was that the students felt motivated to complete their own task, and felt they had to do better, or create something unique compared to other students in the class:
The fact that we were all blogging and we were all connected to each other was really motivating to see other people - motivating and terrifying, because it's like every time someone else posts something, I'm like, man I need to go post something. Then I'm like crap they posted really good stuff. (Clarke_FG1)

Similarly, another student commented:

…looking at other people's stuff, you push to have something that's unique. You want something that's different to everyone else…I want to do this not always better but in a different perhaps another way. (Finn_FG1)

One student commented that she liked this process of being able to see, compare, and borrow as it enabled her to produce the best output in the learning process:

I kind of like that because it brings out the best content. (Indra_FG1)

**Provided opportunities for collaboration with subject experts**

The increased level of connectivity afforded by the use of communication tools in PoJ enabled the learners the opportunity to collaborate with subject experts in order to build an understanding of the topic they were writing the news story on:

I emailed [Mayor of Auckland] he actually replied…he gave an official statement of support for it. And I also emailed a professor over at Auckland Uni who did some work on the history of Auckland city… (Maya_ART_Blog)

Similarly, students used the affordance of Twitter to connect with current journalists to gain their view and feedback on the story they were writing:

I tweeted 3News journalist [John Smith] about the reopening, he said he is looking forward to it. [John] is based in Christchurch, so I gather he would have an attachment to the theatre and the rebuild. (Milly_ART_Blog)

After careful examination of student blogs from volunteering students, multiple examples of collaboration beyond peers and teachers were identified. Several students collaborated with current members of parliament, mayors of towns and cities and subject experts such as psychologists and nutritionists depending on the news stories they were writing.

The ability to communicate and interact with experts and journalists during the course was viewed by the students as adding credibility to what they were learning:

…there have been voices from the industry throughout the course, meaning there is a level of credibility involved when learning about being a journalist in the modern world. (Res_13)
Similarly, students viewed the opportunity to collaborate and elicit feedback from experts they were working with as a critical element that enabled their learning and provided them with guidance to be able to grow as a learner:

What was also quite empowering and helpful, is actually having that opportunity to do it, like opened up to a whole new world. I can put things out there you're going to get people who are going to give you constructive. I think if you are going to grow, you do need that constructive criticism that maybe your Facebook friends won't...

(Octavia_FG1)

One participant commented that being able to follow journalists on Twitter provided him with an opportunity to learn by observing their behaviour and what they were sharing. He concluded that it helped him bridge his learning between learning in the classroom, real life learning and how to be a journalist:

…you actually learn a lot about their mindsets, their thinking, who they actually are as people. And that helps me to be able to find out what kind of journalist I want to be. It's just really opened me up and it's taken the learning more from an experience of classwork to real life learning actually learning how to be a journalist for me.

(Chris_INT)

**Enabled true-collaboration between the teacher and the students**

The underpinning principle in designing PoJ and for enabling participation in the learning process was to scaffold the learner from being an inactive and passive agent of learning to being an active participant and creator of knowledge and content. The role of the teacher in the process is to be that of a ‘true-collaborator’, where the teacher is actively involved and acts as a learning partner regarding the content and the learning process (Hase, 2011). Blaschke (2013) explicates that learner experience with learning using social media platforms ‘will be more customisable and specific to the learner’s true needs …’ (p. 62), where learners are able to drive their own learning and require authentic or true input and guidance from the teachers when required.

The integration of mobile and social media tools enabled opportunities for ‘true-collaboration’ between learner and teacher regarding the content and the learning process:

It's been good to be able to interact with the tutors on Twitter and on the blogs. To be able to keep up with them, so if you've got a question at any time during the week, you can easily ask them. (Jaha_FG2)

The students were able to use the tools to gain instant verification on their work:

It gives you instant verification that the work you're doing is of quality. (Bellamy_FG2)
The critical role of the teacher and true collaboration was highlighted in a post from a participant who was composing a story about youth voter numbers during the current election. The participant had tried two different ways to compose a newsworthy story, but after a few attempts, requested guidance from the teacher to recompose the news story:

Finally! An Angle [for the story] Unfortunately the deadline for this story is approaching faster than the electoral commission can process the demographic statistics. So instead of a ‘rise in youth voters’ or ‘continued decline in youth voter turnout’ angle, with guidance from [Teacher_3], I have decided to form an angle based on the downward trend of youth voter turnout from 1996 to 2011... (Scott_ART_Blog)

While the students were able to gain guidance and feedback on the self-directed processes they were working on, the use of mobile and social media tools also enabled the teachers to collaborate with the students on common issues and questions by posting helpful resources and content:

![Image](11 QUESTIONS... wp.me/p4PIQh-2g)

Figure 6.6 – Just in time resource to help the students (Teacher1_Tweet)

In the extract above (Figure 6.6), a teacher facilitating PoJ shared a blog post on Twitter with the 11 most common questions that were received from the students in a week regarding the news story the students were composing.

Similarly, teacher participation in the Twitter hashtag community was also analysed using Tags (Hawksey, 2015). The teachers were amongst the most prolific conversationalists in the community along with the technology steward (the researcher). Further analysis of the teacher and technology steward conversations in the community indicated that they used the mobile and social media tools to guide student learning, share resources, provide feedback and support the students with using the tools and technological issues.
From knowing to being

The facilitation of PoJ underpinned by the affordances of mobile and social media tools—in particular the mobility of the learner and the ability for others to participate with the students and the students ability to participate with others helped the students to move beyond ‘knowing’ to ‘being’—facilitating an ontological shift (Dall’Alba & Barnacle, 2007). The ability to participate with authentic entities such as people, communities, events and places enabled the students to embody the practices of journalism that helped them reconceptualise learning from being a student to acting like a journalist. For example, Nyko explained how engaging in an open online community helped her achieve a change in mindset because whatever was shared was visible to all members:

…knowing that it was public changed my mindset…you couldn't say, ‘Oh, we'll just write it like a normal essay’…But knowing that it's public, it's different... (Nyko_FG1)

Another participant commented that knowing people from outside the class were reading what they were sharing and following their blog helped her achieve the conceptual change in the learning process:

As soon as you start getting followers and people commenting on your stuff, you're like, oh, my god. People are actually kind of noticing. (Clarke_FG1)

Similarly, another student commented that the participatory nature of learning, in particular the process of composing the news story required her to view herself as a journalist and not as a student because the latter was not going to help her become what she wanted to become:

I don't see the point of referring to myself as a student if what I want to be is a journalist. I think that's actually going to hinder more than help me when I'm trying to get out there. (Teresa_INT)

While another student utilised the affordances of the tools to participate in an organised event in Auckland City protesting against oil exploration and drilling. This provided her with the opportunity to be a reporter of the event as a journalist on Twitter and YouTube (Figure 6.7):
The personalisation element in the design of PoJ aimed at providing the learner with autonomy to choose and direct their learning according to their learning needs. The design and facilitation of PoJ did not impose a strict curriculum or a set learning path. The students were given the freedom to write any news story based on the street they lived on, or upon discussion with the teachers, any other story of interest. The entire learning process in PoJ was centred on the students creating the chosen news story as the main agents, enabled by the affordances of mobile and social media tools.

From the analysis of the data, emerging themes provided an overview of how the Personalisation element of the design impacted on student learning. Each of these themes – Learner-driven participation in and across online communities, Autonomy sparks passion and self-directedness, Autonomy over the use of social media tools and mobile devices, Blogging as conduit for self-directed learning and reflection, Use of social media as a basis for the formation of online identity, Learner created and driven communities for learning, Learning continues beyond the course – are discussed below.
Learner-driven participation in and across online communities

The use of mobile and social media tools enabled the learner to access other pre-existing online communities through which they were able to elicit valuable feedback and opinions to build on their news stories:

I decided that I would post on a local Facebook group, asking for opinions and experiences relating to the Long Bay subdivision. This turned out to be a very good move. I have had over 30 comments on this post. (Susie_ART_Blog)

In the quotation above, the student was able to engage with and gather opinion from people on a Facebook group on issues related to her news story. Similarly, students could search the Web and other social networking services to engage with people and community members to collaborate on the news story:

I have been using the Neighbourly (https://www.neighbourly.co.nz/) website. The Orakei Neighbourhood Watch use the Neighbourly website to report suspicious behaviour or even ask for help from the community. (Kai_ART_Blog)

Some students used Twitter and existing hashtags to interact and collaborate with people to elicit the necessary information and comments to assemble a balanced news story:

Figure 6.8 – Community on Twitter using the hashtag (Kala_ART_Tweet)
Kala, in the extract above, (Figure 6.8) used the hashtags #nzpol and #nz to capture the attention of people tweeting using these hashtags in order to elicit their opinion on waste water discharge in Manukau Harbour.

Similarly, students utilised other online communities such as the first year at university Facebook Group page set up by a student to seek guidance and advise to scaffold their own learning:

I've been apart of it since the first week I think. And it's the best thing ever because everyone comments on it when they're struggling with assignments when they don't know who to reference, if they have a reference and they don't know where it's from. It's really interesting in terms of learning. (Kylie_INT)

**Autonomy sparks passion and self-directedness**

In the design and facilitation of PoJ, students were given freedom within the limitation and requirements of a credentialing university. The increased autonomy of the learner in the course sparked passion, which in turn helped students take ownership of the learning process:

It made it so much easier because you're doing something that you interested about. That was the good thing about when they gave us free range. If you have something you're passionate about, you're much more likely to want to talk about it and express your feelings about it. (Kurtis_INT)

The same student also commented on the difference between being told to do something as part of the learning process and having the option of making personal choices:

If you're [given only] three options and then write your story and you're like, oh I don't really like any of those things. If you have something you're interested about, your skills are probably better shown to the lecturers, and probably it just has a snowball effect. (Kurtis_INT)

According to another participant, autonomy directly impacted on one’s ability to choose something they were passionate about and what they wanted to become:

It's just more tailored to what I possibly want to do. If I'm covering stories about sport, and I don't want to be covering stories about sport, it's kind of pointless. (Emori_INT)

Similarly, students also commented that having autonomy encouraged them to be self-directed in the learning process:

The subject choice was my own and that the way I went about researching and basically everything to do with my individual story that was definitely all my own self-directing, even down to how you use the blog, producing the blog, talk to people on social media - that was all self-directed. (Maya_INT)
The students stated that the self-directed processes in PoJ allowed them to reflect and identify their weaknesses and then seek resources and information to learn without having to rely on the teachers:

You can assess yourself in what you know and what you don't know, and then learn for yourself rather than being taught what you know. (Emori_INT)

Another student commented that self-directed learning allowed him to grow his knowledge and develop as a person:

It extends your learning a lot, being able to be stand out on your own and it helps you grow as a person more than anything…(Kurtis_INT)

**Blogging as a conduit for self-directed learning and reflection**

One of the core tools and critical in the design and facilitation of PoJ was the use of WordPress as a blogging platform. All students were required to create a blog and to publish weekly blog posts. The students in PoJ viewed blogging as a process that enabled self-directed learning:

I always call it student-driven more than anything, because they have to make a blog and blog everything you do, whatever you do… (Marcus_FG2)

Another student commented that having a blog encouraged her to post and collect as much information as she could while knowing and being comfortable with the fact that she may not use all the resources and information she had collected in the final story. She felt blogging provided her with a degree of openness to be able to do that:

It's a skill to pursue a lot of ideas, rather than what you initially think is going to be your best idea. Now, I'm like, oh, and I could also interview someone who lives there. And I can write to [the Mayor], and I can write to this person and knowing and being comfortable with the fact that you might not use half of those in the actual story, but just getting a huge breadth of stuff that you could use especially because we have the blog, it really encourages you to do that. (Clarke_FG1)

Similarly, another student commented how the use of Twitter and in particular blogging gave him a sense of ownership and the ability to express himself and his passion for what he was doing:

…more you got into it and the more personalised it became like when you started to put you into your blog, it felt a lot more you, and a lot more pride went into it because you're addressing people about you. (Kurtis_INT)

Reflection and articulation are critical in the learning process as it enables the learner to create new meanings from an experience (Herrington et al., 2010; Mezirow, 1990). Schön (1987) outlines two instances of reflection that inform the process of knowledge construction—reflection on action (after an experience) and reflection in action (during
the experience or event). In the design and facilitation of PoJ, opportunities for
articulation and reflection were provided through the weekly blogging tasks and from
the news story. Students commented that blogging provided them with the time, space
and an appropriate format to be able to reflect:

It helps you lay everything out and gives you time to reflect. (Chris_INT)

I enjoyed having the blog as a way to reflect and share information with other students. It has helped me develop my story and made me aware that making a news story can be a long, thoughtful process. (Paeru_ART_Blog)

Another student commented that it was a faster way of capturing reflections and she preferred the structure and the layout of how the posts on the blog flowed:

And it's way quicker. I like the format. It makes sense, in my head, to look at a blog rather than to keep solid documents that I've written. (Maya_INT)

Similarly, another student commented that she felt blogging provided a process that provided continuity of thinking during the course:

It's been quite good having to document the process right throughout, rather than getting to the end and having all this information that you've got. And then having to do something with it at the end. Instead you've got a process. (Fiona_FG2)

Students also commented that blogging raised awareness of elements that were missing in their news story and also helped them identify their strengths and weaknesses:

I found the blog very helpful in highlighting weak spots within my story and making me aware of exactly what I was missing and where I needed to go next. (Lucy_ART_Blog)

Similarly, student comments on aspects of blogging also provided a picture of how blogging encouraged elements of reflection on action. For example, one participant stated how the blog enabled her to learn about herself and her journalistic style:

It gives people an opportunity to look themselves and their own journalistic style. It does give people the opportunity to explore that side of it. (Teresa_INT)

Some student comments also provided a glimpse of how blogging aided the reflection in action process. From example, one participant stated:

It's good to be able to narrate what you've discovered. So you get a bit of information and be able to write about it, instead of just showing information. (Thelonious_FG2)

Another student stated how his own experience and writing a blog informed his reflection in action process:

When you're actually sitting down, and today I've been out and interviewed two people about this and you're writing that out, you're actually reflecting on what's happened and putting it in your own words. (Chris_INT)
Similarly, other student comments reflected how blogging aided the students’ ability to articulate and interweave their reflections in action and on action:

I like recording everything because it means you can go back later, like I’m going back now on what I’ve written in the past and say, ‘I mentioned this person earlier and I just forgot about it.’ So, you know, you can go back and reflect and also reflect on what you did. Like I would have done a few things differently in my first interview, but I know that because now I keep track of it. (Maya_INT)

**Use of social media as a basis for the formation of online identity**

The use of WordPress as a blogging platform and Twitter in PoJ gave the students an opportunity to build their online identity. The students felt the visibility of what they were sharing in the public domain made them question their past practices and consider future repercussions:

I think it's like the composing of tweets and stuff thinking about who's seeing it, so when you publish something, you have more of a frame reference to the future and the repercussions of it, rather than just spitting out ideas … (Thelonious_FG2)

Another student commented:

I went back about a couple of weeks ago and deleted a whole lot of old tweets I made because they were just things that I don’t want other people seeing. It's definitely my professional life now - Twitter. It's opened my mind to the fact that if I become a journalist, it's going to be a huge part of my life. (Chris_INT)

The students felt that the use of these tools (Twitter and blogging) provided them with an opportunity as journalism students to create a professional persona, a personal presence and identity on the web. They stated that all they needed were ideas and motivation to achieve this:

Before I did this course, I had no conception of an industry presence before graduating and that it could even happen. All you need is to be motivated and to have ideas. And you can be doing stuff, and so what if no one reads it and no one picks up on it. At the very least, you've got something to tell an employer later on in your life… (Clarke_FG1)

Another participant expressed the importance of having an online identity and his prospect of getting a job as a journalist in the future:

Being active on the world wide web on the internet gives you the chance to make something. If we don't have that online presence, if we don't have the blogs and the Twitters, there's no way we'll get noticed. I think the whole thing about being a student journalist is being noticed, because there's a whole lot of us coming out. There might be three jobs at the end of it, we have to be noticed when we're early on which gives us more of a chance. (Chris_INT)
**Autonomy over the choice and use of social media tools and mobile devices**

In the design and facilitation of PoJ the use of WordPress, Twitter and learner-owned smart devices such as phones and tablets was encouraged, however, students commented that they also used other devices and social media platforms in the learning process:

> I used Facebook to contact friends for opinions. My news story is about students, so it was easy to talk to a lot of students on Facebook friends I've already made. It was a bit more of an informal, personal level I used Facebook. (Chris_INT)

> … because it is just so much easier and you can put it onto your computer really easy. And my phone is not that great so if I press 'play' on a recording, I can't go back like two seconds or whatever. I have to wait. I have to either go back to the start, or do that kind of thing. But on Zoom I could do that. I could fast-forward, go back and stuff so. (Indra_FG1)

In the extracts above, separate instances of different use of social media platforms and mobile devices are given, in particular Facebook and the use of the Zoom recording device. Also reflected in the extract are the reasons why students used the alternative platforms and devices. The students were driven by the appropriateness of the services and tools for the task they were performing. For example, in the first extract, the participant used Facebook because of its popularity with the students. Similarly, in the second extract the participant identified the lack of processing power of her phone and the ease of transferring the content from the Zoom device to the laptop as the main factor. Another participant commented on the appropriateness of the choice of the platform for what she was trying to achieve:

> I used Facebook and maybe surveys because I always think there's a place for general population opinions. It's not a professional opinion, but if you're going to make a statement, a lot of people think you have to be able to prove that a lot of people do think that. (Maya_INT)

Students also commented that the lack of followers on Twitter was another reason for using Facebook:

> I did use Facebook only because I knew I'd generate a good response and I don't have a lot of time and I didn't have a good Twitter following. (Octavia_FG1)

**Learner created and driven communities for learning**

The learners were able to utilise the affordances of mobile and social media tools to create and engage with people who shared similar concerns or had interest in the news story the students were exploring as part of their learning in PoJ. The ability and ease of establishing a network on social media tools such as Facebook and Twitter, provided
the students with the opportunity to start a community and nurture relationships to learn
from the members:

I've been going and forming my own connections. So I've now formed a network of
people that I can go back to, when I'm older and a journalist, and rely on those people as
sources. (Abby_FG3)

The students also created hashtags for the stories they were working on to create a
following that eventually led to the formation of a community over time based on a
topic to harness opinion and feedback for their article and learning:

I've used a couple of other hashtags that aren't [the class Twitter hashtag], just to see if
it could generate interest from other places. Because on my blog, that definitely
worked: putting in a lot of hashtags, I got interest from people who aren't in the course,
which was cool. (Maya_INT)

An analysis of the Twitter hashtag community used by a majority of the students in PoJ
showed that apart from the main hashtag for the course, the students used and created
161 other hashtags in an attempt to either connect with an active group of people on an
already established community, or created a hashtag to form a community around their
topic of interest. For example, Emori started a Twitter conversation (Figure 6.9) with
the hashtags #Napier and #NZ. Emori’s news story was based on Napier as a tourist
town. The hashtags enabled Emori to engage with members of the public interested in
the news story she was writing. As a result, people replied to Emori’s initial tweet and
answered the question: ‘What makes Napier a tourist town?’ The engaging members
also used other hashtags on top of the hashtags Emori used. For example, #artdeco
amplifying Emori’s tweet further on Twitter. As a result, she was able to establish a
temporary community with six people to inform her learning.
Learning continues beyond the course

Some students felt that the stories they composed and published on their blog could be redeveloped into a feature article and it was something they contemplated doing after finishing PoJ. For example:

This is very much a building story, there is no real end or resolution to the story, however it sets up for a continuing story and I may even be interested in following up in the future with a story showing what the outcome of this palaver will be.
(Micki_ART_Blog)

I certainly was not expecting this level of response on my small little story when I started off. It has got me thinking that perhaps I could continue to work on it over summer and see if any local newspapers would be interested in it.
(Kala_ART_Blog)

Themes also emerged from the analysis of the data relating to the productivity element of the design principle. These themes provided an overview of how productivity impacted on student learning.
**Productivity**

The productivity element in the design and facilitation of PoJ attempted to reconceptualise the role of the student from being a consumer of content and information, to being a creator of content and knowledge in the learning process. As such, the design of the learning tasks and activities in PoJ was centred on the students creating content underpinned by the affordances of mobile and social media tools. The students were required to publish a minimum of 10 blog posts by the end of the last week of the course that included a student-created video, photographs, social media discussions and hyperlinks. Similarly, as part of the final assessment task the students had to create a web based multimedia news story using the resources published on their blog.

The themes that emerged after the analysis of the data provided an overview of how the productivity element of PoJ impacted on the learning process and the learner. Each of these themes – **Students as creators of content**, **Enabled learner creativity in the process** and **Students as creators of contexts for learning** – are discussed below in detail.

**Students as creators of content**

At the end of PoJ, 28 blogs from volunteering students were analysed to understand how the students reacted to the productivity element of the design. While the students were only required to publish 10 posts as part of an assessed event in PoJ, an average of 19 posts were published by the volunteering sample. The 28 volunteering students published a total of 527 posts with the highest number of posts from a single student at 36 and lowest number of posts being 10. The assessment brief for the 10 blog posts also required the students to publish posts between 150-200 words. However, a majority of the 527 posts (92%) had well over 300 words with the highest number of words in a single blog post at 1546. An analysis of individual blogs also revealed that while the requirement in PoJ for the students was to create and share only one video, all students had created and shared more than one. The majority of students (86%) from the volunteering sample had created more than three videos that included short 30 second Vine videos, time-lapse videos and videos created using YouTube Capture or using the phone and other devices while interviewing and scoping. All students from the volunteering group had more than the required two photos as part of their blog. Similarly, all students had evidenced three social media discussions and four hyperlinks...
as required in PoJ. All the students had created the web-based multimedia news story by assembling the resources they had gathered on their blogs into a newsworthy story and published as a blog post.

The students in PoJ found that the use and integration of mobile and social media tools enabled them to create content in various ways. It provided them with the power to connect with people, create and collect content as an efficient process:

My story is about students, and students moving from town to town, and moving to bigger cities. To be able to pose a question and have ten different responses it's a longer time, it was about 24 hours, and I had ten responses. I can already say, ‘Okay, yes, this is a problem. Yes, I've been able to get enough details.’ I've already got ten potential interview subjects there who are obviously concerned, keen to talk about it, and they're from all over the country as well, essentially it's been huge in my learning. It's been able to help me make the story and make the exact focus of my story, the exact form. (Chris_INT)

Similarly, another student commented on using her phone as a device for capturing photos for her news story:

Yesterday I went down to Onehunga to take some photos of the construction for the ‘new’ beach using my phone. The majority of the land you can see in the photos has been built out with rock into the water over the past few months … (Kala_ART_Blog)

The students in PoJ felt that having the ability to create blog, videos and other multimedia content as part of the learning activities provided a hands-on learning experience and enabled them to experience what being a journalist was like:

More hands-on through blogging & video uploading & practical interesting. (Res_21)

Another stated:

The assignment requires you to experience what it is like to be a journalist: - write story - interview people - designing site - taking pics and video. (Res_43)

One participant managed to successfully publish his rehashed article, created as part of PoJ, as an opinion piece in a leading online newspaper outlet in New Zealand:
Enabled student creativity in the learning process

Hennessey and Amabile (1987) argue that no one is born creative and every person has the capability to be creative in life. They explicitly link creativity and the potential to be creative to a persons’ intrinsic motivation. Similarly, student comments reflected that the use of mobile and social media tools and affordances for creating content increased intrinsic motivation in the learning process:

It allows you to do things the way you want to. You know I don't have to write something if you don't want to, I can take a photo of it or I can just take a video of it. (Fiona_FG2)

One student commented on how creating content allowed him to express his passion and motivation:

It kind of turns the passion into actual content so you can create it rather than just thinking about it, I mean like, ‘Oh that was really interesting, I really enjoyed it.’ You can make it. (Bellamy_FG2)

Another student summarised the process of publishing blog posts as ‘collation and creativity’:

Every post I made throughout this process of collation and creativity had a bearing on my final product … (Rahu_ART_Blog)

The students also shared instances of how they creatively used the affordances of mobile and social media tools in the course. For example, Finn shared how he created a time-lapse video of the road in his story and how he augmented the video with road statistics:

The road's quite long and there's only sections of the road where there was actually important. There's a series of deaths on the road and so, I slowed it down as it came to those points on the road so I could explain, and I had like the headlines going across. (Finn_FG1)
Figure 6.11 is a frame-grab of the video Finn created as part of his news story.

Other instances of creativity were also observed in the work shared by the students on their blog, for example, a student created a Word Cloud information graph (infograph) to summarise what people reported as issues they might face because of a planned property development project:

I decided to give infographics a try. I copied and pasted every person’s submission outline into a word cloud generator to see if it could show me the points that most people were making. (Mila_ART_Blog)

Students as creators of context for learning

Nardi (1996) states that ‘People consciously and deliberately generate contexts (activities) … Context is both internal to people – involving specific objects and goals - and at the same time, external to people – involving artifacts, other people, specific setting.’ (p. 76). As a credit-bearing course towards a Bachelor of Communication
degree, the objectives and goals for the learner were set within the requirement of the programme, however, the design and facilitation of PoJ allowed the learner to select and create contexts for learning. The use of mobile and social media tools and affordances was heavily integrated and supported in the design and facilitation of the course, which allowed the learners to self-select and drive their own learning in writing a newsworthy story.

The students in the voluntary online anonymous survey were asked to rate what they felt about the statement (Q.13) ‘The use of mobile and social media tools in PoJ allowed me to pick an environment that I thought was most meaningful to my learning and enabled me to explore my understanding of the topic and build on it.’ using a Likert scale (1 - strongly agree to 5 - strongly disagree). Some students (42%) either ‘Strongly agreed’ or ‘Agreed’ with the statement, while 44% of the students were ‘Not sure’ and 14% of the students ‘Disagreed’ with the statement.

Further analysis of student data showed that students were able to utilise the affordances of the tools to create artefacts and context for learning. The students shared multiple instances of situations where they had created a context using the affordances of mobile and social media tools that involved digital artefacts on the Internet, other people and specific setting (cf. Nardi, 1996). For example, Nia shared how the ability to connect with people created a context for learning:

Definitely connectivity, being able to connect on the go. It’s probably the biggest one it was just fast and easy and I could post something up and I’d probably get a response from someone. (Nia_INT)

One student created an online poll and shared it with people in Twitter to create a context of her news story and for learning:
Another student commented on the connectivity element of mobile and social media tools and the affordances of the phone to be able to take photos in real world contexts:

… being able to connect to people that you usually don't connect with…being able to email someone that you don't have their phone number or anything like that, and just doing it on the spot. And also being able to take photos whilst you're walking down your road or whatever it is that you're doing, so I think that's real helpful. (Finn_FG1)

Similarly, Kai used Vine to capture content in a real world context to build her news story. Kai commented that the process allowed her to ‘immerse’ herself in the neighbourhood:

I thought as a way to get amongst the neighbourhood I would make a Vine video of each of the houses that have been broken into over the past few years. …making it was a fun way to immerse myself in the neighbourhood and get to see everything for myself. (Kai_ART_Blog)

Another student shared an instance of the context she created:

I was extremely happy with the photos and video I took of Greenhithe Skate park. The photos and video came out great and it highlights the location along with showing how busy the skate park is at any time. I think the material works well with my news story and supports my piece of writing. (Tara_ART_Blog)

Students were also able to elicit relevant resources from the Internet and weave them in real world contexts to inform their learning and visa versa. For example, Oscar found a video talking about the impact of sugar in our diet and later went out to the supermarket to investigate sugar content in bottled milk:

I highly recommend watching the documentary: http://tvnz.co.nz/nigel-latta/s1-ep6-video-6060553. In the documentary Latta explains and investigates how much sugar is actually added to our food. It is very much the same with the milk, I went into the local supermarket to conduct my own investigation. (Oscar_ART_Blog)
Another student shared:

In preparation for going to take photos of the subdivision today, I did a quick image search to see if there were any photos of the land, pre-development, online. I stumbled across two photos that linked to Stuff articles and also discovered that the articles discussed the construction of the subdivision and more importantly, the predicted housing prices. (Susie_ART_Blog)

Students also used a number of other online tools to gather resources (digital artefacts) for their news story and learning:

On my blog I have quite a lot of photos that I took and photos that I got off the Internet. So I've used Google Earth and Google Street View to give snapshots of my street and everything. I took a whole lot of photos … to put them into a video and I put that on my blog. (Emori_INT)

While a majority of the students in the survey indicated that they were able to use mobile and social media affordances to create contexts (pick an environment to learn in), a significant number of students were not sure if they did or disagreed with the comment. Some of the issues that these students may have faced and reasons for not effectively using the affordances for learning in context are discussed later in the chapter under the analysis for design principles five and six.

The second design principle formulated in Phase 2 of the study was integrated in the design of the learning environment. Data pertaining to this design principle were analysed and the themes that emerged are discussed in the section below.

**Design principle 2: Designing for learning with open, platform independent and learner-owned devices**

In the design and facilitation of PoJ, open and platform independent social media tools were integrated to facilitate the learning tasks and activities. A critical focus in the design of PoJ was to ensure that the students used social media tools that facilitated open and transparent opportunities for learning in the public domain. Similarly, the selection of social media tools for use in PoJ was based on their inter-platform operability—meaning the tool should be operational and support learner actions across different mobile and computer operating systems. The overall design and facilitation of PoJ aimed at enabling learning through the use of selected social media tools (such as WordPress and Twitter) on learner-owned devices. From the analysis of the data, emerging themes provided an overview of how this design element impacted on the
learner and the learning process. Each of these themes – *Access to information and people, Authentic network and collaboration and Mobility weaves learning across contexts* – are discussed below.

**Access to information and people**

According to the students, the use of open social media tools and learner-owned devices provided them with access to information and people to inform their learning when needed:

> If you need something you can get it. Even if it's completely different, if it's something for school or something, your own personal devices and social media help you get there no matter what. It's all about accessibility. (Kurtis_INT)

One student stated:

> It was super duper handy as we could just pull out our phones or whatever whenever we needed to double check something and remind ourselves on it. (Res_8)

Similarly, another student commented on how social media enabled access to people and provided opportunity to engage in a conversation when needed:

> Constant access … social media contributes to ease of access to people… So you know on the way to wherever you want to be you can just sit and tweet people and say whatever opinion you want or read whatever opinion you want. (Teresa_INT)

The same student commented that the use of social media tools and mobile devices raised her awareness of the fact that information for learning is everywhere:

> I think it just made me more aware as a learner, especially to just how online media really works. I always knew subconsciously how it works but it just made me more conscious and more aware of the fact that information is everywhere. (Teresa_INT)

**Authentic networking and collaboration**

The use of open social media tools in the course provided the students with the opportunity to create authentic or genuine networks for learning purposes. The students commented that unlike Facebook where you can only connect with your friends or people you know, Twitter provided the opportunity to connect with anyone and the opportunity to learn from them:

> It has great potential, Twitter. It's actually fantastic because you don't have to be people's friends to be following them or get information, because with Facebook you can make it really private. (Octavia_FG1)

Another student commented:
I think Twitter is vital because you can connect to so many people so much easier. And you learn a lot faster. Like, if you follow all the news outlets in the world you know something as soon as it happens. (Jaha_FG3)

Some students also commented on how they were able to utilise the open nature (transparency and visibility of shared work) of Twitter to find people to collaborate with to build their news story and inform their learning:

If you're going out searching for a story, you can use the social media to find out what's happening in particular places …if someone's tweeting about something that's relevant to your story, you have access to it straightaway so that'll enhance my learning, as if I'm getting someone else's opinion. So I've got my opinion, someone else's opinion, and your tutor's opinion. (Chris_INT)

Another commented:

I used the direct messaging on Twitter … just to find interviews. So that was handy and then I could see what they've said about the same issues without having to get some background knowledge … (Thelonious_FG2)

Similarly, another student commented how he used Twitter to find ‘big people’ and connected with them to inform his story:

Finding big people, because I guess not all stories are going to be like this, but the people relevant to my story are non-identities, so finding them, that's an access to them. So I went on Twitter to find them. (Scott_INT)

Mobility weaves learning across contexts

According to Sharples et al. (2007), mobility in mobile learning is the ability of the learner to move between different contexts, such as physical space, technology, conceptual space, social space and across time. The learning in PoJ was underpinned by the use of ‘open’ social media tools and learner-owned mobile devices. The affordances of these tools were integrated in the learning process as part of PoJ. According to student comments, the flexibility provided by the integration of these tools and affordances allowed them to weave different contexts (cf. Sharples et al., 2007) in order to learn:

Anything you think about, anything you suddenly remember, anything that occurs to you to Google, you can either make a note about it or you can Google it on the spot. You can blog about it on the spot. You can Tweet about it, Facebook it, ask someone to have a look at a blog and comment on it. So the mobility, there is no boundaries at all really. (Kurtis_INT)

According to one student, mobility is omnipresent and embodied in people, technology and social media:

Technology's really important because it is everywhere, and so are we, we are everywhere because social media's everywhere. (Clarke_FG2)
Another student provided a commentary of her movement across contexts enabled by her mobile device when writing her news story:

We use our devices pretty much non-stop. I was Googling articles on the way in to uni like an hour ago. I'll do that on the way home too. I'd be checking my Facebook all day. I'll be uploading things. I'll be checking my comments all day on that Facebook post I wrote. I do all of that on my phone. (Kylie_INT)

Students also shared instances of mobility in time and space in PoJ:

Between this and the audio class I've spent a lot of time sitting on buses around Auckland so it's been good to be able to stay connected on the phone. When I'm sitting on the bus I can blog about the interview I just did, and it's just using my time more wisely so when I get home I have more time to do other work, so I think it's a huge thing about the phone. (Jaha_FG2)

Another student commented:

It's really cool with flexibility of time. Because you can do it just as easily off campus as on, you don't have to wait to be at uni. And you don't need the logical time frames either. (Maya_INT)

The students also provided instances on mobility across technology, in this instance, across learner-owned smart devices, laptop and social media tools. The students in the end of the course anonymous survey were asked what device(s) they used the most as part of the learning process in PoJ (Q.8). Some students (25%) stated that their main device was their laptop, 18% of the students indicated that they used their smart device, in this case their mobile phones, the most in the course and a majority of the students (57%) stated that they used a combination of their phone and laptop as part of the course. One student stated that he used his phone for:

… taking photos, audio recording, things for gathering I think news more or less like, and then I'd go home and type it up because it's annoying to type up on your iPad or phone. (Octavia_FG1)

Another student commented that the learning processes flowed across the devices and it depended on the task at hand and the convenience factor:

Depends what you need it, when you need it and how convenient it is. And you basically flow between the devices you have as one whole unit. (Chris_INT)

Similarly, students commented on how the affordances of their mobile devices and social media tools helped them with navigating conceptual spaces that triggered ideas and provided information:

Being able to put down ideas some how, and then Tweets are easy, it's an idea and you can easily link something. (Scott_INT)
Kurtis commented on how learning with mobile and social media tools enabled learning in different social contexts other than the classroom:

> It makes it so much easier than being stuck in a classroom, because you can learn wherever, which is helpful. Like if something happens in my family and I have to rush home, I'm not completely disengaged from my learning. It's still available to me in a way because I've got my phone… (Kurtis_INT)

Similarly, students commented that the mobility and the affordances of mobile and social media tools in PoJ made them more aware or conscious of all the learning opportunities that could come across in his everyday life. As such, learner mobility enabled the embodiment of learning (Kontra, Goldin-Meadow, & Beilock, 2012; Rettie, 2005)—learning embodied as part of living:

> …it's definitely made me more aware to every opportunity that I can get… You're like constantly thinking about it, 'Oh, should I do this? Should I do that? Should I do that now? Oh, I've got this right now.' Like, I've been consciously trying to have my iPad on me at all times now so I can document… (Octavia_FG1)

Another commented:

> It made me really conscious of every single opportunity I could have. I'm always constantly thinking, "What can I do? What opportunities? Who should I contact?" (Jaha_FG2)

A unique affordance of mobile learning and a key element of heutagogy is mobility. As a result, a third design principle was created to help guide the design of the PoJ course. Data were analysed to identify how this design principle impacted on student learning. The themes that emerged relating to this draft design principle are discussed below.

**Design principle 3: Learning in learner determined contexts**

In the design and facilitation of PoJ, learners were provided with the flexibility and autonomy to determine their own learning contexts. The curriculum in PoJ was designed around students composing a news story based on a real person, event or issue.

The analysis of the data revealed how this design element implemented in PoJ impacted on the learner and the learning process. The themes that emerged from the analysis – *Provided opportunities for serendipitous learning, Learning as stepping outside your comfort zone, Ability to enact practice in context and Facilitated double-loop learning* – are discussed below in more detail.
Provided opportunities for serendipitous learning

According to Buchem (2012), serendipitous learning refers ‘to learning through gaining new sights, discovering unrevealed aspects and recognizing seemingly unrelated connections’ (p. 7). She further elaborates that this type of learning is random and ‘is a by-product of other activities’ (p. 7). The students shared instances of serendipitous learning in everyday real world contexts, on Twitter and with the affordances of mobile devices. For example, Nia shared how she managed to interview a person that she recorded using her phone for her news story:

Right place, right time. I was like, Oh my gosh so perfect. He wasn't there, I waited and he came back over and I said, ‘Is this your stuff,’ and he said, ‘Yeah’. I said, ‘I’m doing an assignment, can you tell me more about it.’ He said, ‘Yeah.’ He was very very eager to share his perspective. (Nia_INT)

One student shared how a chance encounter at work led to a valuable source for her news story:

Today when I was at work, a young girl close to my age came in and we began talking. I brought up Journalism and how my interviewee had pulled out, she then stated how her grandfather owned The Masonic and her whole family were involved with the business. (Ashley_ART_Blog)

Another student commented how using Twitter provided him with opportunities for exploring information and resources on a ‘tangent’:

… you're looking for a story and you're searching Twitter to find something about a story, and then you find something that you're interested in, you'd probably then go off tangent … (Kurtis_INT)

Learning as stepping outside your comfort zone

The assessment tasks in PoJ required the students to create a news story based in real world contexts on a person, event or issue. The students felt that the tasks and activities that they completed and situations they encountered in the real world required them to step outside their comfort zone which enabled learning and allowed them to grow as a person:

It's given me probably a bit more; it's putting you outside your comfort zone. You're not going to learn unless you're put outside your comfort zone, you're not going to grow. (Nia_INT)

Another student commented:

It has taught me things I hadn’t learnt yet, I saw things that left me speechless and I did things I would of never done in my own culture. (Kim_ART_Blog)

The students stated that the activities and processes they completed in authentic contexts, such as talking to people, interviewing and gathering information and
resources allowed them to cross the boundary between their comfort zone and outside the comfort zone:

...when you're doing it for real you encounter problems, and that's what happens in the real world, you encounter problems when you go and do stuff. It makes you work through those problems and for me it's when I work through problems, that's when I learn ... I've encountered lots of problems with my story and I've learnt from them. (Emori_INT)

Another student mentioned:

Doing interviews and asking different people really pushed me out of my comfort zone and I was surprised to find that I quite liked it! (Rita_ART_Blog)

Luckner and Nadler (1997) in proposing the comfort zone model for learning state that:

Through involvement in experiences that are beyond one’s comfort zone, individuals are forced to move into an area that feels uncomfortable and unfamiliar – the groan zone. By overcoming these anxious feeling and thoughts of self-doubt while simultaneously sampling success, individuals move from the groan zone to growth zone. (p. 20)

The transiting of students from ‘groan zone’ to the ‘growth zone’ are captured in the ‘sampling success’ statements students made about their learning in PoJ. For example, Jenna stated:

The article itself was an exciting process. Although difficult at times, sourcing and researching my own story was really rewarding. (Jenna_ART_Blog)

Another student commented that the challenges he faced provided him with an opportunity to grow from and it was an experience he enjoyed:

I’ve learnt a lot about researching a topic and going outside the square to get where I want to be. Yes there have been struggles but I’ve enjoyed them and grown from them. (Chris_ART_Blog)

While one student summed up her experience as an adventure that provided many learning opportunities:

The principles of journalism course has taught me quite a significant amount of things. I am happy I took part in such an adventure. (Pepper_ART_Blog)

**Ability to enact practice in context**

The affordances of mobile and social media tools enabled students to conduct experiments in context and explore ideas and processes in the course. Students commented:

I've just been trying different things and seeing what works the best. (Maya_INT)

Experiments really. Just knowing you can go out there and ... having to do it. (Scott_INT)
Similarly, another student shared how he used the mobile and social media tools to create and capture elements through ‘trial and error’ for his story in context to learn the most effective method for sharing the story:

…just experimenting quite a bit with what's on there …you can kind of trial and error certain things like the YouTube video and the sound, the audio thing… if videos is the best way for you to get your point across, you're probably more leaning towards that or if it's the writing or photos, seeing just different ways to express yourself. (Kurtis_INT)

While another student commented:

I did not get to publish [James’s] interview, but conducting it was still exceedingly useful for me as it allowed me to experiment with multiple platforms and modes of communication to conduct an interview. (Rahu_ART_Blog)

**Facilitated double-loop learning**

Argyris (2015) states that double-loop learning ‘occurs whenever errors are detected and corrected. An error is any mismatch between intention and actual consequences’ (para. 1). As a result, the experience the learner goes through during the process challenges existing assumptions, values, beliefs and theories (Argyris & Schön, 1978). In the design of PoJ, students were faced with real world situations with real world consequences for their actions while creating, capturing and composing a news story as part of the assessment. Some students at the end of the course shared instances of their encounter that reflected elements of double-loop learning. For example, Octavia shared how facing a situation that required her to take a picture of a homeless person for her news story triggered questions that challenged her thinking and action:

My story's on the homeless people on Queen St. and for me to take photos, I feel like, is that ethical … standing there taking a photo of a homeless person? … questions around like, what's ethical? (Octavia_FG1)

Another student shared an instance where his previous beliefs and values were ‘corrected’:

I’ve found through writing this story how my respect for people especially has grown and there is definitely more than meets the eye. (Kurtis_ART_Blog)

While one student commented on how the learning experience in PoJ and her encounter with the people she interacted with while composing her news story reaffirmed her values:

I have learnt to let go of the illusion of control, though we can control where to plant the seed no matter what we do that seed will grow to be a peach tree. We may wish for an apple or an orange, but we will get a peach. And that is ok … we remain loyal to the values instilled in us. (Kim_ART_Blog)
She added that her journey in PoJ:

…has made me reflect on my choices, at times perhaps they are not always the right ones and do not reflect the respect and gratitude my family deserves but it is never a failure and always a lesson. I am grateful for being able to study at University and I one day strive to be successful at my chosen career so I can give back to my parents what they and their parents gave to me – endless opportunities, endless love and endless support. That is what this journey and news story task has given me, and I never thought I would gain such deep and meaningful gratefulness from this. But I have. And I’m a better person for it. (Kim_ART_Blog)

The assessment of learning tasks and activities is a central element in the learning process. As a result, the fourth design principle utilised in the study focused on providing guidance for creating and assessing student work. Data from the study were analysed to understand how it impacted on student learning. The themes that emerged from the analysis are discussed in the section below.

**Design principle 4: Designing formative learner assessments**

The design of the main assessments in PoJ created opportunities for the students to be involved as the main agent in the process. The design of the assessment tasks provided learner autonomy over the topic, the process and the output.

The themes that emerged after the analysis of the data are discussed in detail below and provide an overview of how this design element of the study impacted on successful completion of the tasks.

**Learner autonomy in the assessment process as an empowering factor**

The active role and the autonomy of the learner in the assessed tasks enabled students to personalise the learning process, which encouraged passion, motivation and ownership:

The fact that we got to pick our own topic made it so much more likely that you were going to pick something that you actually cared about. As soon as you care about something, you really want to do it well, and you want to represent it in the best way that you possibly can and do it justice. And I think that is a huge push. (Clarke_FG1)

Another student commented:

It does make you more proud of your work, it's your own hard work, you're actually doing the work you're not just reading a book, in the library for four hours, for no gain, for yourself really. I like how it's personalized, I like how there's you can, sort of, do you own thing … (Jaha_FG2)
One student commented that by having choice and ownership in the process, she felt she was ‘learning’:

We're actually learning. We're actually getting that difference between being told like, ‘Oh, look, these are some of the things that you might need’ to actually, ‘Oh, my gosh, I need this. I need that.’ You know. (Luna_FG3)

Context as an enabler for students to explore multiple perspectives

Herrington and Oliver (2000) state that for learners to build an understanding of a topic or a subject, they should have access to multiple views and opinions, have the opportunity to share their views through collaboration, and they should be able to ‘criss-cross’ the learning environment multiple times to investigate and examine the ideas to build understanding.

In the design of PoJ, students were required to choose a news story based on a person, event or issue, and to work and collaborate in real world contexts to create a newsworthy story. The students were provided with the news values (timeliness, prominence, proximity, conflict, human interest, consequences and oddity) that they were to explore and evaluate in the process of collecting and composing a newsworthy story. The situations the learners faced allowed them to evaluate and explore the essence of news reporting, and to ‘criss-cross’ the problem in real time and in real world contexts—were informed by a range of opinions. For example, Kylie shared that she initially chose a news story but changed to another after investigation:

…at the beginning I had a different idea. I was going to do the Franklin Rhodes street and I blogged about that, and then I thought, "Oh wait that's a terrible idea. This is a bad idea. Find another idea! (Kylie_INT)

Similarly, Rahu reflected on her blog an instance of how she compared a possible news story (the stabbing at the Old Railway station) against timeliness (one of the news values) and decided to pursue another:

My initial idea was to focus on the stabbing at the Old Railway station. Humans of KRoad however is a relatively new project and, whilst it has had media coverage in the past year, has not been the subject of a ‘news story’ per say. It was the most original and therefore the most newsworthy option of mine. (Rahu_ART_Blog)

The students also provided instances of how their interaction with people in the process of gathering the resources and facts provided them with content and information that helped them to explore the topic further:
I just talked to everyone and that's kind of how I got different angles on my story because some people said, 'The market's moving.' So I was like, 'I'll check that out.' Or you talk to people and it's another thing that you go and learn about (Emori_INT)

… Luckily I have a plan b. … Herself and her husband were regular customers at The Masonic Tavern so I will interview her and see what her opinion has on the loss of the pub. This may be my only option in terms of having a contradicting opinion to [Tim]. (Angel_ART_Blog)

Some students also commented on how the processes that encouraged interaction and the ability to explore the principles of news values impacted on their story and learning:

Evaluating the news values within my news story actually helped me pin down an idea that is somewhat newsworthy and has relevance within todays society. Establishing a story frame also helped me consolidate my ideas and gave me an idea of what kind of information I needed to make my news story, news worthy. (Pepper_ART_Blog)

**Assessment as learning to be**

While the mobile and social media affordances transitioned student learning from knowing to being (discussed in the analysis of the first design principle under the Participation element of the 3Ps), the design of the assessment tasks were also found to have played an important role in the process. In the overall design of PoJ, there were three assessment tasks the students had to complete over 12 weeks—publish ten blog posts, write an investigative report and create a web-based multimedia news story. The assessment tasks were designed to prompt learner autonomy, scaffold learning and to help the learner create an understanding of journalism and journalistic practice. The students felt that the assessment tasks informed the process of learning to become because of their authenticity as it helped them learn transferable skills for the future:

You can quote books all you like but, if you can't go out and do it, then it's kind of nothing. So I think, that's been really important in that way you can learn how to be a journalist … this has kind of shown me that, going out and being a journalist's different, and you encounter things that you don't expect… You kind of learn those things, of how to work around them, and you tackle your problems, in a real way … (Fiona_FG2)

Other students shared:

The work that we create has resonance. It's set in a real world environment. And that's teaching you life skills that you don't get in an academic context. (Bellamy_FG2)

One student commented that the authenticity of the assessment required originality in the work they were producing and encouraged self-directedness:

If you don't go out and do work, you can't just copy your friends and you just can't get ideas off them because that's screamingly obvious if you have the same random news strip, the same references and everything. It was a lot more self-directed. (Kylie_INT)
Another student commented that the authenticity of the assessment tasks provided her with the ability to network and connect:

Let's be honest. A degree is a plus, but it doesn't matter, what matters in journalism is how interconnected you are with the network of people around you and the assessment allowed me to do this. (Abby_FG3)

**The critical role of the teacher**

In the facilitation of PoJ, the teachers played critical roles in informing students learning, such as being sharers of ideas and content, collaborators and motivators, and promoters and modellers of effective practice in the community. These subthemes are discussed below.

**Teachers as guides and sharers of content**

The teachers in the course created their own blog and Twitter accounts. They were encouraged to participate with the students as part of the learning tasks and activities. The role of the teachers in the process was observed to be one of sharing content for scaffolding student learning and providing guidance in the process.

An instance of the teacher sharing relevant content with the students on the topic that was discussed in the lecture also highlighted the scaffolding role of the teachers in PoJ:

![Tweet by the teacher in PoJ](Teacher_ART_Tweet)

Figure 6.14 – Tweet by the teacher in PoJ (Teacher_ART_Tweet)

Students also commented that the teachers played a guiding role in their learning process, which they found beneficial:

They're more for guidance I think, than teaching you. I have lecturers in other courses who are, just read off a slide saying, ‘This is what you have to learn.’ I think they're a lot more, help guide you through the process of writing your story, which I guess is positive and helpful. (Kurtis_INT)

Another student commented that he thought the role of one of the teachers in PoJ was to connect, converse and engage and interact with the students, which provided opportunities to seek guidance:
I can imagine [Teacher’s name], I think her role is to try and get everyone talking about what we’re going to fuel our minds in class. So we can talk to her about it and then go away with some type of guidance. (Scott_INT)

Teachers as collaborators and motivators
The teachers in PoJ were also seen to collaborate with the students in the learning process. The students viewed the teachers as critical friends who helped them improve their learning and achieve the outcome required. One student highlighted the critical role the teachers played in their learning:

…how are you going to know if what you're doing is in the right direction if … the only person who really has 100% of an idea what we should be doing is the tutor. (Maya_INT)

Another student commented on the validation and verification aspect of collaborating with the teachers, which they also found motivating:

If you doing something wrong, she'll come to you in class and be like, ‘Hey I noticed that you said this on Twitter. Do you not think if you had this question it might be a bit different?’ Just that little thing. So it means, you're on the right track. Basically, you just feel like she's actually interested in what you're doing. (Jaha_FG2)

And another student commented:

It's quite good to get a bit of reassurance sometimes as well. Because I know there were a couple of times where she just favorited a tweet of mine and that kind of makes you think, ‘Yeah. She's actually looking at it.’ Yeah. Doing something right. (Fiona_FG2)

While one student commented how learning with the teacher helped her ‘harness’ and develop her skills in PoJ:

She's looked at me in a certain light this year and how I behave as a journalist and has really helped me... And not teach me skills, but help me harness and develop my skills … (Teresa_INT)

Teachers as promoters, modellers and enablers
The affordances of mobile and social media tools underpinned the design and facilitation of PoJ. The students in the learning process were expected to utilise these affordances for learning purposes and to create the news story. To help the students understand and use the mobile and social media affordances, the teachers discussed and shared examples of digital artefacts created by learners in the course on weekly basis in class. The teachers also discussed exemplar articles and artefacts from news agencies and journalists from around the world to give students ideas and encouragement to help them conceptualise the use of the tools. For example, the teachers discussed in the lecture and promoted to the class link to a student’s blog where she had used her mobile
device and various social media applications to create and capture content for the news story:

Similarly, the teachers also modelled effective use of mobile and social media affordances with the students to help them understand the implications for news reporting and for composing a news story. For example, a teacher shared with students a tweet that showed how a drone was used to report a crash on a motorway in New Zealand:

The teachers also created content themselves to model the use of the tools advocated in PoJ for the students to explore. For example, a teacher used Piktochart to create an infograph and shared it with the students in class as an exemplar for data journalism:
Teachers also played an important role in being the enabler for transformative change that unlocked learner potential and creativity in the learning process. The teachers discussed with the students in the first week of the lectures the importance of viewing their role as a journalist in the course and not as a student. They also encouraged the students to act like a journalist and to take the opportunity during the course to report any event or issue as a journalist would. One student commented how the advice to ‘view yourself as a journalist’ changed the way she looked at learning in the course and her role in the process:

[The teacher] was talking about, you guys have to stop behaving like you're students…now you're journalists, you can be doing work now if you want. …take a story. If you think it's interesting, write about it, and maybe people will see it and that's kind of cool. I never thought like that before. I was [thinking] I can't do anything until I leave uni. No one wants me unless I have a degree … (Clarke_FG1)

**Instant feedback and critical face-to-face feedback in class**

The underpinning thrust in the design of PoJ was to enable learner directed and determined learning using mobile and social media affordances. Potentially, every student in PoJ was on a different learning path compared to others with a common goal—to create a news story as an outcome of the learning process. Teacher feedback, as a result, is instrumental in enabling student-centred learning (Rudland et al., 2013). However, Nicol and Macfarlane-Dick (2006) state that while students can learn to be self-regulated learners, ‘how to enhance feedback (both self-regulated and external) in support of self-regulation has not been fully explored …’ (p. 200). Similarly, students in PoJ outlined that they needed more feedback in the learning process. One student stated that as soon as it became apparent to her that the learning in PoJ was going to be self-directed, it automatically implied more feedback:
I always thought right from the get-go, as soon as it became apparent that this was a really individually driven thing … I just automatically thought that corresponded to a really high level of feedback … (Maya_INT)

The need for increased feedback was identified as an issue in this iteration of PoJ by both the students and practitioners—discussed earlier in this chapter under the section ‘Testing of the learning solution’ as an area for improvement for the second iteration. Some students stated that they needed quick and instant validation of the work they had submitted in order to move forward, while they also commented that more time needed to be spent in the tutorial session for more in-depth and critical feedback. Students commented that they did not need in-depth feedback but just an acknowledgement through social media that they were progressing well:

… you're not really looking for great in-depth feedback. You're just looking for acknowledgement … (Becca_FG3)

Another commented how a ‘favourite’ on Twitter could have been sufficient as a feedback and to know they were on the right track:

You're just kind of waiting for one of the other tutors to favorite it. To know that okay, obviously it's right. It's in the right place, it's on the right track. (Jaha_FG2)

While one student emphasised the need for more time and critical face-to-face feedback in the tutorial session:

Actually sat down and gone through maybe two blog posts and maybe said, "I really enjoyed this blog post. This blog post was kind of okay. You could have put this in it to make it better and more efficient." That would have been really really good, and really helpful. (Kylie_INT)

While the students expected a high level of detailed face-to-face feedback on the assessment tasks they had completed, they also acknowledged that this was not needed every time. They commented that social media affordances such as the ‘Favourite’ feature on Twitter could have been utilised to validate and provide quick feedback on their work. Practitioner reflections recorded by the researcher in the weekly log also highlighted the need for more time during the tutorial session, as the one-hour timeframe did not allow them space to follow up with all students and to provide guidance and formative feedback.

A critical element in the design of the learning solution was the embedded role of mobile and social media tools. As a result, the affordances of selected tools were incorporated—to help the students understand and apply these affordances a fifth draft
design principle was utilised in the study. Data were analysed to understand the role this design principle played for the learner in the process—the themes that emerged are discussed in the next section.

**Design principle 5: Providing a rationale and an explanation for the use of the tools in learning**

This design element was used in the facilitation of PoJ to communicate the expectation, explanation and a rationale for the use of the tools the course. The data relating to this aspect of the design were analysed and the themes that emerged from the analysis are discussed below.

**Need for a change – re-culturing the students**

The design of PoJ required the learner to take control and lead their own learning. The learning as a result was viewed as self-directed where the teachers played the role of supporting the learner through the process. The analysis of the data, however, showed that some students who came into PoJ had different expectations from the teachers in the beginning and a different view for using mobile and social media tools for learning. Students commented that they expected to be taught exactly what was required and expected of them in the course:

The main thing is that I haven't been taught how to run a news story yet. (Jaha_FG2)

Another student compared learning to baking pavlova. Her expectation in the course was to be told, as you would be for baking a pavlova, how to write the news story—written step-by-step instructions:

It's not as if you learn to make a pavlova in a patisserie course over 12 weeks. [You] make the pavlova…and you get told clear off [how to make it]. (Atom_FG2)

Similarly, another student reiterated:

Their job is to teach us about what we're doing. (Abby_FG3)

Student comments also highlighted that they were unsure or had limited knowledge of the role technology could play in their learning. For example, one student commented that while he was technologically able and understood the implication of social media for learning, using it in a course was a ‘shaming thing’ when viewed by their friends:

Technology, for us, it is something that we have an advantage of because we're so typically able. But, at the same time, it's like a shaming thing when we try to
incorporate that with school or academia. For us, it is social. We only use it for social purposes. (Titus_FG3)

Similarly, another student shared how students are hesitant in using technology or do not see the importance of it in learning:

…there are a lot of us who do use social media, but we sit there on our page and we're like, ‘We don't want to do this,’ because it's going to make us look bad or we don't want to do it because reasons X, Y and Z. It's not really that important. (Teresa_INT)

The same student shared how the school system discouraged the use of social media and how students needed to be made aware of its potential for learning:

In high school we were taught to stay off social media and to stay off Instagram and stay off Twitter and stay off Facebook. It's banned in schools you know. My school blocked it for the six years that I was there. We weren't allowed to access any of that. …I think just creating more awareness of it (Teresa_INT)

Similarly, another student commented that they needed to be made aware of the processes of becoming a self-directed learner:

I just think that even though we are meant to be very self-driven and we are meant to be educating ourselves and that sort of thing, just a little bit more awareness. (Nia_INT)

The extracts above provide an overview of the mindset some students have when they enter university—a mindset that is acquired from their learning experiences in school. From the data in the anonymous survey, all students indicated that they were in the 18-25 year old age group indicating they were new to university and enrolled in the course straight after finishing school. The extracts above highlight that the students had an expectation that they were going to be told by the teachers what to do in the course—a learning mindset perhaps nurtured during the years in the school system. The lack of use of social media or a ban on their use during class time in schools also deprived the learner of the opportunity to build an understanding of how to use them for learning. These shortfalls indicate that the facilitation and design of a learning experience needs to cultivate a culture of change that helps transform learners from passive to active agents of learning and to provide them with greater opportunities to conceptualise the use of mobile and social media tools for learning.

Reiterate and remind the students regularly
Some students commented that when they were reminded of the requirements of the course and to use of social media early in the semester that is when they did what was asked:
The only time anyone is interested in Tweeting or Facebooking about it, or doing any sort of social media work is when we're in the lectures when we're reminded. There should be more encouragement for it. I think that side of it needs to be advertised more, as a whole. (Abby_FG3)

…just the fact that if it was enforced or encouraged from the very beginning, and it had been to us, I guess, every week, then it would have been a bigger response for social media. (Titus_FG3)

Similarly another student commented that if the teachers had been emphasising and reminding them of what needed to be done, it would have made a difference in their learning due to the requirements from other courses they were doing:

…if our tutors or the lectures had been like, ‘Hey, you know, this is really important to get onto this now’. So I think if that had actually been reminded to us, because we do focus on a lot of other things here, doing four [courses] a semester. (Jaha_FG2)

The extracts above provide a glimpse of the challenges teachers face for designing a learner-driven and determined learning in a course. The comments reflect that some students were not only expecting to be spoon-fed but they were also expecting the teachers to manage their learning by constantly reminding and reiterating the requirements of the course. In heutagogic learning, the students create knowledge and understanding through active participation and by taking ownership of the learning process and path. This is in stark contrast to the learning experience many students encounter in the school system or in their prior learning (discussed as a finding earlier in the section—Need for a change - re-culturing the students). In order to help the learners achieve the change, they need to be inducted and scaffolded into acquiring the self-driven and determined learning skills and knowledge (Canning, 2012). In sociocultural approach to learning (Vygotsky, 1978, 1986), Vygotsky states that a student’s ability to solve a learning problem unassisted does not lead to the creation of new knowledge—rather it is evidence of what the student already knows. To encourage the creation of new knowledge students must collaborate with a more able partner, who is able to scaffold him/her beyond their current ability into a zone of proximal development (ZPD) (Vygotsky, 1978; Verenikina, 2003, 2004). The able partner promotes learning in the ZPD by designing activities and tasks for learning and providing assistance in the learning process—which forms the basis for the student to ‘be inducted into the culture of [his/]her society and empowered as an autonomous learner’ (Luckin, 2008, p. 450).
Building on Vygotsky’s notion of ZPD, Luckin proposes the learner centric ecology of resources (EoR) model to help the students understand and create meaningful contexts and learn the skills to create knowledge within these spaces (Luckin, 2008; 2011). In order for the students to gain these skills and knowledge, she states that the students need to be transitioned through the pedagogy-andragogy-heutagogy (PAH) continuum. In the PAH continuum, the student builds an understanding of the content in the pedagogical phase, learns the metacognitive skills in the andragogy phase and learns to apply the metacognitive skills in different contexts in the heutagogical phase. The EoR to help the students transition through the PAH continuum could be assembled by the teacher, an expert or former students, which could include resources such as buildings, books and knowledge, people, technologies and artefacts (Luckin, 2010b, p. 156). The more able partner within the EoR encourages conversation and interactions between these resources and scaffolds the students that informs learning and transformation of learning behaviour:

…it is the role of the more able participants to scaffold a learner’s construction of a narrative that makes sense of the meaning distributed amongst the resources with which they interact. Through this scaffolding the learner at the centre of their context internalizes their interactions and develops increased independent capability and self-awareness. (Luckin, 2010a, p. 48)

The EoR as a result, acts as a platform that helps the learner gain an understanding of his/her role in the learning process by seeking scaffold and collaborating with the knowledgeable others — building skills and knowledge to exploit the affordances of the learning technologies to create meaningful content and contexts (Luckin, 2008; 2010a; 2010b).

**Students need to see the long-term benefit**

The use of social media tools such as Twitter and blogging requires a sustained period of time to create a network and form connections with other people. While the use of hashtags on Twitter can help establish a network, increase interaction and establish an online presence it still requires a considerable period of time to create a community you can learn from. To overcome this issue, the students in the course were encouraged to follow each other. The students, however, commented that the lack of a network was still an issue:
…starting off with Twitter, personally I found a bit of an issue. I had like five followers and you're tweeting and you're like, what's the point? (Kurtis_INT)

One student commented that her current use of Twitter did not have a purpose, she, however, acknowledges that it could in the future:

Twitter ... It has got purpose; I see the purpose in the long run, but right now, no. (Nia_INT)

Another student explained the benefits of using Twitter and how it requires time to build a network and to learn how to use it effectively:

…I do get that when if you've had more of a following on Twitter, it's better in the way that your message would get out to people who didn't know you. There's definitely an advantage for that as well, because you need exposure as well as response. I think it would just be a matter of time to generate a following, and actually get to grips with using it a bit more. (Chris_INT)

Similarly, another student commented that the use of the social media tools needed to be explained to the students:

… you do have social media conversations and that you are talking about your news stories and that you are thinking ahead rather than thinking week by week. (Emori_INT)

Twitter is an important tool that helps a journalist break news, provide coverage and updates on an issue and connect with the audience. Twitter provides a journalist with the contemporary affordances to meet the requirements of the information-thirsty society. A student explained the importance of Twitter for her towards learning to become a journalist:

As an aspiring journalist, you need to get on the bandwagon early, and watch how the news broadcasters are tweeting and pick up their trends and follow them. Otherwise, when it comes to a couple of years down the track, and you've got your first job as a journalist, and you're just trying to make Twitter and you're just trying to get on the bandwagon, everyone's like, ‘Well, he doesn't look good for a few years yet.’ (Maya_INT)

While the use of some social media tools did not make immediate sense for some students in PoJ, it was important to show and explain the long-term benefits of their use and to help and encourage the students in using them for the duration of the course.

The last design principle that was incorporated in the creation of the learning environment provided guidance on how to support and scaffold the students for learning with mobile and social media tools. Again, data relating to this design element were
analysed to evaluate its role and impact on the learning process. The themes that emerged from the analysis are discussed in the section below.

**Design principle 6: Technological support and modelling**

Over the 12 weeks on the course, the students were introduced to several tools that they could potentially use to create and compose their multimedia news story. During this process, the students were given a demonstration of how to set up and use each of the tools. The students were also given examples of how the tools are used in journalism by journalists and news agencies. Data relating to this design element in PoJ was analysed to understand its relevance and how it made a difference to student learning. The themes that emerged from the analysis are discussed in detail below.

**Students need support in learning the tools and the pedagogical affordances for use in learning**

The students in PoJ were required to signup and use the core tools—Twitter and WordPress as part of the learning process. The first week of the semester was utilised to help students set up for the tools, and technological support was provided on a weekly basis throughout the semester. Instructional videos were recorded and shared with the students and the students were also encouraged to seek help on the web and on YouTube. The students, however, commented that they did not know how to use these tools and they felt they were in the dark and blindfolded:

…it was quite scary at first, purely because I didn't know how to work that thing. It was the most complicated thing, and I felt really in the dark about it and like even watching the tutorials. (Octavia_FG1)

It was just like you're blindfolded trying to navigate this site. (Indra_FG1)

Another student expressed that she was not technologically savvy and needed more support:

I am not very technology savvy at all. Even like, I don't know how to upload a YouTube video. Just those types of things; basic things… (Fiona_FG2)

The students indicated that while they were familiar with Facebook, using Twitter and a blog was unfamiliar territory. They also commented that using new tools created fear of the unknown – not knowing what to do and fear of being judged:

At first I was so hesitant to post anything because I knew people were going to see it. You're in a point of vulnerability and you're like, I don't know what I'm doing. I'm not
sure if this is the right information … I felt like I was really shirking in the dark with it. (Octavia_FG1)

Another student commented:

… it's just like a scary thought initially because you're like, I don't know what I'm doing so you're just standoffish. (Jaha_FG3)

While the use and the affordances of the mobile and social media tools were modelled and discussed in the lecture and during the tutorial sessions, the students felt that they needed more awareness of what was possible with these tools and what was required from them while using them in the course. One student commented that the teachers needed to explain student expectations in using the tools:

More black and white as to what we actually have to do on our blogs so that we all know. (Jaha_FG2)

Another student commented that the role and importance of the tools needed to be emphasised early in the course:

At the start of the course I had no idea how important the blogging would be in terms of our final assignment. If that had been really strongly emphasized… (Kylie_INT)

The students also shared that they did not have the knowledge of the pedagogical implications of using tools such as a blog and Twitter and they needed to be made aware of this from the first week:

If they had emphasized to us just how important blogging was, what you write about opens up your knowledge for what you have to search for in your article. And that really helped me when I was finding my article and my source and everything. I needed to put a lot more work into it from the start. I didn't understand how important it was at the start. (Scott_INT)

Similarly, Kurtis commented that while they were given an overview of what was possible and what they could share using Twitter in the course, it would have been helpful if it was done earlier in the semester:

I think when we were clarified a bit more about what was possible with the Twitter and what we could tweet about, it got a bit ok. And I think maybe earlier on if we were a lot more aware of what was possible from it, it would probably be much more effective to other people. (Kurtis_INT)

Other students also commented that they needed to be made aware of the potential of social media for learning purposes:

I think making everyone more aware of social media. (Teresa_INT)

…it just wasn't enforced enough… When I say enforced I just mean they needed to make us understand. (Chris_INT)
The extracts above highlight that the learners in a technology rich learning environment need to be supported to overcome the initial fears of using the tools for learning. They also need support for learning how to use the tools and pedagogical knowledge for using the affordances in academic contexts.

**Modelling as a tool to help learners conceptualise the use of technology**

Collins et al. (1989) state that ‘Modelling involves showing an expert carrying out a task so that the students can build a conceptual model of the processes that are required to accomplish the task’ (p. 16). As part of the design element in PoJ, the use of the tools and their affordances were modelled to the students during tutorial and lecture time. At times, the technology steward along with the practitioners presented live demonstrations of the tools in class. Sometimes the modelling involved discussing an example from a journalist in the field, and at other times exemplar artefacts were created by the practitioners and the technology steward out of class time and shared with students on the PoJ Twitter hashtag and on the practitioners’ and technology steward’s blogs. The aim of modelling in PoJ was to share ideas with the students to help them conceptualise the use of the tools and their affordances for learning.

Students commented that there was a need for them to see and understand how it worked and what was possible:

…it [needed to be] promoted and more of an understanding of how it works [needed to be shared] (Nyko_FG1)

One student commented that she had learnt a lot in the course about mobile and social media tools. However, she needed to be convinced by the teachers:

I’ve learnt a lot, but I think it needed to be a little bit more influenced by the tutors … (Kylie_INT)

Some students commented that when the tools and their affordances were modelled to them in the class or examples were shared on the Twitter hashtag, it helped them realise and understand the potential of the tools and its use in learning and in the future:

… having [the technology steward] come in, and [the technology steward] spoke about connecting things and following trends and all this sort of stuff, [the technology steward] actually showed us how we can potentially be very successful on the internet. (Chris_INT)
Another student commented how she searched and followed current journalist on Twitter to learn from after the idea was shared with them in class:

I had a look at few of the journalist’s posts after our talk on Tuesday. I actually went and Googled a few journalists’ tweets like Hillary Barry and Mike McRoberts and stuff just to see what they were actually tweeting about and they were actually quite interesting. (Kylie_INT)

The modelling of the tools and affordances in class was observed to have had a direct impact on how the students used the tools in their learning. For example, one student shared how it encourage him to try Piktochart after it was modelled in class:

In the lecture last week, data journalism was talked about quite a lot. I decided I would try and incorporate some statistics into my story. … I am going to use some of these statistics and present them with Piktochart … (Siti_ART_Blog)

Similarly, another student used Google Street View, after it was modelled in class, as part of her blog to provide details to the reader about where the story was situated:

Figure 6.18 – Google Street View (Emori_ART_Blog)

The students also shared transformative experiences of how their view and understanding of social media and the devices they owned changed in the course:

…before the course I didn't use my phone a lot other than texting and ringing people, and so I found like I'd often forget I even had that kind of thing that I can use. So it's been quite a process for me, getting me to use my phone for different sorts of things. (Fiona_FG2)

Another student commented how the learning experience in the course had helped her reconceptualise the use of social media tools from using it for social purposes to now using it for learning:

Never in my wildest dreams would I have thought that I would be facebooking, tweeting and blogging about an issue for a university assignment, as I always viewed them as tools for social enjoyment, something completely separate from an academic tool for learning. (Kersey_ART_Blog)
While another student reflected that the course helped him gain important perspectives on how social media tools differed and could be used for any purpose and not just as a social platform:

It taught me that there are a lot of differences in social media. As much as social media, yes, it's social media, but the difference between Twitter and Facebook, social media's really what you make it. (Chris_INT)

From the extracts above, it is evident that students need to know the potential and needed to have the awareness of what they could do with the tools in learning. Modelling as strategy in PoJ was observed to be an effective method for enabling the students to build their understanding and to conceptualise meaningful use of the tools in learning. This, as shown in some of the extracts above, can also lead to a transformational change (Cochrane, 2012a) in the way learners view and use mobile and social media tools for learning.

**Conclusion**

The analysis of the data collected in the first iteration provided an insight into how the use of mobile and social media tools and heutagogy impacted upon student learning. The analysis of the data and practitioner and researcher reflections helped identify several important areas for improvement for the second iteration. A particular element the students highlighted that needed to be revisited before the second iteration was the alignment between the lecture, tutorial and the assessment. The students felt the lecture and what was covered in the tutorial session did not prepare them for the assessment tasks. The practitioners, however, commented at a weekly meeting that the PoJ course and the lectures were not designed to prepare the students for the assessment but rather to introduce and prepare them to be self-driven and independent learners—essential skills needed to be a journalist. The themes discussed under Design principle 5 highlighted that students were expecting the teachers to manage and drive their learning for them. The practitioners as a result agreed that the format and content covered in the lecture would not be changed, however, the number of guest lectures could be decreased to allow more time to discuss the basics of journalistic practice and a greater emphasis needed to be placed on scaffolding the students to be self-direct and independent learners. Another issue identified from student data was the lack of feedback on the tasks and activities completed by the students—issue also discussed by the practitioners at several weekly meetings. The practitioners commented that the lack of time during
the one-hour tutorial session was a contributing factor—an issue also identified by the students. Along with these issues, an ongoing problem identified by all participants was the need for more help and support with learning and using mobile and social media tools in academic contexts.

While areas for improvement for the second iteration were identified, several beneficial elements from the intervention and how they impacted on the learner and learning were also noted. In particular, the use of mobile and social media tools allowed students to be global learners and provided them with the opportunity to learn with people and experts from around the world. The mobile and social affordances increased the degree of interconnectedness between the students and the student and teacher—creating opportunities for collaboration and ability to learn with and from others. Another element of the design identified from the analysis of the data was how the students were able to learn and create new opportunities to further their understanding by using the mobile and social media tools in meaningful or self-selected contexts. In particular, the students created and captured data in contexts that had relevance to their story and their learning need. The students were able to manipulate the entities and artefacts in these contexts to elicit meaning and reflect. They were also able to visit these contexts to reinvestigate, create and capture data and information with the help of mobile and social media tools to further their understanding and knowledge. An important factor identified from the analysis of the data was the role of the teacher in informing and guiding the students for self-directed and determined learning. The teachers were observed to have played a critical role in the process by collaborating with the learner and used different teaching strategies in the learning process to help them learn. Also critical in this process was teacher feedback—instant feedback using the affordances of social media tools and detailed and formative learner feedback in class.

An issue and surprising find from the analysis, given the high rate of ownership of mobile devices amongst the students, was their perception of how the mobile and social media tools they owned could be used for learning. Given that the majority of students who enrolled in the course were young (between 18-25 years old) and had exposure to a mobile device and several social media tools, they still struggled with how to use the tools and failed to conceptualise their use for learning purposes. Complicating this issue
further was the students’ different learning expectation in the course—they mostly expected to be given the content and taught what was to be learnt—expectations opposite to heutagogic learning and the goal of the study. While the practitioners and the technology steward were able to identify this issue early in the course and mitigate it by providing extra support to the students, a greater need and emphasis to re-culture and reconceptualise students for self-directed and determined learning was identified.

Another observation noted with regard to the data collected and reported in this chapter relates to the discrepancy between student feedback in the survey presented in Figure 6.2 and feedback from the students gathered using other instruments in the study. While a majority (54%) of the students in the survey indicated that their experience in the course was good, the remaining (46%) indicated they were either not sure (35%) or their experience was poor (11%). This does not align with the mostly positive feedback reported in the data discussed in this chapter. Perhaps a cause for this discrepancy was the timing of student participation in the survey. The students were required to create a web-based multimedia news story as the final outcome in the course—a process that requires sustained effort and thought, that comes together as a product the students can be proud of when finished. The students, however, participated in the survey before this assessment was due—a period when students are at the height of discontent and worried if they will be able to submit a worthy product that demonstrated their creativity and knowledge. It is only after the creation and sharing of the product that the learners perhaps reflect and recognise the value of heutagogic learning.

This chapter described the implementation of the first iteration of the learning solution (PoJ), and provided an evaluation and an analysis of the design principles used for designing the intervention (PoJ). The chapter also provided an overview of the areas identified for improvement for the second iteration after the analysis of student and researcher data. Each of the design principles was analysed using the data collected during the facilitation of PoJ to evaluate its impact on the learner and the learning experience. The next chapter provides an overview of the redesign of the learning environment, and the implementation, evaluation and analysis of the second iteration of PoJ in the second semester of the following year.
In Phase 3 of the study, the second iteration of the learning intervention informed by the findings from the first iteration was implemented. Data were collected and analysed to identify areas that could be improved for future implementation and to evaluate the designed principles.

Chapter 6 provided an overview of the implementation and analysis of the solution in the first iteration. This chapter provides an overview of the implementation of the refined Principles of Journalism (PoJ) course. An analysis of the data is provided that identifies areas for future improvement and how the design principles impacted upon the design and implementation of the learning solution in the second iteration of PoJ.

**Implementation of the revised solution**

The following section discusses the changes that were made to PoJ informed by the findings from the first iteration discussed in Chapter 6 (Table 6.4). An overview of how the revised solution was implemented and an analysis of the second iteration are provided.

**Redesign of PoJ for the second iteration**

Over several meetings at the end of the first iteration, proposed changes to the design of PoJ were discussed with the practitioners. It was mutually agreed between the practitioners that it was important to allow the students to build their own understanding of journalism and journalistic practice rather than preaching the practice values in lecture. As a result, the changes made were focused on improving student feedback and guidance in the journey through the use of mobile and social media tools integrated in PoJ to enable learners to build their own understanding in collaboration with practitioners. Several changes to the design of the initial PoJ course were made, and approaches used to facilitate the first iteration of PoJ were reviewed and refined. In particular:
• an ecology of resources was assembled (PoJ website) to scaffold learning in the course and help the students build heutagogic learning skills mediated by mobile and social media tools

• the assessments were moved and a progress check (draft news story assessment) to the news story was added. This was done to create time and space to provide students with feedback on the work they were doing and on the progress of the news story

• the time slots for the lecture and tutorials were also revised so that the lectures were allocated a one-hour slot and the tutorial sessions two hours

• 15-20 minutes of the two-hour tutorial session was set aside for discussing the use of mobile and social media tools, to provide technological support, and to introduce and model the use of new and appropriate technologies to the students

• the number of guest lectures were cut short in the second iteration and an emphasis was placed on sharing base knowledge regarding journalistic practice

• three fulltime lecturers and one part-time lecturer were assigned to the course

• the Wix editor (www.wix.com) was added to the list of technologies for use in PoJ. Wix was added as an alternative to using WordPress for the third assessment to provide students with more flexibility and formatting freedom in composing the multimedia news story.

There were no major design changes to the learning environment created for use in the first iteration apart from the addition of Wix (Figure 7.1).
A major focus in the second iteration was placed on student support by providing the students with clear and concise information about the tasks, activities and assessment, and on the pedagogical modelling of the use of mobile and social media tools. This was done to help the learner understand the affordances of mobile and social media tools for learning purposes and to allow the students to build self-directed and determined learning skills. As a result, a more collaborative approach between the practitioners in modelling and facilitating the course was agreed upon and a platform for learner centric ecology of resources (PoJ website) was created for coordinating (blue arrows in Figure 7.2), scaffolding, supporting and modelling the learning and the use of technology (black arrows) that could be accessed by the students on their devices (blue and purple arrows).
Figure 7.2 – The PoJ WordPress setup in the second iteration

The technology steward installed the DS106 Assignment Bank theme on the PoJ website and in collaboration with the practitioners:

- a course blog was created
- a Twitter community was created using a class hashtag
- instructional videos on how to use the mobile and social media tool integrated in the course were created
- exemplar artefacts of the use of mobile and social media tools in journalism were created
- the assignment bank and the blog aggregator modules were activated as mechanisms for sharing the instructional videos and to curate all student blog posts.
An overview of the important function and features of the PoJ website are highlighted in Figure 7.3. A detailed description of how each of these features was implemented in the course is provided in Appendix 10.

The revised PoJ course was implemented with a new cohort of students in the second semester of the following year at the same university in Auckland, New Zealand.

**Implementation of the revised solution**

In a meeting three weeks prior to the start of the semester, two new members to the PoJ team were introduced and the changes to the course structure, setup and expectations were discussed by the course coordinator. The practitioners were also encouraged to use their own Twitter account to participate with the students using the class hashtag for sharing ideas and resources.
A week prior to the start of the semester, a welcome email was sent to the students that included links to the course handbook, the PoJ site and to the instructions on how to sign up for Twitter and WordPress accounts and set up a blog for the course. Students were requested to sign up for the core tools (Twitter and WordPress) before attending the first tutorial in the first week. The practitioners also recorded a video introducing themselves and welcoming the students onto the PoJ course.

The students who needed help with setting up the core tools for the course were supported in the tutorial session, and the importance of mobile and social media tools in journalism was emphasised to all students with examples from the sector and examples developed by the practitioners. During the first tutorial, students were encouraged by the practitioners to send out a tweet using the class hashtag and leave a comment on the tutorial page with their blog address, and Twitter username. Figure 7.4 provides a snapshot of student activity on a tutorial page.
The technology steward in collaboration with the practitioners utilised the 15-20 minutes time allocation in each tutorial session to:

- provide technological support
- introduce new tools to the students
- discuss effective use of mobile and social media tools for learning
- discuss exemplar digital artefacts created by the technology steward, practitioners, journalists and news agencies to help the students conceptualise the use of tools in the course.

The use of the PoJ website was heavily integrated in the learning and teaching process and as a social and scaffolding platform. The website was regularly updated by the practitioners with links to instructional videos and exemplar artefacts, and blog posts were published to share ideas and resources relating to the learning tasks and activities. Figure 7.5 shows the use of the ‘Assignment Bank’ function on the PoJ site for supporting the use of infograph (information graph) using Piktochart and Wix for creating the final multimedia story.
Apart from these changes, all other aspects of the implementation of the learning environment were similar to the first iteration, including the:

- assessment activities—the investigative report, 10 blog posts and the creation of the multimedia news story
• establishment and use of WordPress blog and Twitter
• focus on student-owned mobile devices for use in the course
• technological and pedagogical support for the students
• informal weekly meetings with the practitioners as the basis for planning the tutorial sessions, discussing issues relating to the course and for the technology steward to provide technological and pedagogical advise and support when needed.

The second iteration attracted similar student numbers as the first iteration: 162 students enrolled for the second iteration of PoJ — 12 less than the first cohort.

After the implementation of the revised PoJ course, data were collected from the students and practitioners using the same data collection methods and instruments utilised in the first iteration. The data were analysed to identify areas for future improvement and to evaluate the impact of the revised learning solution on the learner and the learning process.

**Testing of the learning solution**

**Data collection and analysis**

Data in the second iteration were collected and analysed using the same data collection and analysis methods used in the first iteration. A detailed overview of the data collection methods and procedure was provided in Chapter 3.

As in the first iteration, anonymous online survey data was analysed to understand student background, types of devices they owned, Internet connectivity and the social media tools they were using prior to the course and how they were using these tools for learning—discussed in the section below.

**Participant overview, device ownership, connectivity and use of the tools**

Out of the 162 students, 39 participants (24%) responded to the voluntary online survey. Of the 39 participants, 38 (97%) were in the 18-25 year old age group and the remaining participant was in the 26-30 year old age group. A majority (97%) of the students reported that they owned a laptop and 95% of the students reported they owned
a smartphone and a laptop. A further 20% reported that they had access to a tablet device. Overall, all students who took part in the survey reported having access to a computer and smart device (smart phone or a tablet). The majority of the students (82%) used the university wireless network to connect to the Internet, while 13% chose to use their own 3G or 4G mobile network to connect on campus. Most of the students (90%) reported that their smart device was on a monthly 3G/4G mobile Internet plan. In response to Q.5 which asked what social media platforms the students were using prior to enrolling in PoJ, 100% of the participants indicated that they were on Facebook, 82% indicated that they used YouTube for viewing videos, 41% of the participants had their own blog, 44% were on Twitter, 56% had used Google Drive, 28% reported that they uploaded a video to YouTube, while 23% reported they had used Google+. Under the ‘Other’ category, 10% of the students stated they were using Instagram and Snapchat prior to enrolling in PoJ. Figure 7.6 provides an overview of the types of social media platform the students were using prior to enrolling in PoJ.

![Figure 7.6 – Social media use prior to PoJ](image)

In Q.6 students were asked if they used social media tools for learning to which 50% responded ‘No, I use it mostly for social purposes’, while 50% responded ‘Both, for learning and social purposes. In an attempt to gain an insight into how students were using social media tools for learning, students were asked to provide an example in Q.7.
The open-ended question (Q.7) was analysed to identify themes of how students were mostly using social media tools for learning. As in the first iteration, the students’ use of social media tools was limited to YouTube, Google Drive, Twitter and Facebook. The students used these platforms to access information, communicate and share ideas, and to collaborate.

The analysis of the sample data provided by the voluntary survey provided an overview of the type of devices, connection to the Internet, the type of social media and how the students were using these tools prior to enrolling in PoJ. From the sample data, the students preferred a laptop and smartphone combination, as a high majority of the students owned both devices. Similarly, all students had access to a computer and a mobile device (smartphone or a tablet device). A majority of the students were connected to the Internet through their 3G/4G data plan, however, preferred to connect to the Internet using the institutional wireless network when on campus. As in the first iteration, Facebook was the dominant platform that students had access to and frequently used for social purposes and in instances for communication and collaboration for learning. The students used YouTube as a portal for accessing knowledge when they needed to grow their understanding on a topic.

While there was a noted change in how the students used social media tools for learning compared to the data from the first iteration, the majority of student learning behaviour was still oriented towards social use and consumption of knowledge and content. The students as a result, did not view mobile and social media as an important tool for their learning, nor did they use the tools to their full potential.

**Identifying areas for improvement for future iterations**

Similarly, student survey response, focus group and researcher reflections from the second iteration were analysed to identify improvements for future iterations. The analysis and areas for improvement for future iterations of the course is provided in Appendix 11.

As in the first iteration, data from the second iteration were also analysed to understand the impact each of the draft design principles had on the design and facilitation of PoJ.
The data collected during and after the completion of the second iteration were analysed and the themes that emerged are discussed below.

**Evaluating the design principles**

**Data coding and analysis**
The same data coding and analysis method used in the first iteration was utilised in the second iteration.

The findings from the analysis of the data in the second iteration were used to build and strengthen the themes from the first iteration for each of the design principles used in PoJ. The repeating themes are discussed in the sections below and new findings are reported where applicable.

**Design principle 1: Learning as participation, personalisation, and productivity**
As in the first iteration, the integration of mobile and social media affordances in PoJ provided the students with the opportunity to utilise the tools and devices for learning that encouraged elements of participation, personalisation and productivity (3Ps). The 3Ps provided the basis for the first design principle, which were used in the design and facilitation of PoJ.

The themes that emerged from the analysis of the data relating to the three elements (3Ps) of the first design principle are discussed below.

**Participation**
As in the first iteration, an emphasis was placed on enabling learner autonomy in the learning process in PoJ. The themes that emerged after the analysis of the data pertaining to the participation element of PoJ are discussed below.

**Enabled the formation of an organic learner-community**
As observed in the first iteration, the use of WordPress and the Twitter hashtag led to the formation of an organic learner-community. The network diagram (Figure 7.7)
generated using Tags (Hawksey, 2015) provides an overview of the activities and interactions within the community over 12 weeks.

The solid lines between the nodes indicate conversations between the members, the grey dotted lines represent a reply where other Twitter users were copied into the message, and the blue dotted lines indicate tweets, which were retweeted and shared with the community. The size of the font in the diagram represents the rate of user activity in the community. An emphasis in the design of PoJ for the second iteration was placed on increasing learner activity on Twitter as student feedback in the first iteration suggested they struggled to establish a network and failed to understand the potential of its use in learning. Exemplar resources and articles were shared with the students on the PoJ site to model the use of Twitter for learning. Similarly, learning
activities (such as press conferences and learning debates) were designed to encourage the students to send a tweet as part of the course to build their confidence and help them explore the affordances of Twitter to establish connections with peers and others. A total of 1374 tweets were shared using the PoJ hashtag over 12 weeks, averaging nine tweets per student. The participation rate in the second iteration was higher compared to the first iteration, which was six tweets per student—meaning there was more interaction between the students and potential for creating a network within the community.

An analysis of learner interactions (Twitter messages) using Tags (Hawksey, 2015) revealed that the community and learner actions evolved through the early phases of students introducing themselves, sharing their blog posts and trivial communication to more meaningful exchanges, such as sharing ideas and resources, constructive conversations, collaboration with peers, and interaction with teachers and others relevant to their news story. According to the students, these interactions enabled by the affordances of the mobile and social media tools (Twitter and blog), acted as a bridge between the students, the student and the teacher, and the student and everyone else, resulting in the formation of the community that enhanced learner connectedness, interactivity and enabled the formation of a relationship between the students and the teacher:

That was my bridge between myself and then with everyone else, it was not only my community, but with Twitter, that was my bridge between my teachers and then my bridge between other students. (Addison_INT)

As in the first iteration, the Twitter community also enabled the students to communicate and collaborate with people from beyond the class. In the second iteration, a total of 213 people participated in the PoJ Twitter community, of which 162 were students. These 213 people communicated or invited another 397 people from around the world as part of the network. Even though the number of students who enrolled in the second iteration of PoJ was smaller, collaboration with persons other than the students and teachers in the class was higher—29 more people engaged with the community. This suggests that more students were able to connect and create a network with people on Twitter. The students, as they did in the first iteration, were able to collaborate and interact with people from across the globe, in particular from India, Australia, USA, England and Ireland (Figure 7.8).
The PoJ website and the integration of Twitter in the learning activities helped improve the student interaction in the class Twitter community. It also helped the students connect and collaborate with more people than in the first iteration.

**Provided opportunity for sharing ideas**
As in the first iteration, the students used the community to share ideas with peers in class. These involved sharing of inspirational resources and articles and exemplar artifacts from news agencies such as the use of pie charts for analysing and presenting numerical data in writing a news story. The students also shared reflections, resources and ideas in the community for main tasks in the learning process. The learner behaviour observed in this iteration conform with the findings from the first iteration—the students found using the affordances of the tools integrated in the course for sharing ideas beneficial in their learning.

**Enabled collaboration between the students**
As observed in the first iteration, the community also encouraged students to collaborate with each other to build knowledge and to inform and scaffold each other’s learning. As part of the redesign, the PoJ website was created to support student learning. All student blog posts were aggregated on the site, which the students could browse whenever needed. The students felt that the aggregated posts acted as a gateway to identify and seek feedback and support from other students in the class:

> Definitely the fact that you had the PoJ page … when you saw something interesting or you want to talk to someone about something, you just tweet about it, and then you’d instantly get a lot of people commenting and sharing their ideas … (Audree_INT)
Along with the use of Twitter, blog and student-owned mobile devices, the new PoJ site enabled increased opportunity for collaboration between the students by providing easier access and increased visibility.

**Visibility of student work as a catalyst for higher cognitive processes**

As in the first iteration, the sharing of student work with the learner-community achieved through the use of the class hashtag made student work in PoJ visible to the peers. In the second iteration, student blogs were also aggregated and all posts were accessible to the students from the PoJ website. This further increased the visibility and accessibility of student posts to other students. The visibility of student work in this study was observed to have double impact on student learning—the impact of having the opportunity to look at other students’ work, and the visibility of one’s own work to others in the class. Reviewing other students work enabled the learner to explore the learning tasks from multiple perspectives by comparing, contrast, and building their own learning and understanding based on information shared with the community by the peers.

On the other hand, the visibility of a student’s own work in the community encouraged them to create, remix and share content to the best of their ability. For example, the students commented:

> I felt I needed to do better, because for social media, people can see what you're doing. (Wells_FG1)

> For me, knowing that my blog is going to be seen by people… I wanted it to be good… So it kind of pushed me to go further… (Audree_INT)

As a result of the combined effect of visibility of student work in the community, the students were able to learn from each other and at the same time push themselves towards achieving higher learning outcomes. Some students referred to the visible elements of learning in the community as ‘motivation competition’ (Skylar_INT), while one student commented that ‘you want to be ahead of everyone else … I guess that was kind of a motivational thing’ (Solar_INT).

Some students, however, commented that sharing their work was intimidating:
It kind of intimidated me. I see other people doing all these amazing things it didn't motivate me... Which is a bad thing to have. (Jackson_FG3)

Similarly, another student commented that comparing her work to other students in the community worried her, however, she thought the benefits outweighed the negative aspects:

I find looking at other people's work, and them looking at yours, … really worried me, but yeah. It definitely still helped … (Harper_FG2)

While the students in the first iteration outlined similar learning benefits, the addition of the PoJ website in the second iteration seemed to have overwhelmed some of the students in the course. They felt that the visibility of all the work shared by the students in the course was intimidating. They, however, acknowledged that there were more benefits than negatives in having the PoJ website.

**Provided opportunities for collaboration with subject experts**

The affordances of mobile and social media tools enabled the learner to collaborate with subject experts to gain a deeper understanding of the story they were writing. As observed in the first iteration, the students in the second iteration were also able to collaborate with experts in order to gather the information and resources needed for the chosen news story. An analysis of the stories written by the volunteering students indicated that the learners were able to collaborate with local government agencies such as the Auckland City Council, Auckland Police, current councillors in the local government, a former leader of the Labour Party and current Members of Parliament and real estate agents, to elicit information and opinion on the news stories they were writing. One student commented:

After posting this, I was overwhelmed by receiving the fastest reply that I have ever received from a council organisation. … I was pleasantly surprised when Auckland Council tweeted a reply to me in way under an hour! (Cora_ART_Blog)

Similarly, another student commented on how she was able to use social media to elicit the information and opinions from the experts, which helped her improve trustworthiness of the news story:

Social media gave me a chance to hear various opinions and perspectives from people with voice in the field, such discussions enhanced my objectivity by providing a range of views and personal experiences that I couldn’t have conceived on my own. (Brianna_ART_Blog)
The students in both iterations of the course were able to exploit the affordances of the mobile and social media tools to seek and collaborate with subject experts to inform their learning and to build a deeper understanding of their news story.

**Enabled true collaboration between the teacher and the student**

The findings from the first iteration highlighted how students were able to seek true collaboration with the teacher in regard to the content and the learning activities (Hase, 2011). The analysis of the data from the second iteration provided an insight into what the students thought was purposeful use of mobile and social media tools in PoJ. The students commented that because their work was also visible to the teacher, the teachers were able to keep up with what they were doing and their learning needs—the teachers were hence able to customise and focus on areas where the students needed support and guidance. One student commented:

…it helps the teachers to know where they're going, to know what they're doing good, and what they're doing wrong and what they need to teach. If I'm doing something wrong in my news story, they'll know they'll need to teach more of a certain part of the topic. (Addison_INT)

Similarly, another student commented that because of the visibility of their work on social media, the teachers had a mechanism to instantly verify their work and were able to provide guidance:

… being with social media, the teachers can like what you've done, and read over your posts. That gives you a guidance of what they expect from you… So you're still free to do what you want; but there's sound guidance. (Harper_FG2)

The mobile and social media affordances allowed the students to share their learning with peers and the teacher in the class. This increased the visibility of student learning to the teacher. According to student comments the visibility of their work kept the teacher informed and updated on their progress in the course. This allowed the teachers to offer instant feedback and guidance through Twitter and by blogging when they felt the students needed it. The teachers were also able to provide instant verification on any task completed and shared by the students. The tools also enabled the students to seek instant support and guidance from the teachers at anytime of the week. They were able to communicate and collaborate with the teachers to overcome their learning issues and difficulties.
**From knowing to being**

Brown and Alder (2008) espouse that the use of social media tools in learning moves the focus away from learning the knowledge (learning about) to ‘learning to be’ (p. 19) by encouraging participation in communities and collaboration with subject experts. As in the first iteration, the learners were able to reconceptualise their role from being a student to being a journalist. According to the students, using mobile and social media tools helped impress the practices of a journalist as part of what they were doing:

I felt like journalism had become part of me. (Alie_FG2)

According to Dall’Alba and Barnacle (2007) ‘our mode of being in the world is that of dwelling with and amongst things and others’ (p. 681). They argue that learning or our ability to build an understanding and new meaning is not primarily dependent on concepts and our intellect rather is also dependent on being ‘immersed in activities, projects and practices with things and others’ (p. 681). The mobile and social media affordances utilised in this study enabled the students to interact with their surrounding, and enact practices in real world contexts. They had the opportunity to participate in events, communities and entities that helped them build a sense of being a journalist. For example, one student commented that he was able to partake in a protest opposing the local council’s legislation on cafes:

I went to a protest at the Pyrenees cafe in Mt. Albert. The cafe was fined for having tables and chairs outside their cafe by the Auckland Council. My question is: “Is this bureaucracy gone too far? (Ayden_ART_Blog)

Similarly, another student was able to break the news on an accident that happened in west Auckland, providing her with the opportunity to be a journalist:

![Figure 7.9 – Reporting news (Eleanor_ART_Tweet)](image-url)

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One, third year PR (Public Relations) student stressed the importance of building a ‘sense of being’ as part of learning. According to him, his three years at the university had not equipped him for a job in the real world. He feared that the emphasis on theory in the courses he did prior to PoJ did not allow him space to understand the profession and what it encompassed:

I found that some courses I’ve done here, they’ve all just been a lot of theory base, which is a big fear of mine now, about to graduate. I need to know what to do in a workforce. I'm going to walk into a PR firm, and they’re going be, "Hey do this." It's like, "Wait, do what? [My course] didn't prepare me for this. (Mateo_INT)

The learning tasks and activities positioned the students as journalists producing a news story in the course. According to the findings, the design of the tasks and activities helped the students achieve a change in mindset from being a student to a journalist. The tasks and activities also encouraged the students to share the content and ideas openly on the web and in the public domain. The students commented that knowing their work was in the open also helped change their mindset and attitude. According to the students, an important element with their work being public was knowing there was a potential that people other then their peers and teachers could access and comment on them—this provided authentic audience to the tasks the students completed and created a feeling of being a journalist. The students also felt that their work had higher purpose other then meeting the requirements of the course. The mobile and social media affordances also played a critical role for the students in the process—the mobility and connectivity enabled the students to embody journalistic practices in everyday life when engaging with people, their surroundings and other entities. This helped the students in creating authentic content whenever a newsworthy event or issue unfolded—providing them with the ability to enact authentic journalistic practices, such as reporting an event or live broadcasting from a protest as a journalist.

Discussion
Designing for participation as part of the first design principle enabled and provided the students with several learning benefits in both iterations. It enabled the formation of an organic learning community, sharing of resources, collaboration between students, with experts, and other people beyond the bounds of the classroom and the country. It also enabled true-collaboration with the teachers for solving authentic learning issues. The
increased the visibility of student work shared on Twitter and aggregated on the course website triggered higher cognitive processes—the opportunity to explore the learning task from multiple perspectives and the ability to compare and contrast the content and learning shared by the peers (causing cognitive conflict) to construct their own understanding and acquire new knowledge. The mobile and social media affordances allowed the students to create and share authentic content—providing real audience who could read and comment on student work. The affordances also provided the students with the opportunity to enact authentic journalistic practices in real world contexts—helping them become journalists. The impact of learner participation in the design of the course helped the students transition from knowing to being (from knowledge to practice).

The second element within the first design principle, personalisation, is essential in promoting participation. The findings regarding the personalisation element of the first design principle are discussed below.

**Personalisation**

As in the first iteration, the students in the second iteration were provided with the autonomy to choose and write a newsworthy story based in real world contexts on a person, place or event. The themes that emerged from the analysis of the data related to this element of the first design principle are discussed below.

**Autonomy sparks passion and self-directedness**

The students in the first iteration felt that having choice in the learning process was a catalyst for initiating self-directedness, as it helped them take ownership of their own learning. Self-directedness helped the students identify their weaknesses, which they were able to remedy by seeking resources and support without the help of the teacher—helping them grow as a person. According to the students, autonomy in the learning process also triggered passion and motivation, and it gave them the ability to drive the learning according to what they wanted to become (for example, a news reporter, or a sports journalist). The students in the second iteration commented that autonomy in the learning process inspired them and directly impacted on their motivation for completing the learning tasks and activities. For example, Riley commented:
I found that it was probably the most exciting [course] and the most inspiring. I always feel motivated to do my work in this [course] compared to other ones. (Riley_INT)

The students also commented that autonomy in PoJ allowed them to learn from experience, in contrast to being told what to do:

…a big thing for me was that I wasn't told what to do, I was always told but I learned through experience. (Jackson_FG3)

Some students, however, commented that as an autonomous learner they lacked the motivation to seek and direct their own learning:

I often lacked inspiration and at times motivation to find something I believed I could be interested enough in with the hopes of delivering a compelling story. (Gianna_ART_Blog)

Another student commented that she was unmotivated at the start of the course but as the course progressed she was able to gain the confidence to direct her own learning:

At the start of the semester…put it bluntly I was unmotivated to search for a story but as the weeks progressed I started to become more confident in my search for a story and began putting myself out there. (Quinn_ART_Blog)

Learner autonomy appeared to inspire the students and trigger passion and motivation, which facilitated a process that enabled self-directedness and successful student engagement with the learning tasks and activities—observations also made by the practitioners. Self-directedness enabled learning by doing (experiential learning) and helped the student reflect, understand and overcome their weaknesses by seeking resources and support without the help of the teacher—growing as a person. The students, however, needed time and support in the beginning to gain confidence for self-directed learning.

**Learner-driven participation in and across online communities**

As observed in the first iteration, the students were able to move between and interact within online communities in order to ascertain the required information and resources to develop their news story and their learning. The students were able to facilitate discussions within the chosen communities to elicit feedback and gather information. While the core tools in PoJ were WordPress and Twitter, the students engaged with their audience on a variety of platforms to access and generate the data.
In addition to Facebook, wikis and other websites, the students used other communities for learning, in particular the Communications Facebook Page to interact and discuss questions related to their learning and to seek guidance. The students stated that the process of seeking and interacting across multiple platforms as part of gathering the information opened their minds and eyes ‘to using different sources for information … and using different sources’ (Sadie_INT), while another student commented that social media in the process helped her understand the story and it provided an ‘authentic and genuine’ learning experience:

… social media helped me build my story a lot more. If I didn't have social media, I don't think it would have been as authentic and genuine … that's how I talk to a lot of the neighbors… it helped it spread and to get a more accurate idea of the story. (Skylar_INT)

Similar learning behaviour was observed in the first iteration—given the autonomy the students were able to drive and determine their own learning path. The students accessed data and information from several websites and platforms. They also participated in and across several communities (such as Facebook, Neighbourly, Twitter and Twitter hashtags) to facilitate conversations to elicit opinion and relevant data and information for their news story and to seek guidance and support for their learning. The students felt that this provided them with an authentic and genuine learning experience—represented journalistic practice.

**Blogging as a conduit for self-directed learning and reflection**

The students in PoJ were required to create a blog to document their learning and progress in the course. The students indicated that the blog acted as a platform that encouraged self-directed learning. One student commented that by having a blog, he was able to set goals for himself in order to progress his learning:

I was able to set milestones for myself and grow past them. If they hadn't have been there, I don't think I would have got as far as I did. It gave me something to go, this is what I need to get done this week. I was able to organise myself better. (Mateo_INT)

As observed in the first iteration, blogging also provided the students with a medium to articulate their thinking and encouraged students to be reflective in their learning. Articulation and reflection in the learning process are key ingredients for enabling learners to create new meaning (Herrington et al., 2010; Mezirow, 1990). The students commented that the blog was a useful way of keeping track of their thoughts and encouraged ‘constant reflection’:
The constant reflection and recording of what I’m going to do was really helpful at collecting my thoughts and for formulating my plan of action… It made me consider what I was saying and apply it to the stories. (Leah_ART_Blog)

As in the first iteration, students used the blog for reflection on action (after an event) and for reflection in action (during an event) (Schön, 1987). Students shared instances of reflecting in and on action on their blog. For example, one student shared her reflection on the interview she conducted:

After re-listening to the interviews the first thing that I noticed was that I used very few open-ended questions. I started a number of questions with ‘does’, such as ‘Does the school have any partnerships with the community?’ however I now realise that a far better way to phrase this particular question would have been ‘What partnerships does the school have with the community?’ (Ezra_ART_Blog)

Similarly, the blog also enabled the student to articulate reflection in action. For example, Alexis reflected on her blog the elements and actions she needed to take for the news story she was writing:

I need to add a social media aspect to my article and digital diary. I will do this by conducting a poll, and also asking on Facebook for my fellow students opinion regarding the topic. I also need some photos of the bar [her news story] to add to my article, bringing in a visual aspect to engage the reader. It would also be great if I could film a video for my digital diary… (Alexis_ART_Blog)

Overall the students felt that having a blog, and the requirement to regularly publish a post, made them reflect to a greater degree compared to writing an essay. The learning as a result was more meaningful and memorable:

This [course], it got you to analyse your process of getting to achieve something a lot more because when you do an essay you just go off and once you get it back you forget about it. With this one you have to reflect on it. You have to think about it and then it actually sticks in your head more, in a sense. (Anya_FG3)

Blogging over the two iterations of the course was observed to be an enabler for self-directed learning. By combining the findings reported in the two iterations, blogging enabled openness, ownership of learning, ability to express passion and capture content. It provided time, space and an appropriate format for continuity of thinking and self-regulation (setting learning goals and milestones). It also encouraged constant reflection and articulation in the learning process after an event (reflection on action) and during an event (reflection in action) helping the learner identify their strengths and weaknesses and create new meaning.
Deadline on the blogs as a motivator

A weekly deadline for the blog posts was imposed in the second iteration after the feedback from the students and suggestions from the practitioners in the first iteration. The students felt that because the blogs did not have a deadline, they could procrastinate and post a significant number nearing the end of the course. The students also commented that because the blog did not have a weekly deadline, it did not reflect the authenticity of being a journalist—having to write a story under time pressure. According to student feedback in the second iteration, the deadline prevented them from procrastinating their work and it acted as a motivator to post:

You can't just procrastinate and then do it all in one go. (Lee_FG1)

The students, however, commented that the deadline for the posts also compromised the quality of what they were sharing and at times posted ‘for the sake’ of it:

I guess sometimes I had nothing really to blog about and we had to blog… (Roma_FG2)

While one student was conflicted with the idea from a learning point of view (being a student) and learning to be a journalist (being a journalist). Charlotte agreed that the blog deadline was not conducive for her learning, however, also acknowledged that deadlines were an important element of working as a journalist. She stated:

I am conflicted on the idea of a deadline because I feel like as a journalist you will have deadlines and you have to make those deadlines. (Charlotte_FG2)

While some students felt that the deadline lowered the quality of the content they were sharing, a majority of the students commented that the deadline was a motivator to publish their posts. They also appreciated the authenticity and commented that it replicated the time pressure and strict deadlines journalist face in the profession.

Use of social media as a basis for the formation of online identity

Similar to the findings in the first iteration, the students expressed that social media provided opportunities for them to create an online identity. They stated that creating an identity was an important facet of working and using mobile and social media tools. In particular, the students felt that the social media tools provided opportunities for them to voice their opinion and thoughts—helping them establish an identity as a journalist:

I guess it's really important as a journalist to voice your opinion. You're pretty much making a status to the rest of the world. So I guess that was really good. (Ellie_INT)
The findings in the second iteration confirmed the findings in the first iteration that suggests the students viewed the use of social media in the course as an opportunity to create an online identity for who they were as a person (personal identity) and what they were studying and wanted to become (professional identity).

**Learner created and driven communities for learning**

Similar to the first iteration, the students in the second iteration also used social media tools to create intentional communities to gather the information and resources they needed to write a newsworthy story. Other than being a participant in an existing community, the students used a variety of platforms to create a community and converse with the audience for completing the learning tasks. One student commented that she used Facebook to create a community to instigate discussion on her topic:

90+ responses. Yes, you read that correct. On Facebook today, I did one final social media post regarding my story and I was fortunate enough to have over 90 responses. (Asher_ART_Blog)

Similarly, another student used Instagram to instigate a discussion by sharing a picture of her news story issue:

I decided to try something different and create a questionnaire on my Instagram account… now a picture with a caption on Instagram! (Linda_ART_Blog)

As in the first iteration, learner activity in the PoJ Twitter hashtag was analysed using Tags (Hawksey, 2015). The analysis revealed that the learners were also able to create communities using Twitter by establishing their own hashtag for their news story. The students used a total of 182 hashtags in the class community many of which were created by the students to promote their news story, to establish a community with their audience and to elicit opinion and feedback.

The learners in the study were able to appropriate the use of social media affordances with the learning task at hand and created intentional communities with people for learning and for gathering data and information required for their news story. In the second iteration, the PoJ website was implemented to model effective use of mobile and social media tools. An emphasis was also placed on promoting the use of Twitter in the course due to its wide application in journalism around the world. The students as a result, created or engaged with 21 more hashtags or communities compared to the first iteration.
**Lifelong learning**

The data in the first iteration of PoJ revealed that the students continued with their news story after the course and published it with news agencies (discussed under the *Learning continues beyond the course* theme). The data in the second iteration helped build the theme further and suggests that the students were able to gain lifelong skills from the learning experience in the course. For example, one student commented he had learnt skills on how to communicate an idea clearly to other people:

…everyday life when you're trying to put across a message, to know how to do that effectively is a very good skill to have …that's definitely changed the way that I do it, which will effectively help me understand how to portray things that I'm trying to put across. (Wells_FG1)

Mateo commented that the course had provided him with a framework for ideation:

It's given me a really great framework of what to expect, the sort of work I need to do to get to my ideas or to find a good idea. (Mateo_INT)

Another student commented the course experience had made her more productive and has provided her with self-directed learning skills:

I think it's made me more productive in that now I will go out and actually find stuff myself and not just wait for things to come to me. (Skylar_INT)

Another student was able to apply the skills she had learnt in the PoJ to cover a fashion show she was involved in by providing a live commentary using Twitter:

![Figure 7.10 – Application of skills from PoJ (Clara_ART_Tweet)](image)

The extracts suggest that the learning as part of the course provided the students with lifelong skills and knowledge. For example, the students felt that the course gave them the skills to pre-empt the tasks and activities a profession in journalism would pose, and provided them with techniques on how to complete them successfully. The students also suggested that the learning experience made them an effective and productive learner.
The technology in the course enabled the students to apply the skills and knowledge in different contexts helping build confidence and new knowledge.

**Discussion**

The findings discussed above related to how the *personalisation* element of the first design principle impacted on the students’ learning process. A core tenet in designing for personalisation in the course was enabling and increasing learner autonomy in the learning process. In both iterations, the learners were provided with a learning task—to create a multi media news story based on a person, place or an issue. The learners were then provided with support and scaffolding for the duration of the course for composing a trustworthy news story. Increased learner autonomy in the course was found to be the key ingredient for enabling self-directedness. Autonomy provided the students with choice, inspiration, passion and motivation, positioning them as the main agent in the process and providing the learner the ability to direct and determine their learning path and process. The students felt that because they were directing and determining their own learning it provided them with the opportunity to learn from experience (experiential learning) and helped them identify their strengths and weaknesses. The use of mobile and social media tools also played a critical role in the course. The mobile and social media tools enabled autonomy—it helped the learner seek support and scaffold in and across communities and also enabled them to create communities for learning and eliciting feedback and information for the news story. Blogging provided the students with openness, ownership, ability to express passion and capture content and provided space for the students to set goals and milestones (to be self-regulated). It also provided the students with time and format for continuous reflection and continuity of thinking, which helped with the identification of strengths and weaknesses and for creating new knowledge. Due to the highly customisable and personal nature of the tools integrated in the course, some students capitalised on the opportunity and created a professional online identity of being a journalist. The central role of the learner in the course provided the students with opportunities to learn lifelong learning skills, such as effective communication skills and increased awareness of other learning opportunities in their surrounding which provided a framework for ideation and gave them skills for being a self-directed learners. The mobile and social media affordances provided the students with the ability to apply these skills and knowledge in different learning contexts—helping build new and transferable knowledge and skills.
In the second iteration, an ecology of resources (PoJ website) was created to model and support the students in the course. This motivated some students and provided guidance on how to use the learning technologies for learning. In particular, student participation in the Twitter community was higher than the first iteration. The students also participated and created more Twitter hashtags—suggesting they understood the pedagogical implication of the tool. Another impact of these changes is perhaps documented in the lifelong learning theme. In particular, the modelling of the tools for learning helped the students gain lifelong learning skills—it provided them with the ability to apply their knowledge and skills using the affordances in different learning contexts. A deadline for the weekly blog post was imposed in the second iteration. This prevented the students from procrastinating their blog post. They, however, felt this hindered the quality of the content they created, as they did not always have something to share by the end of the week.

While these changes improved learning, the students highlighted new issues in the design of the course. Some students outlined that they lacked confidence, motivation and inspiration to be self-directed. They commented that they needed time to build the confidence to drive and direct their learning.

The third and equally important design element along with participation and personalisation in the first design principle is productivity. Within the productivity element, the students are viewed as active participants in creating content as part of the learning process. The implication and impact of this on student learning is discussed in the section below.

**Productivity**

Similar to the first iteration, the students were placed in the role of content creators by integrating the affordances of mobile and social media tool in the design. As part of the learning tasks, the students were required to have posted 10 posts by the 12th week that included at least four student created hyperlinks, photographs, videos and social media discussions. For the final assessment, the students were required to create a multimedia news story by assembling the resources they had gathered on their blog. Data from the second iteration were analysed to understand and evaluate the impact of the productivity
element of the design in PoJ. The themes that emerged from the analysis are discussed in the sections below.

**Students as creators of content**
The students were able to create and capture authentic content or content in meaningful contexts as part of being a journalist in the course. The students used their mobile devices and social media tools to create content to share on their blog. The blog posts and artefacts from the volunteering sample (n=29) were analysed at the end of the semester to understand how students interacted with the productivity element of the design. As observed in the first iteration, the majority of the students captured and created content that exceeded requirements of the course (10-22 posts of more than 300 words). The volunteer group published an average of 16 posts. All the students in the volunteer group met or exceeded the requirement for four learner-created hyperlinks, two photographs, one video and three social media discussions relating to their news stories. The learners also created other multimedia content such as infographs (information graph), Vine videos, time-lapse videos, captured panoramic photographs, audio, and customised Google Maps to capture the information and resources needed to write a news story and to compose the web-based multimedia story.

The students commented that creating content for the news story in situ (within a chosen learning context) allowed them to capture memories, which helped them later to reflect on what was happening at the time:

I knew I could go back…because you have the Tweets, you don't only have what people said, you have the memories attached to what was happening. (Wells_FG1)

I think it enhanced my learning. It's a lot easier to be able to look back and it just reminds you of the things that you were going to do. (Riley_INT)

Other students commented that creating a Vine video for the story provided a different perspective they could explore and provided an insight into where the story eventuated:

… provides more of an insight to where that story actually is being set. (Sadie_INT)

Some students commented that because they were creating the content themselves, they had to analyse the facts and resources, which made the learning more memorable:

… you had to analyse your facts more and sort them out. …because you do it yourself, so then you're remembering things clearer. (Skyler_INT)
Students also commented that the process of creating content such as an infograph helped them deconstruct the story into smaller parts, which increased their understanding and clarity:

It helped me break down the story myself into different parts, and understand it better... I had to condense it. I had to make sure I understood why I was condensing. I had to reread my story just to make sure I was making sense, and I realized something about the story that I didn't see before. (Audree_INT)

According to the students the act of creating content as part of the learning tasks helped them embody the theory in the course and the practice of journalism. The authentic content the students created as a result of embodied practice was recognised and used by news agencies and the event organisers on which the stories were based. For example, Skylar witnessed a major road accident on a busy road in central Auckland—she took a picture of the incident and tweeted it. The same picture tweeted by Skylar was used by The New Zealand Herald to report the incident later in the day:

![Photo used by NZ Herald](Skylar_ART_Blog)

Figure 7.11 – Photo used by NZHerald (Skylar_ART_Blog)

Relating the findings from both iterations, the mobile and social media affordances empowered the students to create content in situ. The learners were able to connect with people and create and collect data and information in the learning process. The students, in particular felt that the content they created helped with reflection—it triggered memories of the event that was captured. The students also commented that the process of creating content using mobile and social media tools, provided a different perspective and gave them the ability to analyse the information and data—it provided clarity and understanding and made the learning memorable. The mobile and social media affordances, in particular mobility and connectivity, played a critical role in helping the students experience being a journalist in the course. It helped the students embody the
practice of journalism in their everyday life and to create authentic content—providing them with the opportunity to act like a journalist in real world contexts.

In the second iteration of the course, the PoJ website was created to support the students. The students were provided with detailed information on the requirements for the assessment tasks. The practitioners also published blog posts sharing tips and ideas for completing the assessment tasks. As a result, the average number of blog posts from the students was lower in the second iteration (19 in the first and 16 in second). A possible reason for this could be that because the students had clarity on the requirements of the assessment task and could easily access the information at any time, they published concise posts that helped them complete the task. The average number of posts in both iterations were, however, well above the ten required in the course.

**Enabled student creativity in the learning process**

The students felt that the design and facilitation of PoJ allowed them freedom to be creative. The students commented that having the freedom to be creative made them passionate and the tasks purposeful:

> I like the creative freedom of it. I think it's good because it makes life seem more real and more purposeful …you're more passionate about it, because you feel like what you're doing matters more. (Mateo_INT)

Similarly, another student commented that the creative freedom in the course made her ‘flat story’ more interesting as she was able to create interesting content in different locations:

> …it was quite a flat story. It's road safety, and it's something that you can't be that interested in, but being able to be more creative with it definitely made me a lot more interested …it wasn't just a journalism text anymore, it was this idea that you could go to several different places with it and make it even better. (Audree_INT)

As in the first iteration, the students shared instances of their creativity in the course on their blogs and Twitter account. For example, the use of Piktochart to create an infograph was shared with the students as a possible platform for presenting numerical data in an easy-to-understand format. Some students, however, remodelled its use within their own contexts to explain concepts and present nonnumeric facts. For example, Avery was writing a story on a fundraising event ‘Threadathon’ where people took part running on a treadmill to raise money for a charity organisation. As part of her story, Avery created an infograph (Figure 7.12) to explain what a Threadathon was to
people who were new to the event. She also live tweeted the event for people on Twitter and to raise awareness.

The ability to create content in the course provided the students with creative freedom. The students stated that mobile and social media affordances provided an alternative to writing in certain contexts and helped them express their passion for the subject in the multimedia content they created. It also made the learning purposeful and interesting for them.

**Students as creators of context for learning**

In both iterations of the course, the students were allowed to choose their own news story and to create and collect their own resources and information and then to elicit feedback in order to compose a newsworthy story based on a person, place or an issue in the real world context. In the second iteration, the students were provided with
scaffolding for effective use of the affordances of mobile and social media tools enabling them to capture, create and interact with entities in contexts that would inform their news story. In particular, resources (instructional videos on how to use the tools), examples from the profession and tips and ideas were shared regularly with the students on the PoJ website.

As in the first iteration, the students in the voluntary online survey were asked to rate what they felt about the statement (Q.13) ‘The use of mobile and social media tools in PoJ allowed me to pick an environment that I thought was most meaningful to my learning and enabled me to explore my understanding of the topic and build on it.’ Using a Likert scale (1 – being strongly agree and 5 – being strongly disagree), 64% of the students either ‘Strongly agreed’ or ‘Agreed’ with the statement, while 26% of the students were ‘Not sure’ and 10% of the students ‘Disagreed’ with the statement. In comparison (Figure 7.13) to the number who either strongly agreed or agreed in the first iteration (42%), a greater number of students in the second iteration (64%) indicated that the affordances of mobile and social media tools were useful while working in a meaningful context for learning. This indicates that PoJ website and the scaffolding resources which were provided to the students in the second iteration was effective in helping the students understand and apply the mobile and social media affordances for learning in the course.

![Figure 7.13 – Comparison of learning in context over two iterations](image)
As observed in the first iteration, the students were able to create a number of external contexts relevant to their learning and their news story that included ‘artifacts, other people and specific settings’ (Nardi, 1996). An analysis of student blogs from the volunteering group indicated that they were able to engage with multiple contexts (specific settings) over the 12 weeks of the course in order to compose their news story. Students created contexts by interacting with people online and in the physical world by creating communities using a number of social media tools, conducting interviews and online polls to generate data and information. For example, Solar shared that she created an online poll to gather feedback and opinion from people on her story:

I had made a poll and asked people … it was personal aspect in being able to ask people to share their thoughts. (Solar_INT)

Similarly, students were able to create contexts by interacting with and collecting relevant digital artifacts to inform their news story. For example, Addison shared in her blog URLs (or clickable links) of all the resources that she used to write her news story.

Some students commented that immersion within a specific context allowed them to elicit meaningful data and information. For example, Harper shared an instance of interacting with people for the opening of a new mall and how it provided her with an opportunity to learn and understand about the event further:

I did [my story] on the North West Mall, and… I liked finding out people's opinions. I got a lot of information on that, and I could hear about people's concerns that I could include in my story. (Harper_FG1)

Similarly, students commented that they were able to identify gaps in their research and knowledge from their actions and interactions in certain contexts which provided them with motivation to seek out the missing details in order to write a trustworthy news story.

The students used the mobile and social media affordances to create contexts to inform and enhance their learning. They used the affordances to interact with people and for collecting resources and creating content in specific contexts. According to student comments, the process of creating contexts using the affordances of the tools ‘immersed’ them within the event or situation and provided them with the opportunity to elicit meaningful data. They indicated that the process also helped them identify the
gaps in their news story and provided further opportunity to collect the information and data required.

The design changes made in the second iteration of the course stresses the critical need for effective support and scaffolding in helping the learner understand and apply the affordances for learning.

**Discussion**

The students in the productivity element of the design were capable of creating content by collating resources and information from the web, by interacting with people and capturing data and information using the affordances of mobile and social media tool in contexts—resulting in learner-generated content and contexts. The ability to create content using the mobile and social media affordances provided the students with creative freedom allowing them to express their passion for the topic—making the learning interesting and purposeful. Learner-generated content in the study also helped the students with reflection—it aided the reflection process by triggering memory and details of the event that was captured. The content also provided the students with an alternative perspective that improved their clarity and understanding making the learning memorable. The mobility of the device and connectivity enabled the students to create content in real world contexts as part of daily life helping them embody learning and journalistic practice. The students commented that the embodiment of practice and the ability to create content immersed them in the context for the story and helped them elicit meaningful data and information as part of the process. The students during this process were also able to identify the gaps in their story and collect further data and information to improve it. The improvements noted in the second iteration of the course, due to the implementation of the PoJ website and increased time in the tutorial sessions, suggest that technological and pedagogical support and scaffolding is critical for the learner.

**Summary of findings related to the first draft design principle**

The impact of the individual elements of the 3Ps in the design of the course and learning were discussed in the sections above. These findings were further analysed to understand the collective impact of the 3Ps in the design of the course. The findings add
to the understanding of the Pedagogy 2.0 model and provide an insight into how it may impact on the learner and the learning experience.

The findings for each element in the study were mapped against each other suggesting learner autonomy as the central tenet for successful implementation of the 3Ps in the course. Figure 7.14 illustrates a modified 3P model that incorporates the findings in this study. In the initial 3Ps model proposed by McLoughlin and Lee (2008d) (refer to Figure 2.5 on page 41) the three elements do not overlap, whereas the findings in the study suggest they can and outline transformational shifts in learning (p. 19). Learning driven by the principles of the three elements were found to have provided the students with opportunities for gaining knowledge and lifelong skills, learning to become and reflection in the course.

The mutual element in the modified model, Autonomy provided the students with choice and openness, passion, motivation, ownership, creative freedom and flexibility over learning contexts. These factors had a direct impact on student learning and their ability to produce, participate and personalise. The learners’ ability to participate and personalise their learning allowed them to gain the knowledge of journalistic principles and practice and lifelong learning skill (Lifelong learning and knowledge intersection). The students were able to achieve this in several ways by:

- collaborating with peers, other people, experts and the teachers
- accessing the content shared in the learner community that provided multiple perspective on the learning tasks and caused cognitive conflict—helping the learner make new meaning
- accessing and collating web resources relevant to their story
- setting personal learning goals and milestones
- seeking support and scaffold in and across online communities
- creating intentional communities to drive their learning and build their news story
- establishing an online identity using the social media tools
- applying their skills and knowledge in different contexts.
Similarly, the learners’ action and interactions within the participation and productivity elements provided them with the opportunity for *learning to become* — a journalist (intersection between *Participation* and *Productivity*). The students in the course achieved this:

- by collaborating with experts in completing the learning tasks in and across communities. This helped the students learn the values, attitude and conduct of the profession
- through true-collaboration with the teachers to gain the skills and knowledge for solving authentic learning issues
- by sharing resources, content and ideas within the learner community and in the public domain
- by creating authentic content with people and other entities in real world contexts — this allowed the students to embody theory and journalistic practice in their everyday life and ability to immerse themselves within the context of the story they were writing. This helped them extract the information and data they needed and also outlined any gaps in their story for further exploration, making the learning interesting and purposeful.
The nexus between Productivity and Personalisation elements in the course aided learner reflection. The findings suggest that the course allowed the students to:

- learn from their own experience while completing a task. In this process, the learners were able to identify their strengths and weaknesses, which the learners were able to overcome by seeking relevant support and scaffold—promoting self-regulation
- seek feedback and opinion from their audience using the affordances of the social media tools (such as networking and creating their own communities using Twitter hashtags and Facebook conversations)
- create content by publishing blog posts and using mobile and social media affordances. Blogging provided a platform for continuity of thinking and encouraged constant reflection. Blogging allowed the students to reflect on action—helping them make new meaning. Similarly, the content created using mobile and social media affordances provided the students with an alternate perspective, which disclosed more information and data about their story requiring further analysis. The content creation process also required the students to unite the data and information they had gather to assemble it in multimedia format (for example, infographics and video)—this enabled reflection in action that provided clarity and understanding of the topic.

To remedy the issues identified in the first iteration of the course, the PoJ website was created and several changes were made in collaboration with the practitioners to the design of the course and how it was facilitated (discussed at the beginning of this chapter). The changes made had a positive impact on the implementation of the first design principle and helped improve some of the issues. Student participation and use of Twitter in the class community was higher than in the first iteration—student engagement in the community was higher and students created and used more hashtags to promote their stories and to create communities. Similarly, a high number of students indicated that they were able to use the affordances of the mobile and social media tools to choose and learn in a context that was conducive to their learning (Figure 7.14)—suggesting they were competent with using the tools and understood the pedagogical implications of the affordances. The practitioners published blog posts sharing ideas and
resources to help and guide the students from completing the learning tasks and activities. In relation to the first iteration, fewer blogs were posted perhaps indicating the students had a clearer and better understanding of the requirements of the tasks and activities. A deadline for the weekly student blog posts was added in the second iteration. This helped some students who felt it stopped them from procrastinating, while others felt they were posting for the ‘sake of it’ as they did not have anything to share. The students, however, acknowledged that there was a need for a deadline as journalists work under strict deadlines imposed on them by the editors.

While the design changes helped resolve some of the issues, the students identified new challenges that were problematic in the course. According to some students, increased visibility of their work was intimidating and it negatively impacted on their learning. Similarly, student comments suggest that they needed scaffolding to become a self-directed learner. They commented that they lacked confidence and motivation to be autonomous learners and needed the first few weeks in the course to gain self-belief and esteem.

The course along with the 3Ps of Pedagogy 2.0 was supported by the second draft design principle that proposed that learning should be implemented using open, platform independent and student-owned devices. The following section discusses the themes that emerged from the analysis of the data relating to this design principle.

**Design principle 2: Designing for learning with open, platform independent and learner-owned devices**

As in the first iteration, the learning in PoJ for the second iteration was facilitated using open and platform independent social media platforms such as WordPress and Twitter, and learner-owned mobile devices such as smartphones and tablets were heavily encouraged and integrated in the design and facilitation of PoJ. No changes were made to this design principle in the second iteration. The themes that emerged in relation to this design principle are discussed next.
**Enhanced accessibility**

Students commented that the Internet connectivity enabled by the mobile devices enhanced access to a vast amount of resources that they found useful in the course. Students stated that they had their phones on them most of the time and it enabled a number of tasks in the learning activities:

> … all of your social media things are just there [on the phone], and it's quick and easy, and it's accessible. (Sandie_INT)

The students commented that the connectivity and accessibility of social media tools allowed immediate access to people and information:

> …means immediate connectivity. At all times I can look up or tweet or speak to somebody. There's no limit on the physical world any more as a result of that. (Lincoln_FG3)

The constant connectivity and pervasiveness of student-owned mobile devices provided the students with access to information and resources on the web and connectivity with people and opportunity for conversation. The devices also provided quick access to social media tools and other applications, which the students could use to connect, create content and manage their appointments and tasks.

**Authentic networking and collaboration**

Similar to the first iteration, the use of open platforms in the design and facilitation of PoJ enabled students to create genuine connections and opportunities for collaboration with people from around the world. One student commented that the openness of the platforms helped her to establish connections with people, which otherwise would have been impossible:

> I am aware that networking is a MASSIVE part of becoming successful in whatever avenue of media I choose to go down and I have made some awesome connections with people in this course who I otherwise wouldn't have had the opportunity to talk to and engage in debate regarding news issues. (Brianna_ART_Blog)

Similarly, the students commented on the authenticity of the type of collaboration they were able to undertake due to the openness of the platforms:

> … it opened the way for me to network with other engaged citizens and Journalists alike. (Leo_ART_Blog)

While most students embraced the openness of the platforms, some students commented that they lacked confidence or feared the prospect of being judged. The students, however, commented that after the first few weeks of the course when they had gained...
the confidence, they were comfortable with the openness. One student who had kept some of his posts as a draft (unpublished) commented:

For a long time many of these blog posts were private, and I believe I might have been able to experience more from the multimedia platforms if they had been on a public setting. (Wyatt_ART_Blog)

Student feedback from both iterations indicates that the ‘openness’ of the tools was a valuable asset for the students in the course. It allowed the students to openly access resources and to seek and connect with people and experts to collaborate with and to learn from—giving them the opportunity to create authentic networks for collaboration.

**Mobility weaves thinking and learning across contexts**

The integration of the affordances of learner-owned mobile devices, in particular smartphones and tablets and the use of open platforms allowed learners to weave their thinking and learning across different contexts – physical space, technology, conceptual, social and across time (Sharples et al., 2007). One student commented that tools and affordances were useful across several spheres:

It makes you more versatile. I can work across - I can work out in the open, talking to people; but then you can also meet the people that go online, and do all the creating, and stuff like that. (Wells_FG1)

Students commented that the ability to weave contexts using the affordances of mobile and social media tools also helped them link their thinking across several contexts:

…it was helpful because ... Even if I'm in a different class and I think of something for journalism, I can still note it down in my phone …remembering different things that I can just note it down, and then further that later. (Riley_INT)

Similarly, students commented that the affordances of the tools in PoJ enabled mobility and learning across the time and space continuum. One student commented:

I travel quite a lot… I live half an hour away, so a solid hour of my day is on public transport, and I'm using it then, and I'm using it in my break between uni and work, and I'm just always doing something. (Sardie_INT)

According to student comments the mobile device also acted as creative studio while floating between different contexts and the time and space continuum:

…you know you're so connected to your phone and what it does. You could just instantly go, ‘Oh.’ Yeah, I guess it becomes like second nature and you realise the usefulness of the phone. I don't have to go and worry about, ‘Oh I need a camera. I need a recording device.’ I can just use my phone and everything's sorted. (Anya_FG3)
As in the first iteration, students in the second iteration were asked in the voluntary anonymous online survey (Q.8) what device(s) they used the most as part of the learning process in PoJ. Some students (35%) indicated that they mostly used their laptop in PoJ, while 39% of the students indicated that their mobile device was the main equipment for learning and 26% of the students reported that they used both their laptop and mobile devices equally in the process. The almost equal spread of the use of the devices in PoJ indicates that the students appreciated the ability to move between the devices to complete the tasks they were working on. The students indicated that they moved between the devices according to the affordances and their ability to help them achieve the task easily:

So I did all the serious stuff on my laptop but then all the easy things when I’m out and about with my phone. I would never write a blog post on my phone, it would always be on my laptop, just because I have the readings in front of me and it's nice and big to type up. (Ellie_INT)

The students, however, commented that they mostly started a task on their mobile device as they had it on them almost all the time and they used the laptop as a device to assemble into meaningful content:

You always have access to it, which makes it that using it on a phone is more an accompaniment to what I do on the desktop … the phone is something where we capture things, ideas, or great photos or videos, and then I would actually build it on my laptop. (Audree_INT)

The ability to learn, think, weave and navigate the different contexts regardless of time and space enabled by the affordances of mobile and social media also made the students more aware of their surroundings. The pervasiveness of the mobile and social media tools ingrained learning into daily life:

… the new thing is that journalism is no longer something of its own, it’s something that’s integrated into every thing you do every day. (Wells_FG1)

… it became a part of my life. I was always thinking about journalism and what I was going to post. (Audree_INT)

The findings from both iterations in the study indicate that the use of student-owned mobile devices, in particular smartphones and social media tools, provided learner mobility. Students perceived mobility as omnipresent and embodied in people, technology and social media tools. The ability to use social media tools on smart-devices (smartphones and tablets) meant the learners had a mobile studio that was capable of supporting creative learner behaviour in and across contexts. The comments
and reflections shared by the students over the two iterations indicate that they were able to weave several learning contexts using open and platform independent social media tools and their mobile devices in the course—technology, conceptual, social and temporal contexts. This helped learners embody learning into the ‘gaps of daily life’ (Sharples, 2007, p. 3) and increased learner awareness of the learning opportunities in their surroundings (Cook et al., 2011).

Summary of findings related to the second design principle

The use of learner-owned devices, open and platform independent social media tools in the course provided the students with a number of learning benefits. The constant connectivity and pervasiveness of the device and social media tools meant that the students had enhanced access to information and resources on the web. At the same time, it provided access to people and the ability to initiate a conversation with them when needed and allowed them to manage their learning and tasks using scheduling applications on their device. The smart-devices allowed the learner quick access to social media applications when and where needed—acting as a mobile creation studio. The learners were able to capitalise on the openness of the social media tools to freely access resources on these platforms and to seek and collaborate with people and experts to learn with and from. The mobility of the device and the platform independent and open social media tools provided the learner with mobility for embedded learning. These affordances allowed learners the freedom and the ability to weave the technological, conceptual, social and time contexts as part of their learning—helping embody learning and practice as part of daily life.

The design of the course was also informed by a third design principle that suggested that the learners should be able to select contexts for learning according to their learning needs at the time. The following section discusses the themes that emerged from the analysis of the data relating to this design principle.

Design principle 3: Learning in learner determined contexts

As a component of the third design principle, the facilitation and design of PoJ provided the learner with autonomy to determine the contexts for their own learning. As a result, the entire learning in PoJ was based on the learner creating a news story on a real event.
This provided the learner with the autonomy to direct and determine the contexts for their own learning. The themes that emerged after the analysis of the data relating to this design principle are discussed below.

**Provided opportunities for serendipitous learning**

The students shared instances of serendipitous learning (unintended learning) in PoJ. The students felt that the mobility of social media tools and mobile devices when carried on a person allowed them to capture and share content in instances where they were witness to an event or issue that eventuated before them. One student shared an example of how serendipitous opportunities might arise:

...if there was a fire in the building, I could take a picture, and my news could use that picture, like [Skylar] saw a car crash, and she took a picture, and the news contacted her, like, "Can we have your photo?" (Harper_FG1)

Similarly, Skylar shared the serendipitous nature of the pictures she took and how they were used on the front page of the New Zealand Herald. She reflected that it gave her the opportunity to do what photojournalists would do in a similar event:

I managed to get two of my images on the front page of the New Zealand Herald… Both times you could say I was lucky to be in the right place at the right time, which I would argue also applies for professional photojournalists. This is due to the fact that majority of the population now carries smart phones wherever they go … (Student_INT)

![Figure 7.15 – Photo by Skylar on front page (Skylar_ART_Blog)](image)

Freedom over the learning contexts in both iterations of the course provided the students with the opportunity for serendipitous learning. From the data, three categories of serendipitous learning in different contexts were identified:
1. **tangential learning** – this eventuated when learners researching for a particular resource stumbled across other resources which were relevant to their story and provided more information and perspectives (for example, Twitter)

2. **random encounters** – these eventuated in social spaces while interacting with people leading to connections with more information and detail about the news story (for example, conversations with someone while shopping)

3. **right place at the right time** – this is when the learner happened to be at the right location and time when an event unfolded, such as a fire or an accident.

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**Learning as stepping outside your comfort zone**

Many students, as in the first iteration, commented that the learning experience in PoJ pushed them out of their comfort zone. Several students commented that completing the authentic tasks in the real world—such as interviewing people, talking to strangers and using mobile and social media tools—required them to step outside of their comfort zone in order to learn. One student reflected on the significance of bursting the comfort zone bubble and the impact it had on her learning:

> I knew I had to push myself out of my comfort zone… one day I plucked up the courage to take my story to the streets of Westgate. This proved to be a success… From then on I started to believe strongly, not only in myself, but in my article too. I became passionate about finding and creating more content for my blog posts and article. (Quinn_ART_Blog)

The students commented that the boost in confidence they gained from these experiences were also useful in other areas of their learning and in life:

> …with confidence, you gain that and then you can apply that to other areas of your learning as well and of your life. (Jackson_FG3)

According to student feedback and practitioner reflections captured at the weekly meetings—the design of the learning tasks and activities, the tools integrated in the process and need to work in real world contexts played an important role in scaffolding them from their comfort zone into the learning zone. This helped students build passion and confidence, which transferred to their daily life.

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**Ability to enact practice in context**

According to Hase (2011) learners need the autonomy in the learning process to enact practices (explore and experiment) using their current knowledge in different contexts to build new knowledge and capability (Blaschke & Hase, 2015). The students
commented that the affordances of mobile and social media tools created opportunities for them to explore and experiment with ideas in the course:

> Along this journey I have really enjoyed playing with the different social media outlets to provide visual information as well as informative content. I liked playing with the multimedia content on the blog, it has really extended my ability to work in journalistic practices. (Kayleen_ART_Blog)

Students felt that the autonomy and the tools in PoJ allowed them to create simulations in the real world for learning:

> I just found it good getting to go out and kind of simulate what it's really like… (Riley_INT)

One student reflected that the experimentations and explorations allowed her to learn from people and provided her the ability to ‘act’:

> I got to learn more about people. I could be connected, you learn how to act… (Addison_INT)

Learner autonomy and mobile and social media affordances created a learning experience where the learners were able to experiment and explore with ideas and concepts in different contexts—helping build new knowledge and capability. It also helped the learner to act and enact authentic journalistic practices—extending their ability and knowledge of the profession.

**Facilitated double-loop learning**

Similar to the first iteration, it was also observed in the second iteration that the learning experience in PoJ changed or informed the learner’s assumptions, values, beliefs and theories (Argyris & Schön, 1978). For example, Quinn shared an instance of how her assumption about journalism changed over 12 weeks of the course:

> It looked like such a glamourous career, yet over the course of this semester I have learnt otherwise. It isn’t all fame, glamour and served on a silver platter …you have to start from the bottom and work your way up… (Quinn_ART_Blog)

Similarly, students shared reflections of their experience in PoJ and how it helped them understand who they were and what they were capable of—examples of how the learning in PoJ informed their personal beliefs and values:

> In 12 weeks of doing Principles of Journalism I have learnt a lot about myself and what motivates me to work hard … (Skylar_ART_Blog)

The real world situations and interaction with people in socially and culturally sensitive contexts (for example, family, homelessness and teenage pregnancy) challenged the
learners’ values, assumptions and beliefs. These challenges provided an insight into their own capability, motivation, preconceived beliefs about journalism and ethical and human values—suggesting the course provided the students with opportunity for personal growth and understanding.

**Summary of the findings relating to the third design principle**

On the formal and informal continuum for learning, the findings suggest that this design principle played an important role in facilitating learning in informal contexts—in everyday social and cultural contexts reflecting the environment the students lived in. Due to the unfamiliar learning environment and socially and culturally sensitive surroundings, the students felt that they needed to move out of their comfort zone in order to learn. The learning tasks and activities, and mobile and social media affordances helped the students transition to the zone of learning—building passion and confidence. The informal contexts offered the students opportunities for serendipitous learning (tangential, random and right place at the right time) and to act and enact journalistic practices through experimentation and exploration—helping build new knowledge and capability. The rich social and cultural contexts engaged the learners in conversations and interactions that offered opportunities for them to gain an insight into their own capabilities, provided motivation, and informed their ethical and human values and helped them grow as individuals.

A critical element in a course and the learning process is the role of the assessment. As a result, the fourth design principle was derived in the second phase of the study that emphasised the ‘assessment for learning’ principles where the learners have the autonomy to negotiate elements of the assessment tasks. The following section discusses the findings relating to this design principle and how it impacted on the learning process.

**Design principle 4: Designing formative learner assessments**

Similar to the design in the first iteration, the students in the second iteration were given autonomy to choose, direct and determine their own learning and the ultimate output for assessment in the creation of a multimedia news story based on a real person, place or
event. The themes that emerged during the analysis of the data relating to this design principle are discussed in the sections below.

**Learner autonomy in the assessment process as an empowering factor**

As in the first assessment, students were given autonomy over the assessment process. Learners were viewed as agents of their own learning in directing and determining their own path and processes in the assessment events. The students commented that having autonomy in the process enhanced passion and the drive to complete the task:

> …it helps getting to pick your own topic instead of being forced a topic. It makes you more eager to find out information and stuff like that. (Riley_INT)

The students also commented that the assessments and the learning outcomes in PoJ gave them a sense of ownership and personal achievement:

> …you felt like what you were doing had actual worth. You felt like what you were doing was important… (Alie_FG2)

One student commented that having autonomy in the assessment over being told what to do made her more aware and self-analytical:

> I find that if you tell me exactly what I need to do, I won't put much thought into it. But because it was more self-led, we did a lot more self-analysis. (Skylar_INT)

Learner autonomy in choosing the news story and freedom to then drive the assessment tasks and processes increased learner passion, motivation and, ownership of learning—helping engage the student in the course. The students commented that because they had choice and control in the assessment process, they felt they were learning, were self-analytical and thought the work they produced had relevance.

**Context as an enabler for students to explore multiple perspectives**

As observed in the first iteration, the students’ actions and interactions in real world contexts relevant to the news story they were writing played an important part in informing their learning. In particular, the context provided the students with a backdrop to evaluate news values and to write a newsworthy story as part of the assessment activities. For example, Wells explained how he took the news values and applied it against the news story in context to understand the critical elements and the structure of the story:
I took the news values, and trying to, I guess, cater your story to understanding which parts are important… that definitely taught me understanding the news values and understanding the structure of the story… (Wells_FG1)

Similarly, another student shared how applying the news values to the idea for the news story in the real world context helped her redefine the story with another angle:

LIGHT BULB MOMENT! I AM FULLY EXCITED YET NERVOUS AS TO WHAT HAS JUST OCCURRED! I have completely thrown myself off a bridge and changed my whole angle of my news story. Completely! (Lucy_ART_Blog)

Another student commented on how the evaluation of the news values in context indicated that her story needed to be developed further and how she was able to elicit the required information and data in order to make her story newsworthy:

I did kind of looked at the values and go, ‘My story doesn't achieve as many of these as I originally thought’ … I saw how I could also change my story to make it fit more of the values, or things like that. Even I went and gathered more information so that I could fit the values slightly better. (Riley_INT)

The extract above portrays how the student was able to ‘criss-cross’ (Herrington & Oliver, 1995, p. 27) the learning environment, in this case the real world contexts relevant to the news story the learner was writing, to build an understanding of the topic or subject — understanding and evaluating the set of news values.

The students felt that the context they were working in acted as a platform or as an enabler for learning the elements of journalism that could not have been taught. For example, Harper commented how she was able to learn the importance of being impartial as a journalist by interacting and participating in the contexts for her news story:

… with my story I went to a meeting with the guy that developed the mall, and he was talking about, ‘Oh my God, it's going to be so cool.’ So then my news story was me then saying how it was cool. So it really helped me learn you've got to remain impartial. (Harper_FG1)

Wells reacted to Harper’s comments and added that this sort of learning could not have been known rather it is something that needs to be learned:

I hear what you're saying, you wouldn't have just known that. And I would have done the same thing because you don't even see it sometimes, and that's something, which is learnt. (Wells_FG1)

Another student commented that the context she worked in for her news story allowed her to make mistakes and this enabled her to learn more when compared to learning from a book:
...when you make your own mistakes you learn more. You learn more from your mistakes than you do from reading a book or something like that. (Audree_INT)

The extracts above provide an overview of the important role that meaningful contexts could play in the learning process. The examples given indicate that authentic contexts could act as a teacher for enabling learning of unteachable principles or knowledge that could only be ascertained by the learner experiencing it in a meaningful and authentic situation (Barab & Plucker, 2002).

**Assessment as learning to be**

Along with the participation element of the 3Ps that created opportunities for the student to experience learning to become (discussed in the analysis of the first design principle under the Participation element), the students in the second iteration felt that the design of the assessment tasks also helped them understand what being a journalist meant which helped them decide if journalism was what they wanted to focus on as a career path. The students thought the experience in PoJ gave them a sense of being a journalist. One student reflected on the assessment events in PoJ, which he thought gave him an opportunity to grow as compared to writing an essay:

‘This is what you're doing [essay]. Give it to us in three weeks,’ [The news story] was a gradual process of growing, and if there wasn't any growth, we'd get nothing out of it. It wasn't just, ‘Do an all-nighter, and then you get a B.’ (Mateo_INT)

Another student reflected:

I felt like we were expected to be intern journalists. We're obviously beginning and we're learning, and so we're being taught as if we were new to a newsroom rather than new to a course. (Sadie_INT)

A majority of the students who enrol in PoJ as a first year course have no idea of what journalism is and undertake the course to test it as an option for the future. While for some students, journalism is what they had decided to do and become since primary or secondary school. The students commented that the authentic experience of being a journalist in PoJ either confirmed that being a journalist was who they wanted to be or it showed them that journalism was perhaps not what they thought it would be. One student reflected:

Twelve weeks ago journalism was nothing but a potential major of which I held a few preconceptions and some hefty aspirations, now however I’m happy to report it’s an industry I’m eager to learn more about. (Gabbie_ART_Blog)

Another student shared:
Since I was eight years old, journalism was what I wanted to do. I was so excited my first year, my first course of journalism. Then I realised what it actually was like and it made me do the complete opposite, and go, ‘This is not what I want to do at all. It’s just not me in so many ways.’ But it was good that the course allowed that. I’d rather know now than get to two or three years down my uni course… (Jackson_FG3)

Apart from the time pressure to compose a story (students in the course had 12 weeks), the assessment requirements mimicked the news writing process a current journalist would undertake. This provided the students with an authentic experience and provided similar challenges a journalist in the real world would face. This experience in the course either verified a student’s choice of becoming a journalist in the future or helped them reflect and reconsider their choice.

While the participation element of the first design principle helped the students gain a sense of being a journalist, the design of the assessment tasks were also critical in enabling the transformation (from knowing to being). The findings from both iterations suggest that the expectations in assessment tasks and the learners’ ability to participate in and across communities (the first design principle) need to align with each other—emphasising that assessments need to be designed for learning. Herrington, Reeves and Oliver (2010) suggest that authentic assessment tasks must be ill-defined and complex and require the students to define the tasks and sub-tasks that they then explore and complete over a period of time (p. 46). In the course, the students were asked to compose a newsworthy story based on a real world event, person or an issue—a task that is both ill-defined and complex and required the students to formulate their own sub-tasks to investigate and complete over a period of time (12 weeks). The findings suggest that this provided learner autonomy, helped embed the assessment seamlessly into the learning process and enabled learning to become.

The critical role of the teacher
In the design and facilitation of PoJ, the teachers played multiple and varied roles throughout the learning process. From the analysis of student data and teacher-created digital artefacts, the teachers were observed to have assumed multiple roles to help the learner in a self-driven and determined learning process. According to the data, the teachers acted as a role model, guide, collaborator, broker for boundary crossing, an agent for modelling and scaffolding mobile and social media practice, an encourager, instigator, motivator, an enabler of change, mediator for knowledge, a person with
enthusiasm and someone who has trust in the students and in their ability to complete the task and activities as part of the learning process. A number of these themes were discussed as part of the analysis in the first iteration. The newly identified roles—brokers for boundary crossing, mediators for knowledge and someone who has trust in students are discussed below.

The students commented that the learning in PoJ required them to step outside their comfort zone to achieve the learning outcomes required in the course. As a result of this, the students commented that the teachers played an important role in being the agent for brokering the boundary between their comfort zone and their learning zone:

I have appreciated my lecturers and tutors throughout the year who have helped me enhance my journalistic skills by helping me get outside of my comfort zone. (Colton_ART_Blog)

Another student explained how the teacher acted as a guide and informed her learning and transition to a zone of learning by collaborating with her at a meta-cognitive level:

They helped me in a way that it got me to a new place with my story and allowed me to process further, but didn't give me every single detail. That's honestly the best way to describe them, as guidance. Guardian angels in a sense. (Anya_FG3)

The students also viewed the teachers in PoJ as mediators of knowledge. For example, Lee commented on the teachers playing the role of a mediator when he submitted the draft news story. The students presented their version of the story and the teachers then mediated the process to improve the draft story and to inform student learning:

Is mediator the right word, where they sift through your information? I liked it when we did our drafts, they showed us what to do, and what not to do. They allowed us to gather all the information we wanted, and write not whatever we wanted but a news article; but then they mediated it in a way, and taught us how to do it quite properly. (Lee_FG1)

Some students also felt that the teachers in PoJ endeavoured to connect with them and form support roles to help inform their learning:

[Teacher’s name] developed relationships with us and I was comfortable talking to her in a brutally honest way, as that’s just what she was like. Perhaps the best teacher I’ve had so far. (Asher_ART_Blog)

The students commented that they were respected and the teachers had faith in them to complete the given tasks and activities:

It felt like the teachers had faith in what I was doing …with journalism, they're like, ‘These are principles of journalism. This is how you're supposed to act as a journalist.
You have to decide what's right.’ I felt grown up. I’ve always been told what to do, and now I get to just do whatever we want. (Skylar_INT)

The same student commented:

I think that people should trust us… People think that students are lazy and they don't do anything, when they actually do a lot… they don't do their work, it's actually because they've got so much going on that they can't keep up. Just trust and having faith and knowing that you can do it, and just respect. (Skylar_INT)

She further commented that knowing the teachers in PoJ had trust in her capability and respected her as an adult and as a learner made a difference to her learning.

In the study, several teacher roles were identified. Blaschke and Hase (2015) outlined that the teachers play a critical role in supporting and scaffolding the learning in a self-directed and determined learning environment. The roles identified in the study emphasise the versatile and dynamic role the teachers played in informing and guiding the learners in the course. Every learner in a course is unique and bring with them different knowledge, expertise and experience—as a result they all have different learning needs and require differing levels of support and guidance. The teachers, as a result have to adapt to a role that is needed by a student at any given time to support him/her in their learning—to help her move to heutagogy learning by scaffolding her through the pedagogy-andragogy-heutagogy (PAH) continuum. In particular, the teachers collaborate with the students at a meta-cognitive level by being a peer or the ‘knowledgeable other’ in the zone of learning or the zone of proximal development (Vygotsky, 1978) achieved by the student by stepping out of their comfort zone using the affordances of mobile and social media tools in authentic contexts.

**Feedback in self-driven and determined learning**

A new assessment—a draft of the news story was added in the second iteration of PoJ after practitioner reflections and the student comments in the first iteration indicated that increased informative feedback was needed on the news story and writing process. The increased time allocation during the tutorial sessions and the draft of the news story as an assessment event provided the teachers with the opportunity to give the students detailed feedback and guidance. The students commented:

…the feedback was really good, finding out what to do. With other [courses], they write just a sentence like ‘awesome work’, and that's it. ‘Needs work’, and it's like, ‘What is it that you actually want me to do?’ (Wells_FG1)
The students commented that the feedback by the teachers on the draft news story provided them with guidance on their work and it also gave them confidence:

...you knew exactly what track you were on. It kind of gave me a confidence boost so I could actually write a decent story. (Anya_FG3)

According to the students, the feedback they received on their draft news story acted as a trigger for reflecting on their work to identify areas for improvement. One student commented:

By having the draft story you're almost forced to reflect and realise where you could have done better. (Niylah_FG3)

According to some students, the feedback they received on their work provided them with direction and suggestions to move forward as a learner and with their story. One student commented that the feedback he received allowed him to reflect on what his role in the course was and what he was suppose to do in the course:

When I got the feedback, it was then that I realised where I'd been, and then it was just switching over: doing the readings, and then actually integrating that with myself. (Mateo_INT)

The students also commented that the feedback provided them with direction on how to progress their learning and the news story:

I now know the direction I need to continue to take my story, and that will be what I do for the remainder of this course… (Emma_ART_Blog)

The extracts above indicate that explicit and detailed feedback in a self-driven and determined learning environment is critical. It helps the learner reflect and understand their role and gives them confidence, direction and guidance to move forward.

Creation of a polished product as part of the assessment

As part of the second iteration, the students in PoJ were encouraged to create their multimedia news story using Wix. The change was made in the second iterations after observations in class and comments from the students that WordPress did not provide a flexible and customisable user interface that was conducive for producing a polished multimedia news story required as part of the assessment. The students indicated that composing their multimedia news story using Wix was fun and exciting, which enabled them to create a product that was unique to their story and looked professional:
I loved playing around with Wix. This surprised me somewhat, due to my incapability with technology, but being able to create something completely unique and professional was actually really fun and exciting. (Edna_ART_Blog)

Another student commented:
I liked the fact that we’re using Wix because it’s not the typical essay, the typical news stories. I think it’s cool you learn how to do the interactive things, like embed pages etc. (Lee_FG1)

Some students commented that creating a Wix web story page helped them utilise their ability to create a product that they could keep in their portfolio of work for future reference:
From photos and videos, to graphs, maps and social media discussions, I have fleshed out my article to the best of my ability and created a WIX page to show in my future portfolio of work. (Quinn_ART_Blog)

The students also stated that creating a website provided their reader with an opportunity to perceive their news story in a ‘new way’:
I have decided to use a Wix page for my final article publication as I believe my story will be understood in a “new way.” The use of multimedia including image and video options will really emphasise what makes this story special, original and interesting. (Genesis_ART_Blog)

Some students thought that the use of Wix to create the news story took the story and their work to another level:
I am combining videos, embedded pages from social media discussion, links to official websites, a map, and photos into the multimedia Wix format. I think this majorly adds to my story. (Autumn_ART_Blog)

As the final assessment in both iterations, the students were required to compose a multimedia news story. According to Herrington, Reeves and Oliver (2010), authentic assessments need to provide the learners with the opportunity to be expert performers—the students apply the knowledge and skills gained in the learning process to create a polished product. The final assessment (multimedia story) in the course was designed to create this opportunity for the learners. Student comments from both iterations, however, suggest that the selection and affordances of technology played an important role in their ability to create a polished product. WordPress in the first iteration imposed a rigid structure hence limited how the students could express and present their story. Wix on the other hand allowed the students flexibility to express their creativity and to use their knowledge and capability to create unique and professional news story.

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**Summary of findings related to the fourth design principle**

The application of this design principle in the course enabled learner autonomy in the assessment process. This provided the students with ownership, motivation and passion that helped engage them in the learning process, made them self-analytical and create authentic content that had relevance. The learners worked in real world contexts to create their news story, which provided a backdrop for the learners to learn from experience. The contexts offered students multiple opportunities to criss-cross the learning environment helping them reflect, build an understanding and provided opportunities to elicit data and information.

While the participation element of the first design principle allowed the students opportunity for learning to become, the findings suggest that the assessment, in particular the assessment tasks also played a critical role in enabling the transformation. The assessment tasks needed to align with the learning activities, which in this study were the sub-tasks the students derived from the broad outline they were given to create a news story. As a result, the assessment tasks and learning activities were seamlessly integrated in the learning process and provided students autonomy. The teachers were observed to have also played an important role in supporting and scaffolding the learner. The teachers had to adopt a dynamic and versatile role in the course, which helped the students understand, drive their learning, gain the skills and knowledge needed for working in socially and culturally rich contexts and achieve the conceptual changes needed to complete the learning tasks. A new assessment was added in the second iteration to provide students with feedback on their stories. The students valued the change, which emphasised the role and importance of detailed and critical feedback in a learner-driven and determined learning. The students commented that the feedback from the teachers provided them with confidence and helped them understand the principles of journalism and reflect on the elements, which were missing in their story—helping them identify the gaps and methods for resolving it.

The students in the second iteration were encouraged to use the Wix Editor to assemble their news story. This change had a positive impact on student learning, as it provided the students with an open and flexible platform to craft a professional product. While the students in both iterations created a multimedia story, the change suggests that the
selection of the tools and their affordances plays an important role in enabling students
to be expert performers—the tools need to embrace and enable creativity to allow the
learners to apply their knowledge in creating a polished product without limitations.

The use of mobile and social media tools and their affordances were integrated and
embedded in the course. It was equally critical for the students to understand why they
were incorporated and how they were expected to use the tools in their learning. In
order to achieve this, a fifth design principle was utilised in the facilitation of the
course. An overview of how this impacted on student learning is provided in the section
below.

**Design principle 5: Providing a rationale and an explanation for the
use of the tools in learning**

As in the first iteration, the students were provided with an overview of the set-up and
use of the tools in PoJ. A clear expectation of how to use the tools and learning
expectations were provided to the students. An overview of why mobile and social
media tools were integrated as critical components in the course was also shared. The
data relating to this design principle was analysed and the themes that emerged are
discussed in the sections below.

**Need for a change — re-culturing the students**

As reported in the first iteration, there was a need early in the course for the students to
be inducted into the new approach to learning proposed in PoJ, where the students were
the main agents of their learning. Similarly, the students needed to be scaffolded into
effective use of mobile and social media tools, which they otherwise considered to be
mostly for entertainment and social purposes. For example, Mateo who was a 3rd year
student commented that he found learning in PoJ difficult because it was different to
what he experienced over the last two years:

…difficult, simply because the structure of the thing was so different to what I've done
over the past three years. Especially, in regards to the assignments, where literally
everything was just essays… if I'd done this in my first year, it would have been more
effective to me then because at the time I was a more practical student, but over the
three years, I gradually became more theory balanced – essay… it wasn’t really an
active process. (Mateo_INT)

Similarly, Anya reflected on her learning days in school:
…high school is just like you do everything, everybody does the same thing… sometimes what you learn in high school does not translate to the real world. I can definitely say that, some of the courses I took in Year 12 and 13 will not help me in this career. (Anya_FG3)

Some students shared that their expectation in PoJ was that they would be taught according to what was required from them in the assessment tasks. For example, Ontari commented that in other courses she was doing, they had a lecture dedicated to each assignment, where as in PoJ it was not the case:

Usually for some of our other [course], we thought each essay question would have a lecture dedicated to that question. For journalism there was none of that, it was just all over the place… (Otari_FG2)

Some students held similar views for using mobile and social media tool in learning. For example, Fox shared what he thought Twitter was best used for:

I feel like if you're not a celebrity or something, there's not much point, because people go on there just to stalk their celebrities and see what they're up to. (Fox_FG1)

While Sadie commented:

I think learning how the tools could be used not just in an entertainment kind of purpose was very helpful. (Sadie_INT)

One student commented that the expectation set in the first week of the lecture in PoJ helped her change her mindset and grounded her learning from there on:

…because of how they treated us and how they expected us to learn, come prepared to be, not journalists, but at least learning to be journalists. (Sadie_INT)

The findings in both iterations suggest that in student-directed and determined learning underpinned by the use of mobile and social media affordances, the students need to understand and conceptualise their role in relation to the new learning approach. This need arises due to the students’ prior learning experiences which encouraged passive learning. Similarly, the students need to reconceptualise how they perceived the role of mobile and social media tools and their affordances in the learning process. Due to established behaviour and expectations with using popular social media tools, the students only viewed them as a tool for social and entertainment purpose. As a result, it was important to explain and provide a rationale for the use of the tools in the course and to clearly discuss with the students, the learning expectations and their role in the learning process.

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Ecology of resources to help the students understand and use the affordances of mobile and social media tools

With regard to the findings in the first iteration (previously discussed as Reiterate and remain the students regularly theme), a learner centric ecology of resources in the form of a website (PoJ website) and a PoJ Twitter account was created to scaffold and support the students and to promote self-regulation by making the course information and requirements easily accessible. The findings suggest that the PoJ website helped the students self-regulate their learning, however, they needed time to adjust to use the mobile and social media tools in everyday learning. For example, one student commented that because the tools implemented in the course were new she frequently forgot that she had to use them:

> I never had Twitter before the assignment… I forget about it. I do like it as a tool to use, but I just forget it's there sometimes. The blogs as well, having not used that before. (Riley_INT)

For some students, using mobile and social media tools for learning was ‘new’ and hence it was easy to forget that it could be used in completing the learning tasks and activities. The students commented that in particular they lacked ‘situational’ knowledge with using mobile and social media tools in authentic contexts. Lincoln explained:

> …the biggest gap would be situational knowledge. How and when to use it. What's the best application? What's the best app itself for that situation? (Lincoln_FG3)

The students commented that the situational gap meant they forgot or were not aware how to react with mobile and social media tools when they encountered learning situations in the real world. For example, Audree shared on her blog:

> I decided to take another walk around my street and on my travels I came across two lovely women, and had a little mini interview… Unfortunately I forgot to film this. (Audree_ART_Blog)

Similarly, Anya commented that when a possible learning encounter was over and she had time to reflect, she realised what she could have done at the time:

> So it was more just getting back and then being like, ‘I could have done this. I should have asked them for a photo. I should have got more questions, or more follow-up questions.’ That was that main issue that I faced. (Anya_FG3)

The situational knowledge gap and the tendency to overlook mobile and social media tools as a critical resource for learning in authentic contexts may improve with time as
the learners get accustomed to using these tools. This issue deserves further investigation and is identified as an area for further research in this study.

Students need to see long-term benefit
In order to help the students perceive the use of the tools in learning and teaching, they need to see the long-term benefit of using them. To help the students conceptualise this, examples of the use of mobile and social media tools in PoJ were shared with the students in lectures and in the tutorial sessions. One student commented that the teachers needed to talk more about the impact of mobile and social media tools in class with the students to get them on board:

I reckon talk more about journalism is more impacted by Twitter and journalists actually use it. (Skylar_INT)

While other students commented that even though they found the use of mobile and social media tools in the course a struggle, they persevered because of the implications on their future:

Overall, although I struggled to make multi media work for me I now am ware of its importance particularly to our modern world. (Ruby_ART_Blog)

For many students in the course, using mobile and social media tools for learning was new, and as a result difficult for them to conceptualise. To get students on-board with using the tools, it was important for them to understand future implications and benefits of using the tools in learning. This provided the students with a motive and a reason to explore the tools in the first few weeks of the course.

Summary of findings related to the fifth design principle
Prior learning experiences and the use of mobile and social media tools were identified as issues for the student in the course. The students’ previous learning experience had established a learning expectation and behaviour which contradicted the design of the course. Similarly, the students use of mobile and social media tools for non-academic purposes cultivated a culture which was for entertainment and social purposes. As a result, the students in the course needed to be scaffolded and supported to understand their role as a student and to conceptualise the use of mobile and social media tools for learning. The fifth design principle, as a result played an important role in helping the students achieve the changes needed in the course. A critical element in the
implementation of the fifth design principle was the need to show and discuss with the students the long-term benefits of using the tools for learning and in the future. This provided the students with the motivation to start using the tools, which was difficult for them to begin with. Another important element that was implemented with the help of the practitioners in the second iteration was the ecology of resources in the form of a website and Twitter. The ecology of resources helped enable self-directed and determined learning. It provided the students with regular update and easy access to information, ideas and resources for the learning tasks and activities and opportunity to collaborate with the teachers and experts.

To help the students effectively use the mobile and social media tools and affordances in the course, technological and pedagogical support and modelling was deemed important. The following section provides an overview of the findings relating to the final design principle used in the design and facilitation of PoJ.

**Design principle 6: Technological support and modelling**

As in the first iteration, the students in the second iteration were provided with technological support and were shown effective use of the tools in class and in the lectures. Along with this, a PoJ website was created to model and scaffold learner knowledge and use of the tools in the course. Twenty minutes in each tutorial was set aside to help the students, share effective practice and exemplars and to create conversations on the use of the tools for learning purposes. The data relating to this design principle in the second iteration was analysed. The themes that emerged are discussed below.

**Students need support learning the technology and the affordances for use in learning**

Much has been published about the net-generation, in particular about their digital capability and skills for using new tools and technologies (Oblinger & Oblinger, 2005; Prensky, 2001), however, the analysis of the data in both iterations of PoJ has highlighted the critical role of providing technological support to the learners in a technology informed learning environment. The students commented that they needed more support and help with learning how to use the mobile and social media tools in the
course. One student stated that her knowledge of the tools in PoJ was only as good as her mother’s knowledge of using her phone:

I was as technologically confused as my Mum is with her phone. (Emma_ART_Blog)

While other students commented that they needed to be taught how to use the tools in the course:

…for me, I need to be taught how to use the technology in the first place, because I don't know. I never had Twitter, so maybe just a little bit more information, for me. (Riley_INT)

Some students also expressed fear about the unknown—fear of not knowing how to behave and use the new tools integrated in PoJ. To help overcome the fear, nervousness and anxiety of using the tools, the students were asked to post a comment on the PoJ website under the tutorial session they were attending with their blog address and Twitter name. In the second iteration, the students were also encouraged to publish a post in the first week introducing himself or herself, and describing where they came from, or something trivial to help them overcome the hurdle. For example, Alyssa posted:

A small fish in a big pond. I am approximately 1 minute and 23 seconds from my favourite cafe. Approximately 2 minutes and 38 seconds from University. Approximately 1 hour and 32 minutes from my house in Hamilton. Approximately 29 hours from my hometown of Zimbabwe in Africa. (Alyssa_ART_Blog)

Further analysis of comments revealed that the students who expressed anxiety and nervousness using the tools in PoJ were either not present in the first week of the course or did not publish a post or comment on the PoJ site until the third week.

As part of the second iteration—based on practitioner reflection and student comments in the first iteration—the PoJ website was created to help students understand the tools and raise awareness of the affordances for learning. Along with this, the tools were modelled and demonstrated to the students in tutorials on a regular basis. The practitioners also integrated the tools more prominently in the teaching processes, for example in lectures and tutorials to help the students understand the affordances and their use. The students still commented that they needed more support and help on effective use of the tools at the beginning of the course. They, however, commented that as the course went along, they were able to gain the skills and knowledge of how to use the tools effectively for learning.
While increased effort was placed on supporting the students in learning the technologies and their affordances, the students in the second iteration still felt more could have been done to help them. This stresses the importance and the critical role technological and pedagogical support plays for the learner in a technology rich learning environment.

**Modelling as a tool to help learners conceptualise the use of technology**

As in the first iteration, the lecturers and the technology steward modelled the use of the tools in class. The tools were also modelled on the PoJ WordPress site to help the students conceptualise the use for learning purposes. Some examples of effective use of mobile and social media tools were also shared with the students on Twitter and discussed in class to help students conceptualise their use in journalism and for writing a multimedia news story. The students found the modelling of the tools in class and in teaching provided an effective mechanism for helping them understand and conceptualise effective use in learning. For example, Cece commented:

> Speaking as someone who's technologically illiterate like, ‘I cannot work it,’ and now I'm like, ‘Okay, I can see how you do that.’ I can see how that would be possible. Yeah, definitely it helped a lot. (Cece_FG2)

The students also commented that they were able to learn effective use of mobile and social media tools by following journalists and observing how they were using them for reporting in everyday life:

> I think a good person to look is Hilary Barry [TV Presenter]. She has a really good balance between fun stuff and poking fun at cameras and stuff, and the serious issues as well. (Niylah)

The modelling of the tools to the students in class was noted to have a direct impact on how the students used them within their own context—the news story they were writing. For example, Quinn captured a time-lapse video after the teachers modelled it in class:

> This week I was also able to get to Northwest and film a time lapse video walking around the whole centre and into their main anchor store, Farmers. (Quinn_ART_Blog)

From the feedback in the first iteration, a strong emphasis was placed on the modelling of the tools in teaching practice in the second iteration. Some activities and tasks were planned for the students to complete using the tools in the tutorial sessions and in the lecture. The students felt that the integrated use of the tools in teaching was an effective method to learn how the tools worked. For example, Riley commented:
I felt that the mock press conference was really good for me just to see how it really works. (Riley_INT)

Similarly, an emphasis was also placed on promoting exemplar work done by students in PoJ. The students commented that they found this beneficial as well:

For the phone, once we saw Skylar's vlog, I made vlogs for my story as well …that was really cool. (Ellie_INT)

An analysis of student artefacts on the blog from volunteering students indicated that the students only started to create meaningful content using mobile and social media tools in PoJ after they had gained some understanding of their application within the learning contexts. The modelling of the tools in PoJ was therefore an important factor in enabling effective use of the tools by the students in the course.

**Summary of findings related to the sixth design principle**

While a lot has been published about the modern learner and their technological knowledge and competence, the findings in the study suggests that on the contrary learners lacked the skills and knowledge to use the tools. According to the students, technological help and support was critical for them to learn how to use the tools and their affordances and to overcome their fear and anxiety. Similarly, the modelling of the tools and their affordances was equally critical for the students to understand their use in academic contexts. The tools and their affordances were predominantly integrated in the teaching practice to model effective use in journalism. The findings suggest that this helped change student learning behaviour and expectations and helped them conceptualise the use of the tools in learning. As with the fifth design principle, the ecology of resources (PoJ website) also played an important role—it provided easy access to technological help and resources and acted as a platform for the practitioners to collaborate and model the use of the tools on an ongoing basis.

**Conclusion**

As in the first iteration, the analysis of the data collected in the second iteration suggested that the learning intervention co-designed with the PoJ practitioners provided several benefits for the students. The analysis in some instances provided further insight into the themes that emerged in the first iteration, such as the pedagogical implications of learner-generated content and contexts. At the same time, the analysis also provided
an understanding of the role mobile and social media tools play in facilitating a heutagogic learning experience.

Along with the learning benefits that were identified in Chapter 6, the analysis of the data reported in this chapter further suggests that teachers play an important role in helping the students for heutagogic learning. While the teachers hand over the control of learning to the students, the teacher’s role in the process becomes more important for the students and their learning. Mobile and social media tools allow the teacher to be a co-learner and collaborate with students to help them build self-directed and determined learning skills and learn in and across contexts. Similarly, the students need to be provided with the opportunity to utilise the skills and knowledge gained in the learning process to assume the role of an expert and create a polished product as a deliverable in the course. In the second iteration, the students used the Wix editor to assemble their news story rather than using WordPress. The openness of Wix provided the students with increased opportunity to be an expert performer—stressing that the choice of the tool or platform is critical.

An important focus in the second iteration of PoJ was the use of the PoJ website (or an ecology of resources (EoR)) to help the students learn how to use the mobile and social media tools, and understand and conceptualise their role with regard to using the tools for learning in the course. The EoR provided the students with technical support and access to course information and details on their devices and the learning community (on Twitter) enabled the students to discuss and understand the requirements of the course, their role and learning in collaboration with peers and teachers. EoR, as a result played an important role of acting as a catalyst for the students to take ownership of the learning path and process. Equally important in this process is the role of the teacher, who collaborates with the students at a metacognitive level to inform their learning and help them understand and build self-directed and determined learning skills. The students in the second iteration, however, indicated that they needed time to accustom themselves for learning with mobile and social media tools as it was new and an approach they were not use to. The students stated that they lacked ‘situational knowledge’ of how and when to use mobile and social media tools for learning. They, however, were able to build this understanding over the first few weeks of using the
tools in the course with the help of the teacher, who modelled effective use of the tools in class and shared ideas and resources.

In this chapter, an overview of the revised implementation of PoJ informed by student and teacher feedback and researcher reflection in the first iteration was provided. Similarly, each of the design principles were analysed using the data collected during the facilitation of PoJ to evaluate its impact on the learner and learning. The next chapter provides a list of finalised design principles informed by the researcher’s reflection on the process and findings from the iterative cycles of design and implementation.
CHAPTER 8
Reflection and revised design principles

Introduction
A key outcome of a design-based research approach (DBR) is the development of design principles as it ensures that the findings are useful and applicable in other academic contexts that could help other practitioners guide and inform the design of a learning solution (Herrington et al., 2007). In the final phase of design-based research, the researcher is in a position to reflect and provide refined design principles (Reeves, 2006). The design principles are referred to as ‘tentative generalisations’ (Hoadley, 2004, p. 204) and described as ‘heuristic guidelines’ (van den Akker et al., 2007, p. 20) that assist the practitioners with ‘selecting and applying the most appropriate knowledge for specific design and development tasks’ (p. 21).

A review of the initial draft design principles that were used in the design and facilitation of the Principles of Journalism (PoJ) course was conducted. While the draft design principles provided a sound foundation for the formulation and implementation of PoJ in both iterations, it became apparent through the analysis of the data and reflection that some of the draft design principles could be refined for clarity and understanding.

This chapter presents a review of each of the original design principles in relation to their use in PoJ, and changes made to the original design principles are discussed— informed by reflections on the findings at the conclusion of the two iterations in the study (Table 8.1).

The initial set of design principles
The initial draft design principles were derived from the literature and through consultations with practitioners to formulate a solution to the learning problems discussed in Chapter 1. In particular, three frameworks were investigated to derive the draft design principles: Pedagogy 2.0, heutagogy and mobile learning. Chapter 4
provided a detailed overview of each of the design principles and how they were instantiated in the design and facilitation of PoJ. Modifications were made to the draft design principles as a result of the findings of the study and researcher reflections on the process. The refinements and final design principles are discussed below.

**Design principle 1: Design learning activities, tasks and a learning environment that encourage elements of learner participation, personalisation and productivity underpinned by the affordances of mobile and social media tools**

The use of the 3Ps (participation, personalisation and productivity) (McLoughlin & Lee, 2008d) provides a pedagogical framework for the design of learning activities and tasks. It also acts as a guide to effectively exploit and integrate the affordances of selected mobile and social media tools in the learning process. The 3Ps and the affordances of mobile and social media tools provide the learner with increased autonomy—enabling the learner to direct and determine their learning path and process. Learner autonomy over the learning path and process help students gain knowledge of the subject and lifelong learning skills. It provides students with on-going opportunities for reflection that help them build understanding and new knowledge. Increased learner autonomy also helps students learn to become—by collaborating with experts and learning and applying the knowledge and skills required to enact authentic practices in meaningful contexts.

Building on the concept for learning with 3Ps, an ecology of resources (EoR) play an important role in the process. The EoR acts as a scaffold that helps the students overcome the learning barriers and build their confidence and knowledge and skills to be a self-directed and determined learner. An important element of the EoR is the formation of an online learner-community. The community allows the students to collaborate and discuss with the peers and the teacher, the ecology of resources (such as course information, assessment tasks and description, ideas and resources for learning, exemplar resources and artefacts from former and current students, experts in the field and practitioners, and technological support resources) to build an understanding of their role in the learning process, gain the skills and confidence to be an autonomous learner and understand pedagogical use of the tools and affordances.
As identified in literature review (Chapter 2), there is a lack of understanding on heutagological use of mobile and social media tools and affordances for learning (Blaschke, 2012). This design principle helps operationalise the central tenet of heutagogy—learner autonomy by guiding the design of the course and the use of mobile and social media affordances. It empowers learners to be self-directed and determined in their learning and as a result was retained in its original form.

**Design principle 2: Facilitate learning using tools that are open, platform independent and learner-owned**

This design principle helps create a learning environment based on the devices the learner owns. It guides the selection of the tools for use in learning that are platform agnostic—enabling the design of an inclusive and equitable learning experience regardless of the type of device the student owns. Similarly, learner-owned devices and the openness of the tools enable pervasiveness and connectivity that help embed learning in everyday life—they enable thinking and learning across time, in and across the physical, conceptual and, social spaces and between technology, which help ingrain learning as part of life.

The critical element to effectively implement an inclusive design is to gather information about the types of devices the students already own and use—as this information foregrounds the choice and consideration of the tools, type of technological support and access to hardware and connectivity in the design of the learning environment. An equally important element in the implementation of this design principle is for the students to understand the implications of the choice and use of the tools and the affordances for learning and in the future. This provides learners with understanding and motivation for exploring and using the tools early in the course.

This design principle is a conduit for embedding effective use of BYOD that provides a sustainable, equitable and inclusive learning experience for all students (Traxler, 2016b)—as a result, it was retained in its original form.
**Design principle 3: Situate learning in authentic contexts chosen by the learner to enable exploration and experimentation**

This design principle enables learning in student determined informal contexts that reflect the social and cultural spaces the learner navigates as part of everyday life. To learn in informal settings, the learners overcome their comfort zone that builds their confidence to apply their knowledge and skills in different contexts. The affordances of mobile and social media tools help the learner investigate and explore with new concepts and to enact experiments in new surroundings, which helps build new knowledge and capability. The learning situation and scenarios the students encounter in the social and cultural contexts help inform and build their personal values and beliefs—allowing them to grow as a person.

An important element for implementing this design principle in a course is to ensure that the role of the teacher, the design of the learning tasks and activities and mobile and social media affordances have a high degree of alignment between them. The design of the learning task and activities provide the students with the impetus to step out of their comfort zone for learning in meaningful contexts. The teacher acts as an agent for brokering the boundary between the student’s comfort zone and the zone of proximal development (learning zone) by collaborating with him/her during the completion of the learning task and activities and by providing scaffold and support in the process. Mobile and social media tools act as a platform for supporting and encouraging exploration and experimentation within the learning zone. As a result, these three elements need to have a high degree of synergy between them to enable learning in learner-determined contexts.

An important learning outcome in heutagogical learning is that the learner develops capability (Hase, 2002, 2009). This design principle plays an important role in helping the learner build capability, as it provides them with mobility and the opportunity to apply their knowledge and skills in new and unfamiliar contexts—as a result, it was retained in its original form.
Design principle 4: Design formative assessment events that encourage learner participation and reflection in the process

The application of this design principle allows the learner to derive the subtasks and activities required to complete the assessment—the student acts as a participant in customising the assessment to drive their learning, which provides them with ownership, inspiration and motivation in the learning process.

A critical element for implementing this design principle is for the teacher to create an assessment event that sets the ‘scene’ and allows the students to formulate the subsequent task and activities required to complete the assessment. Similarly, the students should be encouraged to create a polished product (Herrington, Reeves, & Oliver, 2010) as a deliverable at the end of the course—it gives them a sense of professionalism and the ability to express their knowledge, skills and creativity.

Another element that plays a critical role for the students in achieving the learning outcomes in this design principle is the role of the teacher. The teacher collaborates with the students to help them understand the assessment task and the derivation of the subtask and activities. The teacher can support the students in completing the assessment tasks and activities when required and provide on-going feedback on the tasks to guide learning and promote reflection. Teachers can also utilise the affordances of social media tools (e.g., using the Favourite or Like feature or posting a comment) to provide timely validation and verification on tasks.

Along with the 3Ps, this design principle also plays an important role in helping students learn to become. The 3Ps provide the students with the impetus to engage in activities that promote and inform the process of learning to become. This design principle provides a framework that enables authentic collaboration between the teacher and the learner for completing the learning tasks and activities and, in helping the learner build tacit knowledge and skills in authentic contexts—creating opportunities for learning to become. The process places a focus on aligning learning outcomes with activities, tasks and assessment—what Biggs and Tang (2011) call constructive alignment. This design principle, as a result was modified from the original to focus on enabling the process of learning to become, which also helps achieve constructive alignment in the design of the course. The design principle was revised to Design
formative assessment events that encourage learner participation and reflection in authentic contexts to inform the process of learning to be.

**Design principle 5: Provide a clear rationale, explanation, and expectation for the use of the tools**

This design principle attempts to help students understand and conceptualise the use and affordances of mobile and social media tools for learning. On its own, this design principle was insufficient to guide the design of the kinds of support and scaffolding required by students. Complications arose in practice, as students expressed that they needed more awareness and clarity on how and when to apply the tools and the affordances in learning contexts. In particular, students identified the lack of situational knowledge in using mobile and social media tools in academic contexts. Their unfamiliarity in using mobile and social media tools in learning contexts created a knowledge gap for how and when to use the mobile and social media affordances for self-directed and determined learning. Many learners in this situation fail to understand their role, and expect to be provided with all the necessary content and information to complete the assessment tasks and activities. As a result, greater emphasis and sustained engagement (Cochrane, 2012a) is needed to help learners achieve an ontological shift for heutagogy learning with mobile and social media tools.

An ecology of resources (EoR) in the form of a Blog/Website and a community provide the students with a platform for sustained engagement with peers and teachers to conceptualise and understand their role in the learning process. The EoR implicitly embeds the fifth design principle as a continuous process for the duration of the course—providing opportunity for students and teachers to engage in an on-going conversation or when required to clarify and understand the learning expectation, use of the tools and create knowledge. EoR, however, also forms an important element of the sixth design principle, which combined allow teachers to explain and discuss learning expectations in conjunction with technological support and pedagogical affordances of the tools integrated in the course.

The sixth design principle and EoR provided an effective approach for instigating and cultivating conceptual change in the learner—making the fifth design principle redundant—as a result was deleted as a principle in its own right.
Design principle 6: Provide technological support and model pedagogical use of tools

This design principle guides teachers to provide the students with on-going technological resources and support as part of the learning environment. The teachers also collaborate with the students and model the use of tools and their affordances in the learning process to help them understand their role and become active participants.

There are two critical elements in implementing this design principle. The first is to ensure that students have access to information and resources that will help them understand the course requirements and expectations and learn how to use the tools. As discussed under the first design principle, the ecology of resources (EoR) (Luckin, 2008) plays an important role for the students. As part of the EoR, course information and expectations and instructional videos and resources on how to use the tools are created or collated by the teacher and at times other students and shared with learners. These resources need to be easily accessible when needed. Secondly, the teachers collaborate with students, create, curate and share examples of effective use of mobile and social media affordances as part of the EoR. This includes exemplar artefacts created by professionals in the sector or useful information from the web. The teachers also integrate and model the affordances in their own teaching practice and when needed, collaborate with learners to help them build an understanding of the tools and affordances and their role in the course. On-going face-to-face technological support is also critical in helping the students understand and engage with the learning tasks and activities. Similarly, the teachers create and nurture a learner community as part of the EoR and encourage student engagement with each other in the community. This provides a platform for students to understand the course requirement, learning expectations and learn self-directed and determined learning skills through sustained conversation and collaboration with the teacher and peers.

A key and interwoven element relating to the EoR is teacher and learner collaboration. Collaborating with the learner allows the teacher to model, inform and co-construct the learning and learning experience. This helps the learner understand their role, learning activities and tasks and pedagogical application of mobile and social media affordances—helping reconceptualise the learner role and learning behaviour.
This design principle helps bridge learner digital literacy skills that moves beyond the learner’s ability to use the tools, and access and evaluate information to building a cultural understanding (Buckingham, 2010, p. 59) of how to use mobile and social media tools for learning in authentic contexts created as part of everyday life. As a result, the sixth design principle was retained in its original form.

After reflection on the findings of the study, four of the original six design principles were retained in their original form, one was revised and one was deleted to clearly articulate the critical elements the practitioners have to consider in designing learning environments to facilitate heutagogic learning.

An overview of each of the final design principles and the guiding questions and suggestions for how the principles could be instantiated in the design and facilitation of a course is provided in Table 8.1.
Table 8.1 – Contextualised learning design principles, meaning prompts and instantiation recommendations

<table>
<thead>
<tr>
<th>Design principle</th>
<th>Guiding questions</th>
<th>How the principle could be instantiated</th>
<th>Key references</th>
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<tbody>
<tr>
<td>1. Design learning activities, tasks and a learning environment that encourage elements of learner participation, personalisation and productivity underpinned by the affordances of mobile and social media tools.</td>
<td>What are the main learning goals and tasks in the course? What mobile and social media tools can be used for learning?</td>
<td>Design learning tasks to encourage learner autonomy through participation, personalisation and productivity. Explore, identify and relate mobile and social media tools and affordances to learner actions, interactions and processes in the learning tasks and outcomes in the course. Design for learning where the learners create meaningful products appropriate to the subject area. Establish a learning community (part of the ecology of resources). Encourage students to interact, share learning and products created using the affordances of the chosen social media tools with others in the learner community.</td>
<td>(McLoughlin &amp; Lee, 2007, 2008a, 2008c, 2008d, 2010), (Lee &amp; McLoughlin, 2008), (Luckin, 2010a), (Beetham, 2013), (Naismith &amp; Corlett, 2006), (Harpur &amp; de Villiers, 2015), (Cochrane, 2012a), (Kukulska-Hulme &amp; Traxler, 2013), (Bannan et al., 2015), (Sharples, 2007), (Blaschke &amp; Hase, 2016), (Blaschke, 2014), (Hase &amp; Kenyon, 2007), (A. Herrington et al., 2009)</td>
</tr>
<tr>
<td>2. Facilitate learning using tools that are open, platform independent and learner-owned.</td>
<td>What types of mobile device do the learners in the class own? Are the chosen social media tools open to public access? Do the tools function seamlessly across devices and platforms? Do the tools allow the students to manage the privacy of the content?</td>
<td>Administer a pre-course survey in the first week of the class to identify student-owned devices. Base the selection of the social media tools on the types of device most learners own – consider the operability of the tools across devices. Explain the long-term benefits for using the tools. Embed and encourage the use of learner-owned devices in the learning process. Encourage, explain and support students to publicly share their learning and content created as part of the learning process to help them build an online identity.</td>
<td>(Cook, 2010), (Blaschke, 2013), (Buchem &amp; Attwell, 2011), (Kukulska-Hulme &amp; Traxler, 2013), (A. Herrington et al., 2009), (Naismith &amp; Corlett, 2006), (Al rasheedi &amp; Capretz, 2015), (Palalas &amp; Anderson, 2013), (Harpur &amp; de Villiers, 2015)</td>
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| 3. Situate learning in authentic contexts chosen by the learner to enable exploration and experimentation. | - What types of contexts will offer the learner a meaningful platform for engagement and for learning?  
- What elements of theory and learning can the learners explore and experiment with in the learning process? | Design for learner mobility in the learning process across contexts.  
Allow the learner to take the learning outside into the real world where possible.  
Create learning activities and tasks that allow the learner the opportunity to practice the theory in contexts they consider meaningful for their learning.  
The teachers provide guidance and scaffolding for learning in authentic learner-determined contexts. | (McLoughlin & Lee, 2007, 2008a, 2008d), (Luckin et al., 2011), (Blaschke, 2012, 2013, 2014), (Buchem & Attwell, 2011), (Cigognini et al., 2011), (Buchem & Attwell, 2011), (Cameron & Tanti, 2011), (Blaschke & Hase, 2015, 2016), (Hase, 2011, 2016), (Hase & Kenyon, 2007), (A. Herrington et al., 2009), (Sharples et al., 2007), (Harpur & de Villiers, 2015), (Bachmair & Pachler, 2014), (Bannan et al., 2015), (Herrington & Herrington, 2007), (Herrington & Kervin, 2007), (Herrington & Oliver, 2000) |
| 4. Design formative assessment events that encourage learner participation and reflection in authentic contexts to inform the process of learning to be. | - How can the assessment task become the main learning activity in the course?  
- What are appropriate feedback mechanisms that could be implemented in the course?  
- What events in the learning process could trigger learner reflection?  
- Do the learning tasks and activities require collaboration with the teacher? | Identify and explore authentic roles the learner could perform in the learning process and the assessment.  
Identify key assessment items and appropriate timing for each.  
Design assessment tasks that are embedded in the learning process.  
Design assessment tasks that are ill-defined and allow the learner to formulate their own sub-tasks for completion.  
Design assessment tasks that require sustained inquiry by students over a period of time.  
Design assessment task that are situated in authentic contexts.  
Design assessments that act as a ‘road map’ for guiding the learner through the learning process.  
Provide critical feedback to the learner in the learning process and on the tasks completed.  
Support and collaborate with students in the learning process by identifying and understanding their learning needs.  
Encourage students to create a polished product that resembles an artefact created within the sector or profession. | (Halupa, 2017), (Hase, 2011, 2014, 2016), (Blaschke, 2012, 2013, 2014), (Blaschke & Hase, 2015, 2016), (Hase & Kenyon, 2007), (Naismith & Corlett, 2006), (Harpur & de Villiers, 2015), (Cochrane, 2012a), (Alrasheedi & Capretz, 2015), (Cameron & Tanti, 2011), (Herrington & Kervin, 2007), (Niblock, 2007), (Herrington & Oliver, 2000), (Herrington, Reeves, & Oliver, 2010) |
5. Provide support and pedagogical modelling of the use of the mobile and social media tools.

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<tr>
<td>Get to know the technological background of your students.</td>
<td>What devices and social media tools have they used or are using?</td>
<td>Administer a survey to find the learner’s background concerning their use of the tools, prior learning</td>
<td>(Cochrane &amp; Bateman, 2010), (Cochrane, 2012a), (Blaschke, 2013, 2014), (Borthick</td>
</tr>
<tr>
<td></td>
<td>For what purpose are they using devices and social media tools?</td>
<td>expectatation and rationale for the use of the tools in the course.</td>
<td>et al., 2003), (Beetham, 2013), (Palalas &amp; Anderson, 2013), (Bannan et al.,</td>
</tr>
<tr>
<td></td>
<td>What is the teacher’s own knowledge and capability in using the selected tools for</td>
<td>Provide a clear explanation, learning expectation and rationale for the use of the tools in the course.</td>
<td>2015), (Bachmair &amp; Pachler, 2014), (Cook, 2010), (Chen et al., 2015), (Hase</td>
</tr>
<tr>
<td></td>
<td>learning?</td>
<td>Provide the learner with technological help and support (part of the ecology of resources) in class and</td>
<td>&amp; Kenyon, 2007), (Rahimi et al., 2015), (Borthick et al., 2003), (Buchem &amp;</td>
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<td></td>
<td>What skills and knowledge are critical to the first week of the course?</td>
<td>online that is accessible across platforms.</td>
<td>Attwell, 2011), (McLoughlin &amp; Lee, 2007, 2008a), (Higgins et al., 2012),</td>
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<td></td>
<td></td>
<td>Provide easy access to information and detail on the learning tasks and activities in the course.</td>
<td>(Cameron &amp; Tanti, 2011), (Herrington &amp; Kervin, 2007), (Luckin, 2011), (Herrington,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Integrate the use of mobile and social media tools in pedagogical practice.</td>
<td>Reeves, &amp; Oliver, 2010)</td>
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<td></td>
<td>Share ideas and exemplars of effective use of mobile and social media tools.</td>
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<td>Provide the learner with guidance on the tasks and use of tools through on-going conversation and</td>
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<td>Model the use of the tools and affordances in teaching practice.</td>
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<td>Encourage, with guidance and in collaboration with the teacher and peers learner participation in the</td>
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<td></td>
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<td>learner community to help build confidence and practice digital and networking skills.</td>
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**Conclusion**

This chapter presents the outcome of Phase 4 of the design-based research approach, that is reflection to refine the draft design principles that were formulated in Phase 2 of the study, and discussed in Chapter 4. The final design principles for designing a contextually embodied learning experience were discussed. The chapter also provides a set of guiding questions and suggestions for how the design principles could be instantiated in the learning environment or course. The final design principles inform the design of learning that occurs in meaningful contexts determined by the learners according to their own learning needs and are mediated by the affordances of mobile and social media tools.

In the next concluding chapter, the research questions that informed and guided the study are addressed, together with the limitations of the study and recommendations for further research.
CHAPTER 9

Conclusion

Using a design-based research approach, the use of mobile and social media tools and affordances for facilitating heutagogic learning was investigated in a first year journalism course. In this final chapter, an overview of the research is presented and findings relating to the research questions that guided the study, and the limitations and implications of the study are discussed. The chapter concludes with suggestions for further research that were identified in the study.

Overview of the research study

The need to design a course for first year journalism students that allowed them to build an understanding of the principles of journalistic practice was established in collaboration and consultation with the practitioners (Chapter 1). Three learning frameworks, Pedagogy 2.0, heutagogy and mobile learning were investigated (Chapter 2), in relation to the findings from the consultation with the practitioners to create a set of draft design principles (Chapter 4). The draft design principles were incorporated in the development of the intervention (course) (Chapter 5) and were implemented and evaluated over two iterations (Chapters 6 and 7). During the two iterations, qualitative data were collected and analysed using data reduction and display, and a constant comparative method (Chapter 3) that helped improve the design of the course, refine the design principles (Chapter 8) and answer the research questions (Chapter 9).

Addressing the research questions

The findings related to each draft design principle reported in Chapters 6 and 7 assisted the researcher to answer the secondary questions that guided this study. The secondary questions are addressed next.
RQ1. What are the pedagogical affordances of mobile and social media tools that enable the design and implementation of heutagogy?

Since its inception in 2000, heutagogy failed to gather momentum as a learning framework in education. It has, however, gained renewed attention in light of ‘the ubiquitousness of Web 2.0 [social media], and the affordances provided by technology’ (Blaschke, 2012, p. 56)—outlining a research gap worth investigating. In this study, draft design principles were formulated to guide the use of mobile and social media tools and affordances to enable heutagogic learning. The findings in the study indicate that several key mobile and social media affordances played a role in facilitating heutagogic learning. In particular, the ability to share, communicate and collaborate, openness of social media tools and mobility, pervasiveness and connectivity of learner-owned mobile devices played a critical part in the learning process.

The ability to share and communicate with mobile and social media tools led to the formation of a learner community, which increased the degree of interconnectedness between the learners, and learner and the teacher, and created new opportunities for collaboration. These affordances also helped the students develop autonomy over the type of support and scaffolding they needed and from whom to receive it. This was observed to be a critical step for the learners in achieving self-directedness as it allowed them the freedom to seek new learning paths.

The openness of the social media tools in the study further amplified when, how and with whom the learners could collaborate. The open nature of social media tools allowed the students access and opportunity to seek and collaborate with other informed persons and subject experts beyond the bounds of the classroom and the learner-community to build knowledge and understanding. The lack of hierarchical structures in open social media platforms provided the students with the ability to create ad hoc communities, allowing them to build genuine connections and create networks with people and experts who were willing to participate, collaborate and inform their learning—moving learning as participation in communities towards learning by communities for learning.
The mobility, pervasiveness, connectivity and ability to use social media tools on mobile devices allowed the students to transcend the conceptual, physical and social spaces and overcome temporal limitations. These mobile affordances acted as a mobile studio that allowed the students access to the Internet, people, communities and learning resources, and an opportunity to weave thinking and learning across contexts by creating and capturing data and information. It provided the students with the opportunity to apply the knowledge and skills in new surrounding that helped build capability, lifelong learning skills and informed the process of learning to become.

The findings in the study have a high degree of alignment (Figure 9.1) with the heutagogical affordances of social media tools reported by Blaschke (2013) and add further understanding to their use in learning and the agency of the learner (Pachler, Cook et al., 2010, 2010a).

A key finding of the study is related to the mobility of the learner and the pervasiveness and connectivity of mobile devices. The mobility of the learner accompanied by the pervasiveness and connectivity of the mobile device and social media tools provide learner autonomy and agency over when and where learning could take place and who to learn with or seek support and scaffolding from. It enables the learner to create, discover and share content, seek learning resources, collaborate and network with people, peers and the teacher in authentic contexts that they consider meaningful for their learning or navigate as part of daily life. As a result, the students create authentic content that provides them with cognitive stimuli that engages reflection and builds meta-cognitive skills.
The analysis of the design principles discussed in Chapters 6 and 7 provided further insight into how these mobile and social media affordances influenced student learning and helped answer the second research question:

**RQ2. How did the use of mobile and social media tools within a heutagogical framework enhance the learning and learner experience in an undergraduate journalism course?**

The mobile and social media affordances, in particular the ability to share, communicate and collaborate, openness of the social media tools and the mobility, pervasiveness, connectivity and the ability to use social media tools on mobile devices provided the students with new opportunities to create knowledge and understanding. These affordances, increased the visibility of student learning that triggered higher cognitive processes and provided the learner autonomy in meaningful contexts, which enabled an ontological shift—from knowing to being—and provided the students with lifelong learning skills.

**Increased visibility as a trigger for higher cognitive processes**
The students’ use of the affordances in learning, in particular *sharing*, created a learner-community that increased the visibility and accessibility of their work to the peers in class. This meant all the students in the class could read, compare and contrast their work with anyone that triggered learner reflections and helped them form new connections with the literature and their own work and understanding. The visibility of students work also provided ‘motivational competition’—motivation to create and share ‘unique’ content that challenged the learner to articulate their knowledge and understanding to the best of their ability, where the work done and shared by one or several students formed the basis for creating the content. Visibility, as a result acted as a catalyst for the students to achieve higher cognition and learning outcome in the course.

**Learner autonomy over their own learning process**
The central construct evident in the use of learner-owned mobile devices, social media tools and affordances was learner empowerment and autonomy over the learning
process. The social media tools enabled the learner to direct and determine their learning according to their learning needs and knowledge, while the mobility of the mobile devices enabled learner autonomy over where, when and how learning could eventuate. The mobile and social media affordances allowed the learner to:

- collaborate and participate with peers and experts as and when required—determined by the learner and their learning requirement at the time
- seek guidance and scaffolding for their learning from the teachers, peers and experts
- establish connections and networks to create a community for long-term support and scaffolding for learning purpose
- seek the resources and information they deemed necessary at the time determined by their knowledge and learning need
- learn in and across meaningful contexts.

Learner autonomy in these processes encouraged active learning and helped the students’ transition from being consumers of information and knowledge to being creators of content and knowledge through participation and personalisation.

In developing heutagogic principles for learning, Blaschke and Hase (2016) provide a set of key learning attributes that define and enable heutagogy. They stipulate that learner autonomy in sharing, exploring, collaborating, creating content, reflecting and connecting with people are critical in heutagogic learning. The findings again have a high degree of synergy (Figure 9.2) with the recommendations shared by Blaschke and Hase (2016) and further the understanding of the impact of mobile and social media tools in heutagogic learning (in Red in Figure 9.2).
Figure 9.2 – Findings alignment with Blaschke & Hase, (2016)

The mobility of the learner accompanied by the mobile and social media tools and affordances allow students to create contexts for learning (*learner-generated contexts*)—enabling them to undertake the core heutagogic learning activities (explore, share, create, reflect, connect and collaborate) in meaningful contexts (Red sphere in Figure 9.2). The contexts students created in the study were observed to have played an important role in their learning and provided:

- a backdrop to explore a topic and their understanding from multiple perspectives, which encouraged reflection and self-analysis
- situations and events that encouraged the students to step outside their comfort zone, which helped build their confidence and facilitated the acquisition of tacit knowledge and skills
- double loop learning – learning encounters that triggered learner actions and reflections that enable them to reaffirm or build an understanding of who they are, their capability and weaknesses, beliefs and values.

The learner-generated contexts also provide students with a learning environment that they could query, interact with and ‘criss-cross’ multiple times creating opportunities for them to act, simulate and experiment with ideas and theories to create new knowledge and understanding. This suggests that learner-generated contexts and social
media affordances enable students to move beyond *exploring* with their ideas and concepts to *experimenting* with them to build new knowledge and capability—highlighting experimentation as another core heutagogic learning activity. Learner activity in meaningful contexts provides them with the stimulus to seek several paths in order to solve, explore and experiment with a concept—promoting divergent thinking that motivates the student and enables creativity (Halupa, 2017).

The findings in the study revealed that learning in meaningful contexts determined by the student facilitated an ontological shift, where the learner—apart from learning the principles of journalism (knowing)—also learnt how to apply the knowledge and skills as a journalist (being), a process that also helped build lifelong learning skills. The mobile and social media affordances in the study acted as a bridge for the learners for transiting from knowing to being. It provided the students with the ability to access and create new knowledge and meaning through collaboration, communication, and experimentation and enactment of authentic journalistic practices in everyday social and cultural contexts in virtual and physical realm. The affordances provided the learners with a *socio-cultural ecology* (Pachler, Cook et al., 2010, 2010a) that allowed them to assimilate knowing (knowledge) and doing—helping the learner build a sense of identity and understanding for learning to become or being.

The students faced several challenges, in particular, learning how to use the tools, and difficulty in conceptualising their role in relation to mobile and social media affordances. As a result, technological support and pedagogical modelling were critical for the students in the study. The students also lacked confidence and skills to be autonomous learners—where Blaschke (2013) states that the teachers have to move beyond controlling and shaping the learning for the student to ‘modelling the experience as the learner’s coach and is more about connecting and collaborating’ (p. 59).

The analysis of learner experience in the course and teacher created artefacts, provided further understanding of the role of the teacher in heutagogy and helped answer the third research question:
RQ3. What is the role of the teacher in facilitating a heutagological learning experience using mobile and social media tools in a course?

The findings in the study revealed that the teachers played a versatile role in the learning process assuming the position required by the students or student according to the learning tasks and activities they were completing. The roles included the teachers as a guide, sharer of knowledge and content, motivator, role model and designer of an ecology of resources. Along with this, the teachers in the study played other specific roles in relation to facilitating heutagotic learning:

- collaborator – the teacher was a co-learner with the students in completing the learning tasks and activities, collaborating with the students in processes and activities where help and support was needed—helping them make sense of the issues and mediating the problem
- change agent – the teacher informed and helped change the learning behaviour and helped the learner navigate the learning contexts and processes to construct new meaning and understanding.

The learning journey for each student in heutagogy is potentially unique and different from the others—as a result, every individual learner may have different support and scaffolding needs. Teachers thus play a critical role in understanding each learner and their learning to provide the support the student needs. The visibility of student artefact/products in the learner community and social media provide the teachers with the opportunity to be involved in the learning of an individual learner through continuous conversation. This enables true-collaboration (Hase, 2011; Hase, 2016) between the learner and the teacher making the learning visible to the teacher and the teaching visible to the learner (Hattie, 2009). In a meta-analysis of over 850 studies involving over 80 million students relating to learner achievement, Hattie (2009) concludes that:

The teacher must know when learning is correct or incorrect; learn when to experiment and learn from the experience; learn to monitor, seek and give feedback; and know to try alternative learning strategies when others do not work. What is most important is that teaching is visible to the student, and that the learning is visible to the teacher. …The more the student becomes the teacher and the more the teacher becomes the learner, then the more successful are the outcomes. (p. 35)
Collaboration also creates opportunities for the teacher to be the change agent in the learning process. An important finding in the study was that the students had different expectations and conceptions of learning and use of mobile and social media. A majority of the students indicated that they needed to be taught how to use the tools and demonstrated how to use them for learning purposes. Similarly, some students expected to be told what to do in their learning and to be taught the content and knowledge—expectations in stark contrast to heutagogic learning.

According to Hattie’s (2009) meta-study for learner achievement, ‘teaching relates to the teachers as activators, as deliberate change agents, and as directors of learning’ (p. 35). To help the students understand and change their role and learning behaviour in relation to the pedagogical affordances of the tools in heutagogic learning, the teachers act as a change agent. Collaboration allows the teacher to model the pedagogical use of the technology and to work with students at a metacognitive level on an on-going basis. This enables the teacher to query student understanding of a question, problem or an issue and to act as activators and agents for deliberate learning in the zone of proximal development (ZPD)—to help change learning behaviour and help the students conceptualise the role of mobile and social media tools for learning.

Another role linked to being a change agent in heutagogic learning is the teacher as a brokering agent to help learner navigate and move to higher-learning zones (ZPD). The learner-generated contexts in the study included socially and culturally rich environments that offered the students new opportunities to learn, however, the students needed to overcome ethical dilemmas and the fear of learning beyond the safe walls of the classroom. On-going interaction and conversations equipped the teachers with a mechanism to provide timely support and guidance either in class or using social media tools on how to deal with ethical issues, understand the context and to build learner confidence for learning outside the classroom.

The responses to the secondary questions discussed in the sections above helped address the overall research question that guided this study.
Responding to the primary research question

As part of the study, draft design principles for designing a heutagogy learning experience were formulated from the literature, in particular heutagogy, Pedagogy 2.0 and mobile learning. These design principles were then used to guide the design of the learning environment that was iteratively implemented and evaluated with two different cohorts of student—discussed in Chapters 6 and 7. The findings in the study suggest that the design of the learning environment was an apt and effective approach for facilitating heutagogy learning with mobile and social media tools. The findings together with researcher reflections helped refine the draft design principles for clarity and understanding. The refined design principles discussed in Chapter 8 have the potential to guide and inform the use of mobile and social media tools for heutagogy learning and provide a framework for addressing the primary research question:

_How can mobile and social media tools enable learner-generated content and contexts (heutagogy) for enhanced learning?_

The relationship between the final design principles helped create a model for integrating mobile and social media tools for heutagogy learning. The implications of the final design principles and pedagogical affordances of mobile and social media for heutagogy learning (in Blue in Figure 9.3) are discussed next.
The first design principle (participation, personalisation and productivity) helps design learning activities and tasks that exploit the affordances of mobile and social media tools selected by instantiating the second design principle. The selected tools and affordances are, however, also driven by the need to design learning activities and tasks that enable the 3Ps of Pedagogy 2.0—outlining a symbiotic relationship between the 3Ps and use of mobile and social media tools (Yin-yang in the inner circle in Figure 9.3). The second design principle also ensures learners are able to utilise the devices they own and use as part of the learning process. The social media affordances operationalise the 3Ps for learning, which help students create content (produce), collaborate, communicate and share (participate), and access information, resources and people that are relevant to their learning need at the time (personalise). The 3Ps as a result enable
learner autonomy to direct and determine their learning—a core tenet of heutagogy. The learner-owned devices offer learner mobility in learning and opportunity to learn in and across meaningful contexts—learner-generated contexts. This enables the learner to move beyond knowledge to building capability by exploring and experimenting (third design principle) with concepts and ideas in unfamiliar environments to create new knowledge and understanding—another core element of heutagogy. Learner autonomy and mobility, as a result allow students to learn and create authentic content by participating in and across communities by accessing resources and collaborating with people across the time and space continuum (middle dotted circle). The authentic content learners create in and across contexts form the foundation for assessment in the course (the outer circle—fourth design principle), which also informs the process of learning to be (Black arrows). The fourth design principle also enables the teacher to weave the learning outcomes, tasks and activities and assessment in the course, while allowing the learner to negotiate and customise the assessment activities and tasks within the requirements of a formal and credentialing higher education institute. In heutagogy, teachers play an integral role from the onset of reconceptualising and re-culturing the learner for self-directed and determined learning. They model and share ideas and resources to help learners understand their role and pedagogical use of mobile and social media tools (fifth design principle). An important element in the fifth design principle and for effective use of the model is that teachers collaborate with learners at a metacognitive level to build their understanding of the learning tasks and activities and self-direct and determined learning skills. The teacher also acts as a co-learner who navigates the learning contexts with student using mobile and social media affordances to provide support and scaffold. During this process, teachers provide timely and critical feedback, co-create with the learner, model pedagogical use of the tools and when needed, experiment with different teaching strategies to help the learner create new knowledge and meaning (Orange line and the circle).

The model (Figure 9.3), as a result offers a potential framework that can act as a guide for practitioners and designers in utilising mobile and social media affordances for heutagogy learning.
Implications of the research

Historically, learning in higher education had mostly been perceived as acquisition of knowledge through the transmission/lecture model, which arguably still remains the dominant practice in classrooms today (Bates, 2015). The epistemologies underpinning such practices perpetuate learning that is devoid of meaning and context, and focuses almost entirely on knowing—leaving the students with the difficult task of situating the knowledge within the domain of professional practice—being (Dall’Alba & Barnacle, 2007, p. 671). The findings from the study indicate that there are significant learning benefits to using mobile and social media tools, however, to exploit these learning gains we must step outside the shadows of didactic teaching practices and embrace new understandings of educational processes and opportunities that new tools and technologies offer.

Implications for practitioners and designers

Effective and informed use of mobile and social media affordances have the potential to offer an enhanced learning experience that challenges the practices and beliefs of established teaching paradigms:

…the capacity of mobile technologies to generate, share, store, access and consume ideas, opinions, information and images, specific to people, locations, communities and their contexts means that they are a quintessential web 2.0 technology, challenging stability and authority of the established educational forms…(Traxler, 2016b, p. 12)

The findings in this study suggest that the design principles (discussed in Chapter 8) have the potential to provide practitioners and course designers with a robust framework for designing and implementing a contextually situated learning experience. A framework for an approach where the learners are able to direct and determine their own learning according to their learning needs through participation, personalisation and by creating authentic and meaningful content and learning contexts enabled by the affordances of mobile and social media tools. The design principles (Chapter 8 Table 8.1 and Figure 9.3) provide practitioners and designers with trigger points, ideas and guidelines to help them conceptualise and design a learner driven and determined learning process and a learning environment where critical affordances of learner-owned mobile devices and purposefully selected social media tools are seamlessly embedded as part of the learning process. The design principles also propose implementation and facilitation strategies that help build learner knowledge and
competencies for effective use of the chosen mobile and social media tools for learning. In particular, the findings highlighted that for the learner to effectively use mobile and social media tools for learning, a reconceptualisation of their technological beliefs, knowledge and their understanding of their role in the learning process was needed. This was deemed to be an important phase in enabling learning in a technology-rich environment. As a result, the design principles also provide strategies and guidelines for helping reconceptualise learner thinking about their role in the learning process, technological beliefs and to build knowledge and skills for effective use of mobile and social media tools for learning.

Along with the design principles, other salient factors were identified as critical in implementing heutagogic learning—these are discussed below.

**Selection and use of technology**

Social media tools need to be pedagogically and purposefully selected for use in the design and facilitation of the course. This should be based on the pedagogical affordances that will inform the teaching and learning process and also help learners build the skills for future learning and career endeavours. Where possible, the use of the mobile and social media tools in a course need to be contextualised in their application or possible application within the profession or domain of study. At the same time, the choice and selection of the tools need to align with the assessment and the learning goals and outcomes. The affordances of the selected tools need to be integrated in teaching and learning practice, as an enabler in the process for empowering learners with the ability to direct and determine their learning according to their needs.

**Teachers play an important role**

Teachers play an important role in learner-directed and determined learning that is enabled by mobile and social technologies. The teacher supports the learners in the use of tools and their affordances, models effective use and provides guidance and critical feedback on the learning and use of the tools for learning. As a result, teachers need to have a good understanding of the affordances of the chosen mobile and social media technologies. In a learner driven and determined learning process the teachers move beyond the role of being the expert in the classroom to being a collaborative agent engaging with learners at a metacognitive level to inform the learning and help the
learner build an understanding of his/her role in the course. The teacher’s key role in learner-directed and determined learning is to collaborate with the learner—this forms an on-going relationship underpinned by conversation and feedback and helps both the teacher and learner transform the learning and teaching process. The teachers in heutagogic learning act as a scaffold for the learner in the zone of proximal development (ZPD) by ‘supporting [learners’] active position in their learning and assisting them in becoming self-regulated…self-directed, [and] life long learners’ (Verenikina, 2004, p. 7) by co-constructing knowledge with the learner in the learning process (p. 11).

Practitioner collaboration and team culture
A regular event central to the design and facilitation of the intervention in the study was the weekly informal meetings, which were held at the university café with the practitioners. In an informal end of study debrief, the practitioners commented that the weekly coffee sessions were the most valuable, reflective, planning and learning period for them. They commented that the shared conversations that eventuated from their observations on learning activities and application of mobile devices by the students, regular conversations and debates on mobile and social media informed learning and on-going discussions on the fast developing and changing affordances of mobile and social media tools, helped improve their understanding and conceptualise their role and practice. As a result, in a learning and teaching environment informed by the affordances of mobile and social media tools, the practitioners are advised to set aside a collaborative and reflective space and time to discuss the issues they and their students face in the process and to collectively plan a way forward. This time helps the practitioners explore and investigate the technologies first-hand, plan learner scaffolding strategies and keep up with any changes and enhancements to the functionalities of old and new mobile and social media tools in relation to new and emerging pedagogical practice and knowledge. As such, practitioner engagement with the scholarship of technology enhanced learning (SoTEL) (Wickens, 2006) either through formal processes such as conferences or research publications, or through informal processes such as the social space utilised in this study, is a critical and an on-going process for learning and teaching with mobile and social media tools.
Limitations of the research

Within this study, the data that were collected informed the design of the solution, the revisions and improvements to the solution that was implemented and informed the refinement of the design principles. As with any form of inquiry, some elements of the design and implementation of the study may have influenced the findings in ways that reduce confidence in the results reported. It is thus important to note these limitations to help other researchers and practitioners in making an informed decision when applying the findings and recommendations within their teaching and learning contexts.

Positive researcher effect

The researcher conducted interviews and focus groups with the students at the end of the course. The questions and techniques used during these research methods may have triggered the students to reflect, interpret and align their learning experiences with the aim of the designed intervention and the study. The use of these research methods may have created a positive ‘researcher effect’ (Miles & Huberman, 1994) by guiding the learners’ thinking and reflections in favour of the findings reported in the study. To minimise researcher effect the findings in the study were informed by the triangulation of data collected using multiple methods (survey, interview, focus groups, student blog, artefacts and researcher reflections).

The researcher as a technology steward in the study

Another limitation in this study relates to the researcher’s role in the process. The researcher collaborated with the practitioners in designing the learning and teaching processes within the study. The practitioners acknowledging the critical need for pedagogical and technological guidance invited the researcher as a non-teaching member of the teaching team. The researcher worked with the teachers and students on a regular basis informing and guiding the use and critical elements in the learning and teaching process—becoming an additional and valuable resource in the facilitation of the course. This level of resourcing may not be feasible or an option for other practitioners using a similar approach.
Neither of these limitations had a direct impact on the design and implementation of PoJ in this study. The limitations, however, do indicate opportunities for future research and for building new understandings and ways for enhancing the design principles.

**Further research**

Design-based research is a systematic research approach that operates in a naturalistic context, which allows the researcher and the practitioners to study the relationship and interdependence of a number of naturally occurring variables (Cober et al., 2015). The iterative implementation and evaluation of the learning solution designed as part of this research provided an opportunity to study in-depth learners’ actions and interactions within the learning process, which highlighted the following areas for further research:

- **Application and evaluation of the design principles in other academic contexts.** The design principles formulated as part of this study were a product of contextualised learning that is possible in journalism and similar courses. Research into how these design principles could be transferred to other academic contexts will help build understanding for a broad and sound framework.

- **Further implications of learner-generated content and context.** While the notion of learner-generated content and contexts are well documented, *how and in what ways* they inform and enhance student learning were identified as areas for further research. In the study, several elements such as immersion, diversity of understanding and opinion, and creation of information-rich and authentic products were some aspects the students identified as beneficial for their learning. Further research is needed to explore and understand how these aspects enhance learning, and what the cognitive implications are for the learner.

- **Enabling ontological shift in the learner.** A surprising finding in this study was the level of difficulty the students faced in conceptualising the role of mobile and social media tools for learning. In fact, it was the lack of the ability to think beyond social use of these tools that was found to be problematic. In this study, a number of strategies were used and discussed (in Chapter 8), however, further research is needed to investigate the perception and knowledge of using mobile and social media tools in learning that school leaves and first year university
students have. As reported in this study, the majority of students in PoJ were graduates fresh from school who struggled to use and conceptualise the tools for academic purposes. They also indicated that because of a lack of situational knowledge, they did not know when it was appropriate for them to use the mobile and social media affordances—raising several opportunities for further research. Some suggested research questions that could help investigate this issue:

- what are the knowledge gaps?
- how can these gaps be bridged?
- what are effective strategies and methods that could be used within the learning process?
- what strategies enable the learner to shift beyond social use of these tools to effectively apply them for learning?

**Effective strategies for supporting practitioners with mobile learning.** Just as students need help and support to conceptualise the use of mobile and social media tools for learning, practitioners need additional support and guidance with exploring, investigating, planning, designing and facilitating learning and teaching with mobile and social media tools. Further research could be undertaken within this domain to investigate effective strategies for helping and supporting practitioners with mobile learning.

**Assessment as learning to be.** While the implications of assessment of learning and assessment for learning are widely documented, assessment as learning to become needs further research to understand the implications and learner benefits of its application in an ontological learning approach.

The list of areas for further research presented above relates to the observations, issues and knowledge gaps that emerged from the study. They identify a few areas of investigation where further understanding and knowledge of how the practitioners could design and facilitate a learner-directed and determined learning experience that is enabled by the use of mobile and social media tools and affordances could be built.
Concluding comment

This study investigated how mobile and social media tools and affordances could be incorporated for facilitating heutagogic learning. It is sincerely hoped that the description, findings and final design principles presented here will offer guidance and assistance to practitioners and designers wishing to implement student-directed and determined learning in higher education.
Abbreviations


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Appendix 1: Affordances of social media in learning and teaching

Referred to in Chapter 2: Literature review page 38.
## Affordances of social media in learning and teaching

<table>
<thead>
<tr>
<th><strong>Social media values and affordances</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Helps the learner build and participate in online communities</td>
<td>Social media enables other forms of social learning (Collins, Brown, &amp; Newman, 1989) such as communities of practice (Lave &amp; Wenger, 1991, 1998). Social media enables the learner to create and participate in online communities that bridges the values of professional practice and informal learning, where learning extends beyond the ‘time and place of study to become the tool that forms and cements values, attitudes, connections, and friendships’. (Dron &amp; Anderson, 2014b, p. 9) (Anderson, 2004; Brown &amp; Alder, 2008; Conole, 2013a; Dron &amp; Anderson, 2015; Lee &amp; McLoughlin, 2007; Rahimi et al., 2014; Siemens &amp; Matheos, 2010)</td>
</tr>
<tr>
<td>Helps create knowledge</td>
<td>Social media helps a person create knowledge that is relevant to a context and as a result allowing him/her to create knowledge frameworks based on the information they have with regard to the context it is going to be applied (Dron &amp; Anderson, 2014b). The openness of social media allows the learner to be able to connect to the outside world and access expertise, content and knowledge from around the globe in order to construct knowledge (Conole, 2013a; Rahimi et al., 2014). Social media also allows the learner freedom over the use and choice of content to inform their learning. Enables student generated content that is participatory and co-created—enables the learner to create new ideas and concepts (Alexander, 2006; Chen &amp; Chen, 2007; JISC, 2011b; McLoughlin &amp; Lee, 2010; Rahimi et al., 2014) The composite affordances of social media allows the learner to ‘learn by doing’ (Brown, Collins, &amp; Duguid, 1989), enables ‘learning with technology’ (Jonassen &amp; Reeves, 1995) where the learner is able to create ‘presentations of the knowledge’ and is able to share it (Rahimi et al., 2014, p. 56).</td>
</tr>
<tr>
<td>Helps engage, motivate and is enjoyable</td>
<td>Effective use of social media increases the rate and quality of interaction between the learner and teacher hence has the capability to enhance student engagement in learning. Panitz (1999) in a meta-analysis study outlines a number of benefits of student-centred and collaborative learning such as engagement and enjoyment.</td>
</tr>
<tr>
<td>Is cost effective</td>
<td>The use of social media to create multi format media is relatively cheaper when compared with the design offers and cost required for designing, developing and creating a formal online learning course (Anderson, 2010; Dron &amp; Anderson, 2014b).</td>
</tr>
<tr>
<td>Engages active learning</td>
<td>Social media actively involves the learning in the construction of knowledge through creation of content and by enabling participatory learner actions and interactions with peers, teachers, communities and the outside world (Conole, 2013b; Dron &amp; Anderson, 2014b, 2015; McLoughlin &amp; Lee, 2011).</td>
</tr>
<tr>
<td>Is accountable and transparent</td>
<td>Compared to other forms of communication, social media leaves a traceable trail documenting the actions and interactions of the learner in formal and informal contexts of learning.</td>
</tr>
<tr>
<td>Bridges the gap between formal and informal learning</td>
<td>Social media blurs the gap between the learner’s interactions for learning in formal and informal contexts and encompasses the learner’s everyday life as an opportunity to learn from (Bower, 2015a; Dron &amp; Anderson, 2014b; Kind &amp; Evans, 2015).</td>
</tr>
<tr>
<td>Addresses both individual and social needs</td>
<td>Social media enables affordances for individual needs and helps a person connect to another when needed as well.</td>
</tr>
<tr>
<td>Social media values and affordances</td>
<td>Description</td>
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<td>------------------------------------</td>
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</tr>
<tr>
<td>Builds identity, expertise and social capital</td>
<td>The benefits of social capital are information, influence and control and social solidarity - social media ‘creates and enhances relationships among learners. These relationships can then be used by the individuals and groups to achieve goals that are frequently beyond their individual capacity to attain’ (Dron &amp; Anderson, 2014b, p. 20; McLoughlin &amp; Lee, 2011).</td>
</tr>
<tr>
<td>Is easy to use</td>
<td>Most social media tools have limited functionality until they attract a significant number of users. As a result the importance of the application and development increases with the uptake and use of the tool.</td>
</tr>
<tr>
<td>Is accessible</td>
<td>Accessibility of social media is conceived in two views: Openness in as, it is not locked down behind hidden passwords and it is open and accessible to all learners regardless of their abilities or disabilities.</td>
</tr>
<tr>
<td>Protects and advances current models of ownership and identity</td>
<td>Social media provides transparency and acknowledgement of a learner's comment as it ‘seeks to return the ownership' to the creator (Dron &amp; Anderson, 2014a, p. 21) in and across formal and informal communities hence enhances learner identity. Similarly, ownership takes a new meaning for things shared with social media - it implies you never lose possession even if you lose your own property - as sharing benefits sharer and all involved.</td>
</tr>
<tr>
<td>Is persistent and findable</td>
<td>Social media encourages the creation of digital artefacts as result is searchable and with the permission of the creator can be ‘used, referenced, researched, extracted, reused, and recycled across time and space’ (Dron &amp; Anderson, 2014a, p. 22).</td>
</tr>
<tr>
<td>Supports multiple media format</td>
<td>Apart from text being the main form of social expression, social media tools also encourages the use of audio, video, pictures, graphs and other multimedia formats as a way to express and communicate an idea.</td>
</tr>
<tr>
<td>Encourages debate, cognitive conflict and discussion</td>
<td>Construction of knowledge is viewed as a result of the learners ‘active engagement with conflicting and confounding ideas that challenge older, pre-existing knowledge’ (Dron &amp; Anderson, 2014b, p. 22; Piaget, 1952; Vygotsky, 1978). Social media enables learner participation and access to knowledge created by others in different contexts across different time and space, where some are ‘divergent’ and others are ‘convergent’. The divergent ideas created in different contexts challenge the learners own ideas and thoughts forcing him/her ‘to make explicit much of their implicit and pre-existing knowledge so that it can be communicated effectively to others’ (Borthick, Jones, &amp; Wakai, 2003; Dron &amp; Anderson, 2014b, p. 22).</td>
</tr>
<tr>
<td>The design of social media tools is soft</td>
<td>The design process of social media tools engages people in the process that informs and helps build the tool over iterations. As such, it allows the users to exploit the affordances of the tools while they inform the design of the tool in return—the users and social media tools ‘proceed in a dance, intricately interwoven, mutually affective and inseparable’ (Dron &amp; Anderson, 2014a, p. 23).</td>
</tr>
<tr>
<td>Supports creativity</td>
<td>Due to the soft and flexible nature of social media, it allows people to be creative and imaginative in the use of the tool that was not initially thought of or designed for - this offers an opportunity to think differently and creatively in educational practice (Dron &amp; Anderson, 2014b; Lee &amp; McLoughlin, 2007; McLoughlin &amp; Lee, 2008d).</td>
</tr>
<tr>
<td>Expands the adjacent possible</td>
<td>Every new social media tool that comes out with new possibilities and functions builds upon what came before it, successively building and evolving, providing new capabilities and opportunities that were not there before.</td>
</tr>
</tbody>
</table>
References


Appendix 2: Information sheet (student)

Referred to in Chapter 3: Research approach page 84.
27 July 2014

Hello there!

My name is Vickel Narayan and I am a PhD student at Murdoch University in Perth, Australia. My supervisor for this study is Prof. Jan Herrington who is also from Murdoch University in Perth. We together would like to invite you to participate in a research study looking at how mobile social media could be effectively implemented in learning and teaching.

**Nature and Purpose of the Study**

There is little doubt that mobile devices such as iPhones and Android devices along with social media such as Facebook and Twitter have become an involuntary mobile act that we all carry out several times daily. While we all use mobile social media (MSM) for mediating our social life with friends and family, there is little research on how it could be used to empower students and to enhance the learning process. The mobile devices available in the market today are faster and much more powerful when compared with a computer 2 years ago. These powerful computing devices that fit in your palm offer limitless opportunities to revisit learning and teaching in the 21st century with regard to mobility and ability to ‘create’ on the go.

Therefore the aim of this study is to investigate how MSM can be used to empower you (the student) in the learning process and how the age old teaching methods can be revised into taking advantage of the mobility, computing power, social media and connectedness in the process. This study will investigate strategies for implementing mobile social media in courses, student experiences and issues and explore the capabilities of mobile devices that make it a suitable companion in the learning process.

If you consent to take part in this research study, it is important that you understand the purpose of the study and the procedures you will be asked to undergo / tasks you will be asked to complete. Please make sure that you ask any questions you may have, and that all your questions have been answered to your satisfaction before you agree to participate.

**What the Study will involve**

If you decide to participate in this study, parts of your work may be selected to be published in the study *anonymously*. This may include the following:

- Extracts, pictures and videos from your blog.
- Any digital content created as part of assessment or in the learning process.
- Data collected from a voluntary survey at the end of the semester. The survey may take 10-20 minutes to complete.

From the volunteering sample, up to 30 students will be selected and asked to participate in a focus group. Up to 6-8 students will be further selected and asked to participate in an interview. The focus group and interviews are estimated to last between 30 minutes to an hour. The interview and focus group will be recorded and the recordings will be transcribed to remove any personal data or information that may identify an individual before being used in this study.

**Voluntary Participation and Withdrawal from the Study**

Your participation in this study is entirely voluntary. You may withdraw at any time without discrimination or prejudice. All information is treated as confidential and no names or other details that might identify you will be used in any publication arising from the research. If you withdraw, all information you have provided will be destroyed.
Information Letter (Student)
The mobilised learner: Heutagogy and mobile social media
www.murdoch.edu.au

Privacy
Your privacy is very important. Whether you elect to participate or not will be kept entirely confidential. Any members of the research team who are associated with you in other roles will not know whether you have elected to participate and will view only anonymous data. It will thus not be possible to identify you, neither will you be identified in any publication arising out of this study.

Benefits of the Study
It is possible that there may be no direct benefit to you from participation in this study; however, as part of this study, you will have an opportunity of working and experiencing new methods and technologies in the teaching process this may help enhance your learning and future career prospects as a journalist. Your feedback and participation in this study will help improve this course and other courses you take in the future.

Possible Risks
There are no specific risks anticipated with participation in this study. However, if you find that you are becoming distressed in this study you will be advised to receive support from Dr. [Paper leader’s name] (Principles of Journalism paper leader).

Feedback from the Study
An executive summary outlining the findings of this research and the entire study will be made available to all participating and interested students through a website and the learning management system Blackboard. You will be informed via email of the completion of the study and will be able to access the document through a web link.

If you have any questions about this project please feel free to contact either myself, Vickel Narayan on mobile +642XXXXXXXX or my supervisor, Dr Jan Herrington, on phone +618 XXXXXXXXXXX. My supervisor and I are happy to discuss with you any concerns you may have about this study.

Once we have analysed the information from this study we will email a summary of our findings. You can expect to receive this feedback in 2016.

If you are willing to consent to participation in this study, please complete the Consent.

Thank you for your assistance with this research project.

Sincerely

This study has been approved by the Murdoch University Human Research Ethics Committee (Approval 2013/225). If you have any reservation or complaint about the ethical conduct of this research, and wish to talk with an independent person, you may contact Murdoch University’s Research Ethics Office (Tel. 08 9360 6677 (for overseas studies, +61 8 9360 6677) or e-mail ethics@murdoch.edu.au). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix 3: Consent form (student)

Referred to in Chapter 3: Research approach page 84.
1. I agree voluntarily to take part in this study.

2. I have read the Information Sheet provided and been given a full explanation of the purpose of this study, of the procedures involved and of what is expected of me. The researcher has answered all my questions and has explained any possible problems that may arise as a result of my participation in this study.

3. I understand I am free to withdraw from the study at any time without needing to give any reason.

4. I understand that my participation in the survey, the focus group and interview is voluntary.

5. I understand I will not be identified in any publication arising out of this study.

6. I understand that my name and identity will be stored separately from the data, and these are accessible only to the investigators. All data provided by me will be analysed anonymously using code numbers.

7. I understand that all information provided by me is treated as confidential and will not be released by the researcher to a third party unless required to do so by law.

8. I understand that documents and digital content developed by me during this course and on my blog may be used anonymously in the research outputs for this study and that I will be informed in such a case.

I confirm that:

☐ I am willing to participate in a voluntary survey at the end of the semester.

☐ I am willing to participate in a voluntary focus group at the end of the semester.

☐ I am willing to participate in a voluntary interview at the end of the semester.

☐ I am willing for this interview/focus group to be audio taped.

☐ I would like to receive a copy of any comments attributed to me for verification / or amendment.

☐ I am happy for my comments to be used anonymously without being contacted again.

Name of participant: ____________________________

Signature of Participant: ____________________________ Date: ........../....../........

I confirm that I have provided the Information Letter concerning this study to the above participant; I have explained the study and have answered all questions asked of me.

Signature of researcher: ____________________________ Date: ........../....../........
Appendix 4: Information sheet (Lecturer)

Referred to in Chapter 3: Research approach page 85.
Hello there!

My name is Vickel Narayan and I am a PhD student at Murdoch University in Perth, Australia. My supervisor for this study is Prof. Jan Herrington who is also from Murdoch University in Perth. We together would like to invite you to participate in a research study looking at how mobile social media could be effectively implemented in learning and teaching.

Nature and Purpose of the Study
There is little doubt that mobile devices such as iPhones and Android devices along with social media such as Facebook and Twitter have become an involuntary mobile act that we all carry out several times daily. While we all use mobile social media (MSM) for mediating our social life with friends and family, there is little research on how it could be used to empower students and to enhance the learning process. The mobile devices available in the market today are faster and much more powerful when compared with a computer 2 years ago. These powerful computing devices that fit in your palm offer limitless opportunities to revisit learning and teaching in the 21st century with regard to mobility and ability to ‘create’ on the go.

Therefore the aim of this study is to investigate how MSM can be used in enabling student-generated content and context (heutagogy) for enhanced learning. Heutagogy or learner-generated content and context refers to a learning process where the student has control over where, how, what and when to study mostly through mobile devices and social media tools. This study will investigate strategies for implementing mobile social media in courses, student experiences and issues and explore the capabilities of mobile devices that make it a suitable mediating agent in the learning process.

If you consent to take part in this research study, it is important that you understand the purpose of the study and the procedures you will be asked to undergo / tasks you will be asked to complete. Please make sure that you ask any questions you may have, and that all your questions have been answered to your satisfaction before you agree to participate.

What the Study will involve
If you decide to participate in this study, parts of your work may be selected to be published in the study **anonymously**. This may include the following:

- Extracts, pictures and videos from your contribution in the online and face-to-face community
- Digital content created as part of your teaching
- Your reflection and feedback in the process – electronic journal.

This study focuses on exploring the use of mobile social media in learning and teaching in collaboration with the practitioners (you). The entire study hence focuses on close collaboration and communication with you. To maintain and nurture this community, we will be meeting on a weekly basis to discuss any issues and possible solutions. Some conversations may continue on a private online platform.

Voluntary Participation and Withdrawal from the Study
Your participation in this study is entirely voluntary. You may withdraw at any time without discrimination or prejudice. All information is treated as confidential and no names or other details that might identify you will be used in any publication arising from the research. If you withdraw, all information you have provided will be destroyed.

Benefits of the Study
This study will offer you the opportunity to investigate the use of the fast growing mobile social media platforms for learning and teaching. At the same time, it will offer you an opportunity to investigate contemporary pedagogies and practices to accompany these digital ecologies. The study will also offer you an opportunity to work with other staff involved in teaching the Principles of Journalism course, to reflect on your own teaching practice and learn from others in a community of practice.

Possible Risks
There are no specific risks anticipated with participation in this study. However, if you find that you are becoming distressed in this study you will be advised to receive support from Dr. [Paper Leader of the course].

Feedback from the Study
An executive summary outlining the findings of this research and the entire study will be made available. You will be informed via email of the completion of the study and will be able to request a copy to read.

If you have any questions about this project please feel free to contact either myself, Vickel Narayan on mobile +642XXXXXXXX or my supervisor, Dr Jan Herrington, on phone +618 XXXXXXXX. My supervisor and I are happy to discuss with you any concerns you may have about this study.

Once we have analysed the information from this study we will email a summary of our findings. You can expect to receive this feedback in 2016.

If you are willing to consent to participation in this study, please complete the Consent.

Thank you for your assistance with this research project.

Sincerely

This study has been approved by the Murdoch University Human Research Ethics Committee (Approval 2013/225). If you have any reservation or complaint about the ethical conduct of this research, and wish to talk with an independent person, you may contact Murdoch University’s Research Ethics Office (Tel. 08 9360 6677 (for overseas studies, +61 8 9360 6677) or e-mail ethics@murdoch.edu.au). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix 5: Consent form (Lecturer)

Referred to in Chapter 3: Research approach page 85.
1. I agree voluntarily to take part in this study.

2. I have read the Information Sheet provided and been given a full explanation of the purpose of this study, of the procedures involved and of what is expected of me. The researcher has answered all my questions and has explained the possible problems that may arise as a result of my participation in this study.

3. I understand I am free to withdraw from the study at any time without needing to give any reason.

4. I understand I will not be identified in any publication arising out of this study.

5. I understand that my name and identity will be stored separately from the data, and these are accessible only to the investigators. All data provided by me will be analysed anonymously using code numbers.

6. I understand that all information provided by me is treated as confidential and will not be released by the researcher to a third party unless required to do so by law.

7. I understand that the following data created in teaching the course may be used anonymously in the research outputs for this study and that I will be informed in such a case:
   a. documents and artefacts created and shared as learning resources for the students
   b. posts, comments and feedback made face-to-face or on the online platform regarding the implementation of the project.

8. I am willing to engage in this study in partnership with the researcher in exploring the use of mobile social media for learning and teaching in my course. Yes/No

9. I agree to be a part of this research community. Yes/No

10. I understand that I may be required to make reflective posts on a private online platform and keep a reflective journal for the duration of the study.

Name of participant: ____________________________

Signature of Participant: ____________________________ Date: ……/……/…….

I confirm that I have provided the Information Letter concerning this study to the above participant; I have explained the study and have answered all questions asked of me.

Signature of researcher: ____________________________ Date: ……/……/…….
Appendix 6: Anonymous online survey

Referred to in Chapter 3: Research approach page 86
*Required*

1. Participant consent *

I have read the Information letter about the nature and scope of this survey. Any questions I have about the research process have been answered to my satisfaction. I agree that by submitting the survey I give my consent for the results to be used in the research. I am aware that this survey is anonymous and no personal details are being collected or used. I know that I may change my mind, withdraw my consent, and stop participating at any time; and I acknowledge that once my survey has been submitted it may not be possible to withdraw my data. I understand that all information provided is treated as confidential by the researcher and will not be released to a third party unless required to do so by law. I understand that the findings of this study may be published and that no information which can specifically identify me will be published.

- I agree
- I don't agree

A bit about you

2. What age group do you fall under?

- 18-25 years old
- 26-30 years old
- 31-35 years old
- >36 years old

3. What computing devices do you own? (Select as many applicable.)

- Desktop
- Laptop
- Tablet (For example, iPad, Android or Windows)
- Smartphone (For example, iPhone, Android or Windows)
- Other: ________________________________________________________________

4. If you own a mobile device (laptop, tablet or smartphone), how do you normally connect to the Internet?

- University Wifi
- Using cellular 3G or 4G network
- Cabled

5. Is your smartphone or tablet on a cellular data plan (3G or 4G)?

- Yes
- No
- Don't own a smart device.

6. Please indicate what social media tools you were using prior to enrolling in the Principles or journalism course. (Choose as many applicable.)

- Facebook
- Twitter
- I had my own Blog.
- Google Drive
- YouTube (Viewing only.)
- YouTube (Have uploaded videos to YouTube.)
- Google+
- Other:
7. Were you using any of the social media tools for learning?

- No, I used it mostly for social purposes.
- Yes, I mostly use it as a learning tool.
- Both, for learning and social purposes.
- Other: ____________________________________________________________

8. Can you specify an example of how you used a social media tool for learning?
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

9. Of the devices you own, what device(s) did you use the most in the course?
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

Your experience in the course: Learning with mobile social media

10. How would you rate your learning experience in the Principles of Journalism course?

- Very poor
- Poor
- So so (Not sure)
- Good
- Very good

11. What would you say were the contributing factors for your answer to the question above? (What made your experience in the course Good or what made it Poor?)
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

12. How do you think the design and facilitation of the course impacted on your learning? Please explain your answer.
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

13. What features of mobile social media did you use the most in the course for completing the learning tasks and assessments? (Choose as many applicable.)

- Video capture
- Pictures
- Geospatial data (Geotagging)
• Connectivity  Internet on the go.
• Social interactivity with peers, teacher and the outside world afforded by the mobile device and social media.
• The ability to capture and create on the 'go'.
• Ability to learn, create and connect anywhere, anytime and any place. Opportunity to learn in the real world, 'learning by doing'.
• Other:_____________________________________________________________________________________________

14. The use of mobile social media in the Principles of Journalism course allowed me to pick an environment that I thought was most meaningful to my learning and enabled me to explore my understanding of the topic and build on it.

• Strongly agree
• Agree
• Not sure
• Disagree
• Strongly disagree

15. Did the use of mobile social media help you collaborate with your lecturers when it was needed the most for your learning?

• Yes
• No
• Not sure

16. What was your experience of using mobile social media for learning outside the classroom?

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

17. Do you think your learning experience in the Principles of Journalism course was different? Please explain your answer.

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

18. How do you think the design and facilitation of the course has helped you towards becoming a journalist?

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

19. If you were to summarise your learning experience in the Principles of Journalism course, what would it be? (You may use a bullet list to answer this question.)

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
Suggestions: What would you want us to do different in the next semester?

20. What is your suggestion on how we can make this course better for next semester students?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

Thank you 😊
Appendix 7: Focus group questions

Referred to in Chapter 3: Research approach page 86.
Indicative focus group questions

**Questions:**

1. How would you describe your learning in the Principles of Journalism course? (Follow-up questions as appropriate)
   - What skills did you learn?
   - Are they transferable to everyday life? How?
   - What role did the teachers play in the process?

2. What role do you think MSM played in the learning process? Or how did you use it in the learning process?
   - What about this experience was useful to you?
   - What more could have happened and did not happen?
   - What are some of the ways you have grown as part of this course?
   - Poll - Technology or no technology?

3. What were some of the MSM features or capabilities that helped in your learning and in completing your learning tasks?
   - What difference did it make and why?
   - How can it be improved?

4. Where and how did you use MSM in learning if at all? If not,
   - Why not?
   - What stopped you?
   - What were the issues?

5. What was your experience of learning with MSM in the course? (Probe further to understand the context for positive and negative reasons.)
   - What were some of the factors or design elements in the course that made you use MSM?
   - How did it make a difference to you as a learner/journalist?

6. How do you think the use of MSM has made a difference in your learning? (Seek explanations on answers given.)
   - When did using MSM make sense? And why?

7. How did you mostly use the MSM tools in this course? (Seek further clarification: Did you find it beneficial or not? Why?)
   - What tasks did you use MSM for?
   - What Apps helped and why?

8. What were some of the disadvantages of using MSM in learning?

9. Did working in the real world as a student with MSM help you understand the concepts and build your skills? (How did MSM help in this situation?)
   - How did working in the real world case that you chose help you grow as a learner?
     - What were the empowering factors in the activity?

10. Did the assessments in PoJ make learning with MSM effective?

11. The PoJ WordPress site, did it make any difference?

12. Any other comments in the design and facilitation of the course? (Invite students for feedback.)
Appendix 8: Interview questions

Referred to in Chapter 3: Research approach page 87.
Indicative student interview questions

Example questions:

1. How would you sum up your experience in the PoJ paper?
2. Can you please identify the mobile device you own and used in the course.
3. What social media tools did you use in the course for learning?
   • How?
   • What difference did it make to you as a learner?
4. How do you think the mobile device and social media tools you used are related?
   • Do you see them as related? Why?
5. How do you think MSM helped or did not help you in your learning?
6. How did learning in authentic contexts chosen by you help with your studies? Being there like
doing your story, how did it help?
7. What role did MSM play in your learning in PoJ?
   • What role did MSM play in facilitating/mediating a learning context and in helping
   create content? (What was your experience?)
8. In what situations did you find MSM worked best for you and your learning?
   • Where/when did you use MSM the most in PoJ? Why? Or what difference did it
   make?
9. What capabilities/features did you use the most in the course? Why?
   • How did it help your learning?
10. What elements of the course or activity made you consider the use of MSM? (Why?)
11. What was your role in the learning process? (Follow up question: How did you take
    responsibility for your own learning in the course?)
12. What were some of the issues or problems you faced in relation to using MSM in the paper?
13. Any improvements that you would like to suggest?
Appendix 9: Weekly log

Referred to in Chapter 3: Research approach page 88.
Practitioner community of practice (CoP) and weekly log

Design-based research advocates a close collaboration between the researcher and the practitioner. To achieve this, a community of practice was set up with the lecturers of the Principles of Journalism course. The community was facilitated face-to-face and online providing a synchronous and an asynchronous platform for discussion, collaboration, support, reflection and communication. The community members met face-to-face every week over a cup of coffee to discuss any issues arising in the week of teaching, changes to facilitation methods, topic and assessment, student scaffold, technology and diverse discussions in general on learning and teaching.

Strategies for nurturing and maintaining the CoP:
- weekly informal catch up meetings over a cup of coffee
- nurture a collaborative and collegial environment that drives the learning within the community
- establish an online platform for inclusiveness, collaboration, support and communication
- encourage the teachers to update the online platform with issues and reflections as they occurred—forming the basis for discussion in the weekly meetings
- encourage and support staff to use digital media and mobile tools to participate on the online platform.
Appendix 10: Description of the elements of the PoJ

WordPress - Figure 7.3

Referred to in Chapter 7: Iteration 2 – Implementation and evaluation page 203.
### Description of the elements of the PoJ WordPress - Figure 7.3

<table>
<thead>
<tr>
<th>Design elements</th>
<th>How it was used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – PoJ curriculum</td>
<td>This section was updated on a weekly basis with the plan for the week. This included links to the lecture notes on the institutional learning management system and the readings for the week. An outline and instructions for the task for the week was also provided.</td>
</tr>
<tr>
<td>2, 13 and 14 – PoJ and technology</td>
<td>This section housed the technology support instructions. Here, links to the 'how to videos' and written instructions were provided to the students. This section was broken down into several parts to make it easy for the students to find and use the resources. Apart from providing technology support, this section was also used to introduce new tools and to demonstrate to the students the pedagogical affordances of the tools for learning. These resources were to accompany the support provided to the students in class during the tutorial sessions. The element numbered 13 provides a snapshot of the Twitter, WordPress and Gmail in PoJ category and the resources within. The students were also able to vote and share the resources within any category that they found useful on Twitter and other social media platforms.</td>
</tr>
<tr>
<td>3 – PoJ tutorials</td>
<td>Within this section, individual pages were added for each tutorial session. The students were able to comment under the tutorial session they were going to attend with their own blog address and Twitter username.</td>
</tr>
<tr>
<td>4 – PoJ blog</td>
<td>This was the official PoJ blog page. This is where all the information regarding the course, instructions and anything that needed to be shared with the students was posted.</td>
</tr>
<tr>
<td>5 – Your blogs</td>
<td>This section of the site curated all the student blog posts in a single page. The blogs were then divided and grouped according to the tutorial session the students were attending. This was done to make student work more visible to the other students in the class and to provide ease of access.</td>
</tr>
<tr>
<td>6 – Examples</td>
<td>Here, examples of work done by students from last year were shared (with permission). This was done to give the students an idea of what was expected and to also model good work. This section was added in the third week of the course when the students had chosen the story they wanted to work on.</td>
</tr>
<tr>
<td>7 – Course links</td>
<td>Important links regarding the course were placed here to make it easy for the students to access from the site.</td>
</tr>
<tr>
<td>8 – Recent updates</td>
<td>Any resources that were updated on the site by the lecturers or the technology steward were displayed here to give the students instant access to the resources, which were just added or updated.</td>
</tr>
<tr>
<td>9 – Recent comments</td>
<td>Recent comments made by any student in the class or the lecturers anywhere on the site were displayed here to add interaction to the site and to model collaboration through engaging with the questions or comments posted.</td>
</tr>
<tr>
<td>10 – PoJ on Twitter</td>
<td>A Twitter widget was embedded here so that the students could click and follow the PoJ Twitter account to get all the updates or ask any question.</td>
</tr>
<tr>
<td>11 – Students on Twitter</td>
<td>All Twitter activity under the class hashtag was curated and displayed here for the students to browse through.</td>
</tr>
<tr>
<td>12 – Front page</td>
<td>The front page displayed the plan, task and instructions for the current week to the students.</td>
</tr>
</tbody>
</table>
Appendix 11: Identifying areas for improvement for future iterations

Referred to in Chapter 7: Iteration 2 – Implementation and evaluation on page 209.
Identifying areas for improvement for future iterations

Participant feedback

As in the first iteration, participant feedback on the design and implementation of PoJ was sourced from the voluntary anonymous online survey that participants were requested to complete at the conclusion of the semester. Feedback on the design and implementation of PoJ was also elicited from the three focus groups that were held at the conclusion of the semester.

In response to Q.9 (Figure 10.1), a vast majority of the students (69%) indicated that their learning experience in PoJ was either ‘Very good’ or ‘Good’, 28% indicated that they were not sure, while 3% of the students indicated that they thought their learning experience in PoJ was either ‘Very Poor’ or ‘Poor’.

![Figure 10.1 – How would you rate your experience in PoJ?](image)

Further analysis of each student response in Q.9 was conducted in relation to the feedback provided by the students to Questions 10, 11, 16, 18 and 19 to understand the reason for the choices they made (Poor, Not sure and Good)—which in turn helped identify the influencing design and implementation factors. The individual themes arising from each response were compared with other student responses to form the theme and categories. The survey findings were then corroborated with the data from the focus groups. The analysis helped identify the positive elements of PoJ and areas for
future improvement. An overview of the positive categories and themes of the design and implementation of PoJ is provided in Table 10.1.

<table>
<thead>
<tr>
<th>Category</th>
<th>Themes</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course design</td>
<td>Authentic task and activities</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>Practical hands-on learning</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Self-directed learning</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Structure</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>Reflection</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Lifelong learning</td>
<td>4%</td>
</tr>
<tr>
<td>Facilitation (11%)</td>
<td>Lecturer</td>
<td>11%</td>
</tr>
<tr>
<td>Learning Environment (32%)</td>
<td>Mobile social media</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>PoJ Site/technological scaffolding and social learning</td>
<td>6%</td>
</tr>
</tbody>
</table>

From the analysis of the student feedback data, a number of elements relating to the design of PoJ were identified. A majority of students (57%) indicated that the overall design of PoJ was a beneficial factor in their learning. In particular, students outlined the authenticity of the learning experience (22%) and the overall structure of the course (15%) beneficial. Many students valued the authenticity of the tasks and activities in PoJ as it helped them build relevance to the role of being a journalist in the real world. For example, Res_23 stated:

The course gave a real and deep understanding of what journalism is and what sort of elements I should expect should I choose to major and get a job in journalism. (Res_23)

Similarly, some students felt that the structure and layout of the course played an important role in informing their learning, as Res_21 commented:

The course was set out well and made logical sense. I felt as though I built on my knowledge each week to form a good basic journalistic knowledge base and skillset. (Res_21)

Another student shared:

I am a third year public relations [PR] major… In all the PR courses I have done everything was sort of disjointed. All their classes were self-contained and within the units were very vaguely structured, whereas this [PoJ] paid itself. Everything was on a linear scale; everything flowed organically onto the next. (Lincoln_FG3)
Another element within the course design category that students mostly commented about was the practical and hands-on nature of the course in balance with theory (9%): ‘the practical work helped drive the teaching into the students’ (Res_14), while Res_28 stated that the design of the course ‘forced us to apply the theory in a practical journalism piece’. Cece compared previous learning experiences to PoJ and stated:

…it was the best integration between practical and theory out of all my courses, because other ones have just been solely practical or solely theory-based. I think it is [PoJ] really good measure of the two. (Cece_FG2)

Other smaller themes that emerged from student feedback data were that the learning in PoJ was self-directed (5%) and students felt they acquired lifelong learning skills (4%), which they felt could be transferred across multiple situations and career paths. For example, Res_3 felt the learning design in PoJ was flexible and the students were ‘free to choose their own path of knowledge’, while Res_8 commented on the lifelong skills gained in PoJ:

I would summarise it as a wave of quality information that I will carry with me no matter what career path I go down … very transferrable skills that I have not learnt anywhere else. (Res_8)

Some students also valued the integration of mobile and social media tools in the design of the learning environment (26%). In particular, the students felt that blogging had a positive impact on their learning and the use of mobile and social media tools allowed them to learn or choose a context that was more meaningful and conducive for the desired learning outcome. For example, Raven commented:

… initially I honestly thought blogging was a chore. I did not look forward to doing it every week but as the course went on, as I got more involved in my story and with the tutorial, I found it easier. …the blog was a good way to help with learning. It helped you to understand because you were able to put everything in your own words. (Raven_FG1)

Res_32 stated:

The blog assessment I felt was far less formal allowing me to get more ideas out of my head and onto the post. (Res_32)

Similarly, Res_33 stated that mobile and social media tools helped the learning process by allowing students to select a meaningful context:
…learning journalism and being practical journalists made learning interesting and easy for me. Technology-driven learning allowed me to learn in a context in which I understood. (Res_33)

Some students commented that the use of mobile and social media tools provided increased connection with the peers and teachers in PoJ:

I felt more connected with my peers and teachers, and I really liked it. I can stay connected, I can still learn from what other teachers posts we well. (Wells_FG1)

Another theme that students mostly commented about was the use of the PoJ website that was implemented in the second iteration. The students stated that the PoJ site acted as a gateway to access course content and information and allowed them access to all student work which helped them learn from each other. For example, Monty stated:

…some of the features were quite good in terms of being able to see what other people were writing. Rather than having to actually go out and look for it, I could make one or two clicks and everyone’s stuff is there. And it was good to compare yourself with other people to see how much they had written, what sort of content they were writing and how it was styled. (Monty_FG2)

Some students also valued the passion and enthusiasm of the lecturers who facilitated PoJ and stated that they had a positive impact on their learning, for example, Res_12 stated that: ‘engaged and passionate tutors’ was a beneficial factor in PoJ, while Res_36 commented:

My tutor made the [course] for me. I would enjoy it either way but he really encouraged passion and inspiration for me. (Res_36)

Areas for improvement were also identified from student feedback data. The student feedback on the areas they thought could be improved were analysed and themes were grouped into three broad categories—course design (40%), facilitation (36%) and the design of the learning environment using mobile and social media tools (24%). Table 10.2 provides an overview of the categories and themes after data analysis.
Table 10.2 – Areas of improvement for future implementation

<table>
<thead>
<tr>
<th>Category</th>
<th>Themes</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course design (40%)</td>
<td>Lecture, tutorial and assessment alignment</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>Learning resources (readings)</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Integration of mobile and social media tools</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Assessment scope</td>
<td>15%</td>
</tr>
<tr>
<td>Facilitation (36%)</td>
<td>Feedback</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Assessment clarity</td>
<td>34%</td>
</tr>
<tr>
<td>Learning Environment (24%)</td>
<td>Explain use of mobile and social media tools</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Technology overload</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Objection to using social media tools</td>
<td>13%</td>
</tr>
</tbody>
</table>

A majority of the students (40%) indicated that the design of PoJ could be improved. In particular, the lecture, the tutorial sessions and the assessments (21%) needed to have a better alignment between them. For example, Res_35 commented that ‘It [PoJ] would have been better if the tutorials and the lectures matched up’, while Res_2 stated: ‘structure the lectures and tutorials according to what is required from us’. Other issues that some students (15%) commented on were that the scope of the assessment or the news story was too limiting and focused only on ‘hard news’, they wanted to explore other genres of news reporting in the course. For example, Res_22 suggested that ‘a variety of journalism styles’ would help improve PoJ, while Res_39 commented: ‘Introduce other forms of journalism.’ Similarly, students indicated that the use of mobile and social media tools could have been better integrated in the learning process (2%) and suggested that the weekly readings needed to align with the coverage in the lecture (2%).

Some students (36%) commented that the facilitation of PoJ could have been better. In particular, they felt more clarity was needed on the requirements of the assessment and weekly blog posts. For example, Res_12 commented ‘Definitely be more clear when it comes to explaining assignments to confused first years – they need structure and guidance’ and Res_38 stated that ‘Clear rules for blogging’ were needed. A few students (2%) commented that perhaps a checkpoint was needed for the news story assessment after the draft and before the final story was due:
... even if we had a halfway check point whether you are doing this correctly or you need to have more theory, or you need to add more video, just so we know where we are at and all that. (Anya_FG3)

Similarly, 24% of the students felt that the design of the learning environment using mobile and social media tools could be improved—a particular issue that some of the students raised was that they would have preferred not to use social media (13%). For example, Roma_FG2 stated:

I hate blogging. I hate tweeting. I really hate it because I have grown up in a very anti-technology life. (Roma_FG2)

While Res_10 commented:

I really hated the idea of having to start a Twitter. I try and keep my social media to a minimum because I feel like I could be doing more productive things with my time so I definitely did not like that. (Res_10)

Clark et al. (2009) explain that such issues with using technology for learning arise due to ‘digital dissonance’— when a student’s use of social media for learning either conflicts with their existing use out of school or the learner has not used social media for any purpose at all. To help the learners overcome such issues, Schoenborn et al. (2013) propose that they need to be scaffolded and acculturated into effective use of the tools for collaboration and co-creation. In order to help students with regard to using and setting up mobile and social media tools for use in the class, time in each of the tutorial sessions was set aside. In particular, a considerable amount of time was spent in the first week to involve the students in a discussion to answer any questions, queries and issues they might have had in signing up and using social media tools in the course. Students were provided with support and help throughout the course and effective use of mobile and social media tools were modelled and demonstrated in class to help the students reconceptualise and understand the significance and use of mobile and social media tools in journalism and learning.

Other issues that students commented upon were that they felt the use of mobile and social media tools in the course needed to be explained further (6%) and in the duration of the course, some students felt that they were ‘overwhelmed’ by the tools and technologies shared (5%). For example, Zoe shared:
I think I would like to know a bit more about how journalists use Twitter properly to connect to each other. That, I felt like I did not know enough about. (Zoe_FG2)

Similarly, Monty commented:

Whilst I could see what was being done in the course in terms of giving us different media to portray our stories, I kind of felt it was a little overwhelming. At times it felt like there was almost too much to look at. (Monty_FG2)

Along with the data collected at the end of the semester, the researcher who was involved in the project as a technology steward also identified areas for improvements. The researcher’s reflections are discussed in the following section.

**Researcher’s reflections**

As in the first iteration, the researcher recorded his reflections using Google Docs. The reflections were recorded based on the researcher’s involvement in the project as a technology steward. In this role, the researcher was invited as a collaborator with the practitioners in the tutorial sessions and lectures. In the second iteration, the researcher spent 15-20 minutes with the students in every tutorial. Reflections were recorded on the events and questions arising in this time. The reflections were informed by feedback and discussions with the practitioners in the weekly meetings and students comments and interactions in class, on Twitter and the PoJ website.

The areas the researcher identified that could be improved were: enforcing and reiterating the course structure, expectation, and assessment requirement, and better integration and modelling of mobile and social media tools in the course.

The researcher noted that in the class of more than 160 students, not every student was determined to become a journalist. Many students took the course to understand and get an idea of what journalism was and then decide if they wanted to continue studying journalism and work towards a career in it. The researcher noted that because of this, many students had different expectations from the course.

The researcher also noted that the changes made to the PoJ course after the first iteration had a positive impact on student learning and how the course was facilitated.
The revised PoJ site served as a better platform for supporting and scaffolding student learning and helped the practitioners manage the course information, content and interaction. The researcher, however, noted that there was a need to continually reiterate to the students the important facets and requirements for the course such as where to find the information, to check the PoJ site for updates and the requirements for the assessment. It was also noted that when important elements of the course and expectations from the students were emphasised in the lecture and tutorial, student response was better compared to when it was not.

The modelling of effective use of mobile and social media tools in class had a direct impact on how students used them in the course. As a result, modelling and scaffolding pedagogical use of mobile and social media tools were noted as areas for further improvement. Another element that was noted to be critical was to involve the practitioners in using and modelling the mobile and social media tools in their teaching—they needed to take ownership and drive the modelling process. The researcher noted that modelling did not necessarily need to mean a hands-on demonstration of how to create digital artefacts. At times, a simple explanation and discussion of an example of how a mobile and social media tool was used in the industry seemed to work for the students. The researcher noted:

…it is not, not knowing how to use the technology that the students find difficult, rather it is not knowing how and what to do with it in a learning context that appears to be the biggest hurdle for the students. (Researcher_Reflection)

**Recommendations for future improvement**

The findings from participant feedback data and the researcher’s reflections were corroborated to identify the areas for improvement for future implementation. The issues and recommendations for improvement of PoJ for future implementation are described in table below.
### Table 10.3 – Issues and improvements for future implementation

<table>
<thead>
<tr>
<th>Issues</th>
<th>Recommendations for improvement</th>
</tr>
</thead>
</table>
| The students felt the lectures did not align with the tutorial activities nor prepare them for the assessment tasks. | Emphasise and integrate the ecology of resources in teaching practice and as a medium to support and scaffold learning more prominently.  
   Stress the importance of self-directed learning and that the students are required to follow up on the readings and blog to build an understanding of the practice and how it helps them with the assessment tasks.  
   The recommended reading list needs to be discussed with the students in the tutorial sessions to help them understand and consolidate their own understanding. |
| Students felt the scope of the assessment was narrowly focused on ‘hard news’ and did not cover other types of journalistic practices. | Stress and reiterate that PoJ is the first year of a 3-year Bachelor degree. PoJ is not designed to provide the student with all the skills and knowledge to be a journalist, it is designed to prepare and position the learner for the remaining 2-years of study towards becoming a journalist. Hence the focus in PoJ is to provide the students with the basics of journalistic practice.  
   Discuss the assessment requirements with the students in the lecture and tutorial sessions and provide scaffolding that helps them understand their role and the tasks for completing the assessment tasks.  
   Record and share a video outlining the expectations and requirements for the assessments on the PoJ website for the students to access to review when needed.  
   Create and share a ‘cheat sheet’ or a guide for the students on the requirements, critical elements and processes of the assessment on the PoJ website. |
| The students wanted clarity and guidance on the processes and the requirements for the assessment. | Help students understand and transition from social use of mobile and social media to the application and development of technological and pedagogical knowledge for learning by:  
   • providing robust ‘just-in-time’ and continuous technological support for the duration of the course  
   • tightly integrating the mobile and social media affordances with the learning tasks and activities  
   • sharing and modelling effective use of the tools to the students  
   • providing formative feedback on the use of the tools by the student as part of the learning process  
   • providing access to support resources, ideas and exemplar models of use on a variety of platforms and across devices (mobile and personal computer). |
References
