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To Steven and Caitlin

Foreword

I am delighted to have the opportunity to introduce this important book by Dr. Maggie Hartnett. I had the privilege to be one of the supervisors of Maggie's Ph.D. and, as in all successful teaching, I am pretty sure that I learned more from her than she learned from me. Her clarity of thought and her careful, meticulous approach to the research process, combined with her richly human-centred and sensitive perspective on the educational endeavour, led to something quite unique in the literature, some of the results of which you are about to discover. In this volume, that builds upon her Ph.D. work, that clarity and humanity shine through. I warmly commend you to it and hope that you will be as inspired by her work as I have been.

This is one of the first books that I am aware of that takes a truly rigorous and in-depth look at the lived reality of how and why online learners are enthused and driven, or demoralized or discouraged, during the process of online education. This is arguably the most important issue in education today and one that, as more and more education moves online, must increasingly dominate the narrative of the discipline.

The Central Problem

Far too many students, online and not, are discouraged, drop out, cheat, or follow instrumental paths in which what is learned is far less important to the learner than the certification of that learning. When coercion is entirely absent, as we see in many MOOCs, the picture looks very grim indeed. The fact that completion rates for MOOCs average less than 7 % (Jordan 2014) even allowing for other salient influencing factors that may suggest a slightly more encouraging interpretation—strongly suggests, that, without carrots or sticks, many of our most carefully considered pedagogies and cherished online course designs appear to hardly work at all. We might conclude that carrots and sticks are therefore necessary for learning were it not for the fact that learning is among the most natural and enjoyable things

in the world that, in the absence of courses, is something that we do with relish and passion every day of our lives.

How did such a strange state of affairs come to be? My attempt to answer that question in what follows is, of necessity, something of a caricature, but it presents some of the central challenges that provide the context of Maggie's research and, in sharp relief, I hope it helps to show the great value of what she has achieved in this book.

The Systemic Motivational Problems of Traditional Educational Systems

Our traditional educational systems are designed for and have evolved to fit the constraints of physical space. This has some significant consequences for the intrinsic motivation of students. Through the lens of self-determination theory that underpins the research presented in this book, we know that intrinsic motivation demands three pillars of support for three essential needs: autonomy (control), relatedness (a sense of social meaning and value) and competence (achievable challenge and attainment of goals that are personally valuable) (Deci and Ryan 1985). While face-to-face education is often effective in providing relatedness-support thanks to bringing people together in a single physical space and engaging them in a shared endeavour, physical classrooms and timetabled classes present huge challenges when it comes to competence and autonomy needs.

All Together Now

The first challenge to intrinsic motivation of putting people in a timetabled physical space is a very strong and completely understandable tendency to attempt to teach many people the same thing at once: indeed, that is often the avowed purpose. Doing so, though, runs immediately into an obvious problem: that people are different. This means that there are almost inevitably always going to be some students that are confused and fearful, and some that are bored and disengaged, because no one starts with the same competencies and interests as anyone else. It takes effort, ingenuity, sensitivity and time to create ways of supporting these different competence needs in a conventional classroom. Good teachers generally do their best to enthuse students, to help them find personal meaning and interest in what the whole class is doing, or to try to design ways to allow students to take different paths that are best suited to their needs and competence. But many teachers, at least sometimes, take the easier path of offering rewards or threats of punishment in order to drive behaviour. Indeed, it is such an obvious path that most educational systems formally enshrine this in the demand for grades, accreditation, and implicit or explicit rules of conduct.

Teacher Control

The second challenge to intrinsic motivation of putting people simultaneously together in a physical space is that people are quite a big distraction to other people. They tend to like to talk, engage, interact and to generally make a noise. Teachers therefore tend to need to be in control of this. They quite reasonably feel the need to give students something to do in the allotted time and space, whether it is listening and note-taking or something more beneficial to learning. Whatever the activity, it is normally chosen by the teacher, because that is by far the easiest and usually the most efficient approach. It is necessary for teachers to take control because authority and leadership is required to avoid the chaos and self-organising behaviour of crowds that would at best distract from and at worst entirely disrupt the planned process. At the very least, teachers need to attract learners' attention long enough that learners know what needs to be done. This means that the teacher shapes the path that learners must take while in a classroom. Although good teachers and careful learning design can often overcome these problems to some extent, it is difficult under such circumstances to give learners a strong sense of autonomy and control. It is not surprising that many teachers fall back on rewards and/or punishments to sustain their authority, thereby usually reducing learners' own sense of autonomy.

Why Online Is Different

Online education inherits some of these constraints because it has mostly emerged from the context of traditional education. But online education also opens up possibilities and propensities that, until now, have been under-researched and, more importantly, under-utilised in the ways we have attempted to design learning experiences. For the most part we have relied on extrapolations from the physical setting that tell us little about the richness and complexity of the motivation of online learners, in order to guide our teaching. We are also often working blind, because the motivation of online learners has mostly been hidden from us inside a black box, revealed only in its indirect coarse effects (drop-outs, cheating and so on) or, in the occasional hint from evaluations, reflections and discussions. The unique and important contribution of this book is that it takes the lid off that black box and lets us look inside. What we find there is a rich complexity that reveals the analysis I have presented so far to be over-simplistic.

Online, the power relationships and the uniformity of process that define physical classrooms are, on the face of it, no longer a necessary feature of an educational system. We have only to glance at the most successful e-learning systems in the world, such as Google Search, Wikipedia, YouTube or the Khan Academy, to see astonishing amounts of learning happening without coercion, guidance or extrinsic control, driven by and supporting motivated learners.

However, in formal education, thanks largely to the surrounding educational system, teachers do continue to wield authority, especially through the awarding of grades. At a broad level, online teachers direct learners and their learning in very similar ways to what occurs in physical classrooms. Their control is no longer absolute, however, at least in the largely asynchronous approaches of the sort examined in this book. Students have greater choice over how they study, including over what pace, what tools, what content, what communities, what media and what methods they use can. This individual control potentially increases both learners' autonomy and provides greater support for their competence needs. It would seem, therefore, that there would be fewer concerns about autonomy and competence support for online learners. And yet, things are far more interesting and complex than such a simplistic analysis suggests.

The Complex Nature of Motivation in Online Education

Maggie's studies, presented in this book, are among the richest and most far-reaching that have yet been attempted to understand the nature of motivation of online learners. In particular, her studies show rich systemic interdependencies between multiple motivational factors, constantly changing motivational drivers, and the extreme context-sensitivity of motivation to learn. There is a rich and subtle interplay between learning design, grading requirements, personal tendencies, contextual needs, community behaviours, peer support, implicit and explicit pedagogies, technological constraints and the exchange of control that inevitably occurs in a community that supports interaction. Some of the implications of this—for example, that autonomy and competence needs actually rely upon a certain level of teacher control—are profound. Her book is thus an important and valuable contribution not just to the literature of motivation but to the field of education as a whole. These are lessons that every online teacher needs to learn.

August 2015 Jon Dron
Vancouver

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Preface

Prior to embarking on this research investigation, I worked as an academic in several different higher education institutes of technology (polytechnics) within New Zealand. This involved face-to-face teaching and, over time, increasingly online teaching. It was around this time that I began studying for a Master of Education degree in online education. I completed this degree part-time as an online distance student over the course of several years (while working), only meeting and getting to know my fellow learners and lecturers in 'cyberspace'. Many of these experiences were stimulating and valuable, some were transformational and a few were disappointing and uninspiring. These experiences contributed to my interest in why certain situations, within the context of technology-mediated learning environments, encouraged my tendency towards making an effort, persisting in the face of difficulties and wanting to do well; while others fell into the 'just get it done' category. I understood at some level that it wasn't just me who contributed to my *motivation to learn*, but that there existed a complex relationship between myself as a learner and the wider learning environments in which I found myself. Wanting to understand why this was the case was my motivation for undertaking this research.

Structure of the Book

The book is organised into six chapters. Chapter 1 introduces the subject of the book, Chap. 2 reviews the literature on online learning and motivation that informs and supports the aims of the investigation. Chapter 3 briefly describes the case study methodology that underpins this research and the methods used to generate and analyse data. It then goes on present in-depth findings from two case studies that form the context for this research. In Chap. 4, the key findings are discussed

highlighting their importance with reference to the wider motivation and online learning literature. Using the findings and understandings outlined in the previous two chapters, Chap. 5 then presents the practical guidelines for online teachers, instructional designers and learners. Chapter 6 concludes the book by highlighting its contributions as well as recommendations for future research.

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I wish to express my gratitude to the students and teaching staff who agreed to take part in this research and share their experiences of online learning and teaching. Without them our understanding of motivation in online contexts would be much poorer.

I also wish to express my sincere appreciation to my research colleagues and friends who have been a constant source of advice, support and motivation. They include Dr. Alison St. George, Associate Professor Jon Dron, Dr. Alison Sewell, Dr. Alison Kearney and Dr. Ben Kehrwald. Without your assistance this research would have been less rich and certainly less enjoyable.

A very special thank you goes to my husband Steven and daughter Caitlin. I truly appreciate the constant love, support, understanding, time and space you have given me to complete this work.

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Abbreviations

AM	Amotivation
ARCS	Attention, Relevance, Confidence, Satisfaction
ER	External Regulation
IM	Intrinsic Motivation
IQR	Inter-quartile Range
IR	Identified Regulation
LMS	Learning Management System
Mdn	Median
MOOCs	Massive Open Online Courses
PBL	Problem-Based Learning
SDI	Self-determination Index
SDT	Self-determination Theory
SIMS	Situational Motivation Scale

Chapter 1
Introduction

Abstract This chapter introduces the research problem that the research described within this book sought to address, specifically the nature of *motivation to learn* of students situated within online learning environments. It outlines why *motivation to learn* online is an important consideration that is receiving growing attention. It then describes the specific research aims that provided the direction for the investigation that is reported in subsequent chapters.

Keywords Education · Online · Digital technologies · Learning · Motivation

1.1 Background

The rapidly changing nature of digital technologies is having a dramatic impact on how we live our lives. From shopping, to communication, entertainment and work, the ubiquity of digital technologies is changing the way we interact with each other and the world around us. Education is no less affected. The growth of the internet and related technologies has resulted in the merging of online teaching and learning into the routine practices of higher education institutions (Haythornthwaite and Andrews 2011).

Online learning has a number of potential benefits, not least of which is the ability to overcome the time and location restrictions of traditional educational settings. In doing so, it provides learners with the flexibility to choose when, where and how to learn (Bates 2005). Another benefit of this form of learning is greater equity of access. People previously excluded from education due to location, personal circumstances, financial constraints, disabilities, or lack of course availability, can now participate in education. Notwithstanding the advantages of flexibility and equity of access that online learning offers, a variety of factors have been identified as crucial to the success of online learners. Primary among them is concern over learner motivation in online education (Bekele 2010). A growing body of research highlights motivation as an issue requiring further investigation in online settings (Artino 2008; Kim and Frick 2011).

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1.2 Research Issues

This study explores the nature of *motivation to learn* of students situated within online learning environments. Specifically, it examines undergraduate, pre-service teachers' *motivation to learn* within two distinct online learning contexts situated within a New Zealand university. In addition to this, recognising the mutually constitutive relationship of the learner and the learning environment (Hickey and Granade 2004), a range of social and contextual factors are investigated to gain an understanding of their relationship with students' *motivation to learn*. Questions guiding the investigation are:

1. What is the nature of students' *motivation to learn* in online environments?

In order to explore this question self-determination theory (SDT), a contemporary theory of motivation, is adopted. In particular, the SDT continuum of human motivation (Ryan and Deci 2000) that encompasses amotivation, several types of extrinsic motivation and intrinsic motivation provided a powerful analytical tool for exploring the complexity of learner motivation.

2. In what ways do social and contextual factors relate to students' *motivation to learn* in online environments?

SDT also explains how external events can enhance or constrain motivation via the basic psychological needs of autonomy, competence and relatedness. It highlights that if the conditions are such that they support an individual's need to experience competence through optimal challenges, autonomy via a sense of control and relatedness by feeling connected to others, then high quality motivation will emerge. Alternatively, if social or environmental factors exist such that a student's perception of competence or sense of autonomy are undermined, or if they feel disconnected from the people around them, then motivation will be detrimentally affected (Deci and Ryan 2000). These underpinning psychological needs provided a powerful framework for identifying social and contextual factors that influence motivation in online learning environments and in doing so has extended SDT research into new learning environments.

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Chapter 2
The Importance of Motivation in Online Learning

Abstract This chapter begins by looking broadly at learning as a process of knowledge construction and the increasing role of digital technologies in this process within tertiary education contexts. This is followed by an introduction to online learning along with definitions, discussion of foundational online learning concepts and contemporary pedagogical approaches used in online learning environments. Next, the reasons why motivation is an essential consideration in online teaching and learning contexts are explored. Then, existing research into *motivation to learn* in online environments is discussed in light of contemporary theoretical motivation frameworks. Finally, self-determination theory (SDT)—an intrinsic-extrinsic theory of motivation—is discussed in detail. In particular, the continuum of human motivation that outlines a range of different types of extrinsic motivation and the underlying psychological concepts of autonomy, competence and relatedness that SDT is built on are discussed. In doing so, justification for the use of SDT as the conceptual framework for this work is provided.

Keywords e-learning · Online learning · Motivation · Self-efficacy · Interest · Goal orientation · Self-determination · Intrinsic · Extrinsic · Autonomy

2.1 Motivation and Online Education

Paris and Turner (1994) describe motivation as the 'engine' of learning (p. 217). Motivation can influence what we learn, how we learn and when we choose to learn (Schunk and Usher 2012). Research shows that motivated learners are more likely to undertake challenging activities, be actively engaged, enjoy and adopt a deep approach to learning and exhibit enhanced performance, persistence and creativity (Ryan and Deci 2000b). Given the important reciprocal relationship between motivation and learning (Brophy 2010), it is not surprising that motivation has been actively researched across a wide range of traditional educational settings (Schunk et al. 2014). Despite this, studies that explore *motivation to learn* in online contexts are limited in both number and scope, as others have noted (Bekele 2010).

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Of the research that is available, there has been a tendency to adopt a limited view of motivation that does not acknowledge the complexity and dynamic interplay of factors underlying and influencing *motivation to learn* (Brophy 2010). Instead, designing motivating learning environments has received attention (Keller 2010). Alternatively, motivation has been viewed as a relatively stable personal characteristic and studies have focused on identifying lists of traits of successful learners (Yukselturk and Bulut 2007). Comparative studies between online and on-campus students are common using this approach (Wighting et al. 2008) and findings indicate that online students are more intrinsically motivated than their on-campus counterparts.

However, higher dropout rates associated with online courses compared to similar face-to-face ones (Park and Choi 2009) lend support to the view that motivation is more complex than the above studies suggest. Feelings of isolation (Paulus and Scherff 2008), frustrations with the technology (Hara and Kling 2003) and time constraints due to other responsibilities (Keller 1999) have all been identified as factors influencing students' decisions to withdraw from online courses. Poor motivation has also been identified as a decisive factor in contributing to the high attrition (Artino 2008; Keller 2008). Therefore, student motivation is considered a crucial factor for success in online learning environments (Artino 2008; Keller 2008) and is a primary reason for the current study. Collectively, these factors point to the need to reconsider *motivation to learn* in technology-rich environments. But before turning our attention to motivation it is important to start by defining what is meant by online learning.

2.2 Online Learning

Today, there are a plethora of terms to describe the application of digital technologies in learning including distance, online, open, flexible, blended, flipped, mixed and MOOCs (Massive Open Online Courses). To help make sense of these terminologies, Bullen and Janes (2007) developed a continuum of technology use ranging from face-to-face to fully distance environments. E-learning is a common generic term used to describe anything on this continuum that incorporates digital technologies in the learning process (Nichols 2008).

2.2.1 Definition

Online learning has its roots in distance education. Bates (2005) points out that the terms 'online learning' and 'e-learning' are used interchangeably, but makes the distinction that e-learning can encompass any form of technology while online learning refers specifically to the use of the internet and the web. The term "fully online" is used by Bates (2005, p. 9) to distinguish distance courses where students

must have access to an internet capable device to undertake a course. Ally (2008) also highlights that there are many definitions of online learning that reflect the diversity of practice and technologies in use. He goes on to define it in the following way:

> … the use of the internet to access materials; to interact with the content, instructor, and other learners; and to obtain support during the learning process, in order to acquire knowledge, to construct personal meaning, and to grow from the learning experience (p. 5).

Given the lack of consensus of terminology, the term *online learning* is used in this book. It is taken to encompass the definition offered by Ally *and* incorporates the fully online distinction used by Bates that makes cognisant the distance context of courses. In other words, *online learning* described here is taken to be a form of distance education mediated by technological tools where learners are geographically separated from the instructor and the main institution.

2.2.2 Learner Autonomy and Control in Online Learning

While it not the intention here to offer a comprehensive review of the history of distance education, or the place of online learning within it, it is important to discuss two theoretical concepts that have been influential in the overall development of the field and continue to influence our understanding of learning and motivation in contemporary online contexts. These concepts are *transactional distance* that encompasses the notions of structure, dialogue and autonomy suggested by Moore (1990); and the alternative concept of *learner control* (Garrison and Baynton 1987). Similar concepts exist within contemporary motivation literature, particularly those associated with self-determination theory (Deci and Ryan 1985), the motivational framework that underpins this investigation.

Moore (1990) coined the phrase *transactional distance* to define the psychological separation frequently experienced by students, as a result of the spatial and/or temporal separation between learners and instructors in a distance learning context. From this perspective, the relative amount of structure and dialogue inherent in the learning activity determines the degree of 'distance' experienced by the learner (Dron 2007). Structure refers to the design of the course and expresses the flexibility or rigidity of the teaching methods, objectives and assessment practices (Moore 1993). Dialogue refers to the degree of interaction with the instructor and is associated with the communication medium (Moore and Kearsley 2005). In Moore's theory, low dialogue and structure equate to high transactional distance and vice versa (Garrison 2000). However, the theory points out that high dialogue and structure are difficult to achieve simultaneously (Dron 2007). The theory also incorporates a third concept, learner autonomy. The greater the transactional distance (i.e. low structure and dialogue), the more responsibility is placed on the learner (Moore and Kearsley 2005). In this model, Garrison (2003) argues that autonomy is associated with independence and self-directed learning. While

Moore points out that the transactional distance model does not imply that autonomous learners do not require teachers, he does suggest that they require less dialogue and minimal structure when compared with less autonomous learners (Moore 2007).

Other researchers in the field have argued that the term *autonomy* has suffered from the lack of clear definition (Garrison 2000; Garrison and Baynton 1987). Garrison and Baynton (1987) argue that a richer, more inclusive concept is that of *learner control*, as it helps to address the confusion associated with the role of independence in distance education. In this conceptualisation, "control is concerned with the opportunity and ability to influence, direct, and determine decisions related to the education process" (p. 5). This can only be achieved by striking a balance between *independence* (being free to make choices without restrictions or outside influences); *power*—later referred to as competence—(the capability to be responsible for and take part in the learning process); and *support* (the resources, including the teacher, available to the learner throughout the learning process). In this model, support from the teacher enhances greater control on the part of the learner; it does not take away from it. Baynton (1992) tested this model via confirmatory factor analysis and found that the subsequent three main factors mirrored the proposed dimensions.

The work of other researchers has also influenced our understandings of choice, control and autonomy in distance education, most notably Candy (1991). Candy focused on self-direction and distinguished two different types: self-direction as (1) a personal characteristic; and (2) the degree of control a learner has in determining his or her learning path. This is an important distinction because it recognises that autonomy is both a personal and situational variable. In other words, the degree of autonomy a person expresses can vary from situation to situation.

Dron (2007) has built on the work of previous theorists and developed a conceptual model called *transactional control*. Transactional control has to do with choice and attempts to explain the dynamics of transactional distance. In this model, structure is equivalent to teacher control, dialogue relates to negotiated control, and autonomy relates to learner control. In other words, control is seen as a continuum from learner control at one end to teacher control at the other, which is determined by the choices made throughout the learning trajectory.

While the concepts of autonomy, independence, control and agency have been central to the development of distance education theory, other theories have also been influential.

2.2.3 *Contemporary Theories of Learning*

With the advent of the internet and communication technologies that enable interaction between and among student groups, contemporary learning theories increasingly inform teaching and learning practices in online contexts (Anderson and Dron 2011; McLoughlin and Lee 2008). In particular, constructivist and social

constructivist perspectives of learning have gained prominence in online education research and literature (Ally 2008; Dyke et al. 2007).

Constructivism sees the student at the centre of the learning process and actively involved in the construction of knowledge (Dalgarno 2001). Learning from this perspective, places emphasis on authentic activities, collaboration, learner control or agency, reflection, active engagement and intrinsic motivation (Herrington and Oliver 2000). There are several strands of constructivism. Two which figure prominently are cognitive constructivism and social constructivism (Dyke et al. 2007).

Individual cognitive constructivism has grown out of the foundational work of Piaget (1977) and is a theory that views the learner as agentic (i.e., the ability of an individual to make choices and act on those choices) and learning as an active process of individual meaning-making. Favoured approaches tend to be task-oriented, hands-on and self-directed (Dyke et al. 2007). Examples of cognitive constructivist methods include: active learning, problem-based learning and inquiry learning (Kirschner et al. 2006). Researchers (Lindgren and McDaniel 2012) have recognised that digital technologies present new opportunities for supporting learner agency most notably by personalising the learning experience, allowing the student to choose, assemble and construct their own representations of knowledge in their own way (Conole 2010).

The development of social constructivist theory was influenced by Vygotsky's (1978) cultural-historical theory and the writings of Dewey (1916). Social constructivism conceptualises learning as participation in shared activities where the context and the situated nature of learning are integral considerations. Social constructivist theory also acknowledges the importance of motivation and the crucial part contextual factors play in the fostering of motivation among learners (McInerney and Van Etten 2004). From this perspective, knowledge is distributed among members of a community, and learning involves individuals' abilities to participate successfully in community practices (Wenger 1998). Language is a central tool for learning and co-construction of knowledge (Dyke et al. 2007). It can be argued that the emergence of the theory of connectivism, that views learning as a process of developing networks of information, resources and people (Siemens 2005), is a logical progression of social constructivist theory in a digitally-mediated world.

The situated, social and constructed nature of learning has been recognised in the online learning literature (Howland et al. 2012). Principles such as mediation, zone of proximal development, internalisation, cognitive apprenticeship and distributed intelligence have been adopted to underpin the design and development of online learning environments (Dyke et al. 2007). Particular emphasis has been placed on the development of online learning communities (Harasim 2012) where opportunities for collaboration and interaction are realised through the use of various digital communication tools (Haythornthwaite and Andrews 2011). While there is a focus on the socially-mediated nature of learning in the sections that follow, this does not

negate the importance of individual constructions of knowledge. Learner interactions with course content in particular, frequently occur at an individual level in online learning contexts.

2.2.4 The Role of Interaction in Online Learning

Interaction has been used in online learning to denote anything from clicking on a link to interpersonal dialogue among many participants (Nichols 2008). However, for the purposes of this book, a useful starting point is the work of Moore (1989). Moore identified three types of interaction in earlier generations of distance education, namely: learner-instructor, learner-content, and learner-learner interaction. Hillman et al. (1994) added a fourth type, namely learner-interface interactions.

Learner-instructor interaction refers to exchanges that occur between learners and the teacher and are characterised by attempts to motivate and interest the learner. They also provide a mechanism for feedback allowing clarification of misunderstandings. Thach and Murphy (1995) identified seven types of learner-instructor interactions in distance education settings: (1) establishing learning outcomes/objectives; (2) providing timely, useful feedback; (3) facilitating information presentation; (4) monitoring and evaluating student progress; (5) facilitating learning activities; (6) facilitating discussions; and (7) determining learning needs and preferences. More recently, Garrison et al. (2000) have developed the concept of teaching presence as part of the community of inquiry model. Teaching presence explicates the teaching role in online environments which encompasses design and organisation, facilitating discourse and direct instruction (Garrison 2011).

Teaching presence and the effective facilitation of learner-instructor interactions, particularly via online dialogue, have continued to be an area of active research (Garrison 2011; Mishra and Juwah 2006; Rovai 2007). From this, guidelines for facilitating effective practice have emerged that build on those of Thach and Murphy (1995). For example, Rovai (2007) provides design and facilitation guidelines for effective online discussions based on research and experience. They include ways of encouraging learner motivation, incorporating opportunities for learner choice, and clarification of expectations as well as developing and nurturing a strong sense of community. Mishra and Juwah (2006) highlight the importance of establishing a purpose and context for discussions, clarifying the relevance of conversations by making links to learning outcomes and the importance of encouraging learners to participate through the provision of appropriate support.

Learner-content interaction describes the intellectual process that occurs between the learner and the resources associated with the topic of study (Moore 1989). Learner-content interactions occur when learners access such things as textual and graphical representations of the subject matter (Hirumi 2006). With the increasing availability of technology, learners can now choose from a huge variety

of information at any time or from any place. But in order to interact with content, learners need to be able to access relevant and appropriate resources which frequently require guidance from the teacher (Anderson 2006b). Availability of adequate resources has also been shown to be important from a motivational perspective (Reeve et al. 2004).

Learner-learner interactions highlight processes that take place between peers undertaking a course together (Moore 1989). This can include processes such as sharing information and understandings, working together to interpret and complete activities, solving problems, and sharing opinions or personal insights. Technology-mediated communication technologies, for example, provide learners with opportunities to collaborate and actively participate in knowledge co-construction via online discussion (Hirumi 2006).

Juwah (2006) argues that for learners to participate and have positive peer interactions, they need to know how to effectively use the digital tools and must understand how to learn. This includes having the necessary prerequisite, prior knowledge and an understanding that successful learning requires self-regulation. Even with the necessary skills, peer interactions in technology-mediated environments are complex and cover a range of intellectual (e.g., reviewing, conceptualising), social/emotional and instructional interactions (e.g., critiquing). Much of what is known today about what is required for effective peer interactions to occur in technology-mediated environments has emerged from the analysis of asynchronous discussion transcripts (De Wever et al. 2006). Garrison et al. (2000) developed the community of inquiry model that posited that interactions must consist of three core elements for effective peer learning to occur. They are: cognitive presence—the degree to which the participants can construct meaning through ongoing communication; social presence—the ability of participants to present themselves as 'real' to other community members; and teaching presence—the design and facilitation of the learning experience.

Learner-interface interaction refers to a learner's ability to use the required technological tools in order to interact and communicate with the instructor, other students and the course content (Hillman et al. 1994). A learner's belief in their ability to use the necessary technological tools to learn online has also been found to be related to performance (Moos and Azevedo 2009).

Online communities Rovai and Lucking (2003, p. 6) state that "interaction is the primary mechanism through which community is built and sustained". Interaction between learners and the development of learning communities has gained considerable attention (Anderson 2006b; Harasim 2012; Rovai 2000) because it has been identified as a crucial factor in creating and sustaining online communities (Haythornthwaite and Andrews 2011).

The development of a supportive network among learners can foster *motivation to learn*, commitment to group goals, encourage the co-construction of knowledge (Bonk and Khoo 2014), and has been shown to be significantly related to perceived

cognitive learning (Rovai 2002). However, building such a network is not straightforward. Interaction is an essential element of a supportive community but will not occur by simply providing the technological tools to learners (Garrison 2011). Course structure (Anderson 2008), class size (Vrasidas and McIsaac 1999), prior experience (Juwah 2006), social presence (Lin et al. 2008), instructor immediacy (Shea et al. 2005), self-disclosure (Cutler 1995), collaborative learning (Boekaerts and Minnaert 2006), group facilitation (Jones and Issroff 2007), personal agency (Anderson 2006a), and the ability of learners to meet their peers' affective needs within small group settings (Anderson and Simpson 2004), have all been found to influence student interaction and their sense of being part of an online community.

The discussion to this point has identified that the adoption of social constructivist principles that encompass the concepts of collaboration, interaction, and dialogue are important underpinnings in the development of successful online learning communities. Developing and sustaining a sense of online community is also important in fostering motivation among learners (Bonk and Khoo 2014). In the section that follows, attention turns to the existing body of research that has investigated the motivation of learners in these types of online environments.

2.3 Motivation to Learn in Online Environments

The characteristics of independence, self-direction and intrinsic motivation have long been associated with distance learners (Moore 1989). Intrinsic motivation has also been identified as an important characteristic of online learners (Shroff et al. 2007). Findings from comparative studies between online and on-campus students also suggest that online learners are more intrinsically motivated compared with their on-campus counterparts at both undergraduate and postgraduate level (Huett et al. 2008; Shroff and Vogel 2009; Wighting et al. 2008).

But as Martens et al. (2004) argue, online learners are often required to be more intrinsically motivated *because* the learning environment typically relies on intrinsic motivation and the associated characteristics of curiosity and self-regulation to engage learners. In fact, the technology itself is viewed by some as inherently motivating because it provides a number of qualities that are recognised as important in the fostering of intrinsic motivation, namely challenge, curiosity, novelty and fantasy (Lepper and Malone 1987). The novelty factor tends to wear off as users become accustomed to the technology (Keller and Suzuki 2004) and intrinsic motivation can wane. Frustration with technical problems can also reduce intrinsic motivation.

While the intrinsic motivation of learners is an important consideration, contemporary research studies exploring motivation in these environments is limited in both number and scope (Bekele 2010). Recent concern over attrition rates in online courses (Lee et al. 2013), particularly within emerging technology-mediated

environments such as MOOCs (Liyanagunawardena et al. 2013), highlights the need for greater understanding of the complexity of factors that influence *motivation to learn* in online contexts.

2.3.1 What is Motivation?

Brophy (2010) defines motivation as "a theoretical construct to explain the initiation, direction, intensity, persistence, and quality of behaviour, especially goal-directed behaviour" (p. 3). Motivation involves goals that provide the impetus for purposeful action with an intended direction. Whether physical or mental, activity is an essential part of motivation. Inherent in this definition is the notion that motivation is a process rather than an end result. This has implications in terms of measurement of motivation. That is, because it cannot be observed directly it must be inferred from actions such as choice of tasks, persistence, effort and achievement, or from what individuals say about themselves (Schunk et al. 2014). Contemporary views link motivation to individuals' cognitive and affective processes such as thoughts, beliefs, goals and emotions and emphasise the situated, interactive relationship between the learner and the learning environment that is facilitated or constrained by various social and contextual factors (Schunk et al. 2014).

2.3.2 Why is Motivation Important?

Motivation plays a crucial role in learning and can influence what, when, how we learn and is a significant factor in performance (Schunk and Usher 2012). It has been shown to play an important role in determining whether a learner persists in a course, the level of engagement shown, the quality of work produced, and the level of achievement attained. Understanding the nature of motivation and the ways in which personal histories, social factors, experiences and circumstances may influence the motivation of learners, therefore, has important practical implications for those involved in online teaching and learning.

While few would disagree that motivation is important, the complexity and multifaceted nature of the construct has resulted in the development of several theories (Schunk et al. 2014). These can be broadly conceptualised in terms of a general *expectancy—value model of motivation* (Brophy 2010). The expectancy component is concerned with learners' beliefs about whether they are able to perform a task (Bandura 1997). The value component relates to beliefs a learner holds about the task itself (Eccles and Wigfield 2002). In addition, comprehensive reviews of the motivation literature have resulted in the development of several motivation design models. These include Keller's (2010) ARCS model of motivation design (incorporating the four components of attention, relevance,

confidence and satisfaction) and Ginsberg and Wlodkowski's (2000) motivational framework for culturally responsive teaching. Keller's model, in particular, has been frequently used as a conceptual framework for the development of online learning environments that enhance learner motivation.

2.3.3 *Motivation, the Learning Environment and the Learner*

Different perspectives have been adopted when exploring *motivation to learn* in online environments. The two that feature most prominently are motivation from the perspective of instructional design and motivation viewed as a trait of the learner. The first perspective concentrates on the design of the learning environment and the factors considered necessary to provide optimum learner motivation (Keller and Deimann 2012; Zaharias and Poylymenakou 2009). The second perspective views motivation as a relatively stable personal characteristic of the learner (Wighting et al. 2008; Yukselturk and Bulut 2007). But as we begin to understand more about the nature of motivation in online contexts, a third situated perspective is emerging that acknowledges the dynamic and responsive nature of motivation to different situations (Hartnett et al. 2011; Rienties et al. 2012). Throughout the remainder of the chapter, research from all three perspectives is presented. The various motivational theories that underpin different research investigations are also discussed. The reason for this is twofold. Firstly, incorporating various motivational theories ensures that a comprehensive picture of research to-date is presented. Secondly, while self-determination theory (Ryan and Deci 2000a) is the motivational framework underpinning the current study, other contemporary motivational theories are drawn upon where relevant, including self-efficacy theory (Bandura 1997) and interest theory (Hidi and Renninger 2006).

2.3.3.1 Motivation from a Learning Design Perspective

The first perspective used when examining motivation in online learning settings has been to concentrate on the design of the environment to elicit student motivation. Several instructional design models have been put forward, some of which consider learner motivation as a component of a broader design approach, and others which focus exclusively on motivation (see for example Chan and Ahern 1999). By far the most frequently used instructional design framework for the development of motivating online learning environments is Keller's ARCS model (Keller 1987). The framework was developed as a means of influencing learner motivation by using a systematic approach to instructional design. The attention, relevance, confidence and satisfaction (ARCS) categories serve as guidelines for systematically developing instructional strategies that capture learner attention,

establish relevance of what is being taught, encourage learner confidence, and provide a sense of satisfaction via intrinsic and extrinsic rewards (Keller 2010). Though not originally developed for online education, the ARCS model has been used as a design approach for instruction in online learning contexts (Keller 2008; Keller and Deimann 2012) and has underpinned a variety of other studies (ChanLin 2009; Hodges and Kim 2013; Paas et al. 2005).

Such instructional design approaches have been very important in developing our understanding of motivation in online learning environments. However, they are not sufficient on their own to explain the complex processes that occur as they often do not take into account learner differences. Even though the full application of the ARCS design process incorporates an analysis of the motivation of learners (Keller 2010), the model itself is often applied in a more prescriptive way (ChanLin 2009; Hodges and Kim 2013). Such approaches concentrate on the view that it is the designer and developer who make the material motivating and frequently reflect earlier behaviourist theories of motivation that assume that behaviour is caused by events or stimuli external to the person (Hickey and Granade 2004). Contemporary motivation literature suggests that it is a complex mix of these as well as other factors that contribute to a learner's motivation in any given situation (Brophy 2010).

2.3.3.2 Motivation from a Learner Trait Perspective

The second and predominant method for investigating motivation has been to conceptualise various motivation constructs as learner characteristics or traits. The impetus for conducting much of this research has been in an attempt to identify and address factors that contribute to higher attrition rates (Lee et al. 2013). Conversely, other studies have attempted to identify characteristics that predict learner success (Yukselturk and Bulut 2007).

Moos and Marroquin (2010) contend that research investigating motivation in technology-rich environments should be guided by fundamental and well-established theories of motivation. These include, self-efficacy theory (Bandura 1997); goal orientation theory (Murayama et al. 2012); interest theory (Hidi et al. 2004); and intrinsic–extrinsic motivation theory, in particular self-determination theory (Ryan and Deci 2000a). Of these, self-efficacy theory has been used most frequently.

Self-efficacy: Social cognitive theory proposes that motivation influences both learning and performance (Schunk and Usher 2012) and focuses on how people acquire knowledge, skills, beliefs and strategies through their interactions with and observations of others. Bandura (1986) social cognitive theory is central to this area of motivational research. It is based on the premise that there is a reciprocal, triadic, interactive relationship among personal factors, behaviours and environmental influences. A focal point of this theory is the notion of self-efficacy, defined as the belief that one is capable of learning or performing at a certain level in order to

attain particular goals. Self-efficacy, unlike similar constructs such as self-concept or self-esteem, is focused on an individual's beliefs about their performance capabilities for a particular task within a particular context that has yet to be undertaken.

Bandura (1997) proposed that individuals use information from a number of sources in order to judge self-efficacy. These include actual experiences (successes, failures), vicarious experiences (model observation), attributions, verbal persuasion, and physiological/affective states. Actual experience plays a major role in assessing self-efficacy for a task, with success generally raising self-efficacy and failure lowering it. Ability and effort attributions affect self-efficacy with positive ability attributions enhancing self-efficacy more than effort attributions (Schunk et al. 2014).

Observing similar peers successfully completing a task can convey to the observer that they too have the capabilities for success where model similarity is an important factor. Having a trusted person tell you that you have the ability to succeed is a further important source of information. Physiological symptoms such as increased heart rate or sweating can act as a signal of anxiety, indicating a lack of skills or ability. Alternatively, it may be interpreted as positive anticipation suggesting confidence in the ability to succeed.

Self-efficacy has been linked to factors influencing goal setting and goal performance (Schunk and Usher 2012) and has been shown to be a major motivational factor that affects students' task choices, effort, persistence and achievement (see Brophy 2010). Research has consistently shown that self-efficacy is a strong predictor of performance and student motivation (Schunk et al. 2014). Criticism of self-efficacy theory centre around, what some consider, an ambiguity of definition (i.e. outcome expectations and efficacy expectations are not conceptually distinct) and the lack of clarity of the self-efficacy measurement scale (Eastman and Marzillier 1984).

Self-efficacy has also been highlighted as an important predictor of successful outcomes and satisfaction in online learning environments (Kuo et al. 2013). Academic self-efficacy (Artino 2008; Lynch and Dembo 2004) and efficacy to learn online (Shen et al. 2013) have both been found to be significantly related to a number of factors. These include: use of high level learning strategies (Moos and Azevedo 2009; Wang and Wu 2008); critical thinking and metacognitive learning strategies (Artino and Stephens 2006); persistence (Hart 2012); satisfaction (Artino 2007, 2008); participation (Kuo et al. 2013); and academic performance (Hodges 2008). However, several studies exploring self-efficacy to learn online did not predict student achievement outcomes (Bell 2007; Xie et al. 2006). Prior successful experience with online learning has also been found to be important for learners to feel efficacious about future learning in similar contexts (Bates and Khasawneh 2007). Furthermore, learner self-efficacy may fluctuate as they come to understand the challenging nature of learning in technology-rich environments (see Moos and Marroquin 2010).

Goal orientation: A second conceptual framework used to support studies investigating *motivation to learn* in online contexts, is goal orientation theory. Goal orientation theory explores learners' reasons for engaging in achievement behaviour, in particular the beliefs that result in different approaches to and engagement in achievement situations (Murayama et al. 2012).

Although there are numerous types of goal orientations, the two that have been studied most extensively are learning (mastery or task-involved) goal and performance (ego-involved) goal orientations (Schunk et al. 2014). Learners who adopt a learning goal orientation tend to focus on learning for understanding, developing new skills, and improving or developing competence where the standard for judging the achievement or otherwise is internal to the learner. In contrast, a performance goal orientation tends to focus on demonstrating competence or ability where the standard for measurement is in comparison to others (Murayama et al. 2012).

While earlier research focused on the differences between learning and performance goals, more recent work recognises that performance goal orientation can be further categorised into performance-approach (wanting to demonstrate competence in relation to others) and performance-avoid (wanting to avoid looking incompetent) orientations. This research also suggests that performance-approach goals can be potentially positive for learning and, when combined with learning goals, can lead to optimal motivation (Harackiewicz et al. 2002). What is also clear from the research is that a performance-avoidance orientation is negatively related to various learning outcomes (Brophy 2010).

Studies in online learning environments have found that students who adopt a performance orientation are more likely to contribute to assessed activities (Bures et al. 2000) and focus on administrative tasks (Dawson et al. 2009) in comparison to learners who adopted a learning goal orientation. Furthermore, research has shown positive relationships between learning goal orientation and increased participation in discussions related to learning and sharing (Dawson et al. 2009), metacognitive strategy use and performance (Chen and Wu 2012), and learners' overall satisfaction (Kickul and Kickul 2006). A smaller body of research has investigated approach and avoid goal orientations, for example, a learning-approach orientation has been shown to be a predictor of achievement (Crippen et al. 2009). Moos and Marroquin (2010) highlight the fact that the type of strategies learners use differ depending on their goal orientation, while Ng (2012) found that the positive effects of both learning and performance goal approach orientations are supported by learners' control beliefs. Apart from a few exceptions (Ng 2008, 2009), studies that have considered the adoption of multiple simultaneous goal orientations by learners in online contexts are rare.

Interest, a concept closely related to intrinsic motivation, is a distinct motivational construct evident in some online motivational research. Research in traditional educational contexts has consistently shown that the level of an individual's interest has a significant influence on their learning (Hidi and Renninger 2006). Interest has been characterised in a number of ways, but is most often viewed as a psychological

state that "involves focused attention, increased cognitive functioning, persistence, and affective involvement" (Hidi 2000, p. 311). Interest is always content specific (Krapp 2002) and two types of interest have frequently been associated with this psychological state, namely individual and situational interest (Hidi and Harackiewicz 2000). Individual interest is seen as a relatively stable disposition or motivational orientation towards certain activities. Situational interest is engendered in response to particular conditions within the environment and tends to be less enduring (Hidi and Ainley 2008).

Rather than being seen as opposites, situational and individual interest are considered distinct constructs that can interact and influence each other. While researchers have highlighted the importance of individual interest on learning and motivation (Hidi and Renninger 2006), research has also focused on situational interest as a way for educators to foster student involvement and motivation in specific activities (Hidi and Harackiewicz 2000). In their four-phase model of interest, Hidi and Renninger (2006) describe two different types of situational interest, triggered and maintained. Triggered situational interest tends to be short-lived. Maintained situational interest follows on from the triggered state and is usually sustained over longer periods of time.

Triggered situational interest has been linked to learning environments that include group work and use of computers (Hidi and Renninger 2006; Lepper and Malone 1987). Maintained situational interest has been linked to a variety of conditions such as personal relevance and utility value (Hidi and Renninger 2006), collaborative work as well as authentic and meaningful activities (Blumenfeld et al. 2006; Boekaerts and Minnaert 2006).

Online learning studies have shown that higher engagement occurs when learners are personally interested in the topic (Schallert and Reed 2003) and have a pre-existing individual interest in computers (Sansone et al. 2011). Additionally, personal interest is enhanced in autonomy-supportive online environments (Moos and Marroquin 2010); a learner's level of topic interest has been linked to learning in online environments (Akbulut 2008; Renninger et al. 2011); and situational interest has been shown to increase with the inclusion of conceptual scaffolding in online contexts (Moos and Azevedo 2008). However, researchers have highlighted the need to account for novelty effects frequently seen in technology-rich contexts where learner interest diminishes over time (see Moos and Marroquin 2010).

Intrinsic–extrinsic motivation: is another motivational construct that has been used to investigate learner motivation in online environments. "Intrinsic motivation is defined as the doing of an activity for its inherent satisfactions rather than for some separable consequence" (Ryan and Deci 2000a, p. 56). Intrinsic motivation often results from the challenge, interest or fun an individual derives from an activity. In contrast, "extrinsic motivation is a construct that pertains whenever an activity is done in order to attain some separable outcome" (Ryan and Deci 2000a, p. 60). In other words, intrinsic motivation is associated with undertaking an activity for the enjoyment or interest inherent in it. Extrinsic motivation is associated with a source outside the activity itself, such as undertaking a course of study

to improve future career prospects. Research suggests that individuals who are intrinsically motivated are more likely to undertake challenging activities; be actively engaged and enjoy learning; adopt a deep approach to learning; and exhibit enhanced performance, persistence, and creativity (Amabile 1985; Brophy 2010; Ryan and Deci 2000b).

Several studies have explored students' reasons for engagement in online environments from an intrinsic–extrinsic motivation perspective (e.g., Rentroia-Bonito et al. 2006; Shroff and Vogel 2009; Xie et al. 2006). Huang and Liaw (2007) found that learners' perceptions of autonomy were predictive of both intrinsic and extrinsic motivation. A study by Martens et al. (2004) examined the intrinsic motivation of psychology and technology undergraduates undertaking authentic computer tasks. They found that high levels of intrinsic motivation were not necessarily indicative of higher levels of achievement. Instead, intrinsic motivation was associated with greater exploration of the learning environment. Results of research by Rienties et al. (2009) revealed that differences in learner motivation influenced the type of discourse contributions with intrinsically motivated learners being central and prominent contributors. While this body of research adds to our understanding of motivation, it is important to note that there has been the tendency to focus predominantly on intrinsic motivation (Martens et al. 2004; Rovai et al. 2007; Shroff and Vogel 2009). In doing so, current views that individuals can be simultaneously intrinsically and extrinsically motivated to a greater or lesser degree over time in any given context, are neglected (Paris and Turner 1994).

2.3.3.3 Motivation from a Situational Perspective

Although fewer in number, studies have been conducted that do acknowledge a more contemporary situated 'person in context' perspective (Turner and Patrick 2008). For example, studies have shown that receiving elaborated and timely feedback significantly enhances student self-efficacy (Artino 2007, 2008; Bates and Khasawneh 2007; Wang and Wu 2008). Collective efficacy, "people's shared beliefs in their collective power to produce the desired results" (Bandura 2000, p. 75), is a related construct that has been shown to have positive effects on discussion behaviour and group performance in computer supported collaborative learning environments (Wang and Lin 2007a, b).

Furthermore, Matuga (2009) found that goal orientation changed from a performance to learning orientation over time, within the context of an online science course. In a related study, Whipp and Chiarelli (2004) found that instructor support, peer support and course design all influenced learner interest within a web-based course. While Xie et al. (2006) identified contextual factors that increased student intrinsic motivation (e.g., clearly stated guidelines, well-designed discussion topics and instructor involvement) and those that decreased it (e.g., lack of instructor and peer feedback).

2.4 Self-determination Theory as a Framework for Studying Online Motivation

Arguably one of the more well-known theories of motivation is intrinsic–extrinsic motivation. An influential theory that explains this motivation concept is self-determination theory (SDT) (Deci and Ryan 1985). Self-determination theory is a contemporary theory of situated motivation that is built on the fundamental premise of learner autonomy. SDT argues that all humans have an intrinsic need to be self-determining or autonomous, as well as competent and connected, in relation to their environment.

Connell (1990) defines *autonomy* as "the experience of choice in the initiation, maintenance and regulation of activity and the experience of connectedness between one's actions and personal goals and values" (pp. 62–63). When autonomous, students attribute their actions to an internal locus of causality and experience a sense of freedom and choice over their actions. *Competence* is defined as "the need to experience oneself as capable of producing desired outcomes and avoiding negative outcomes" (Connell and Wellborn 1991, p. 51). *Relatedness* "encompasses the need to feel securely connected to the social surround and the need to experience oneself as worthy and capable of … respect" (Connell and Wellborn 1991, pp. 51–52).

SDT states that if the environmental conditions are such that they support an individual's autonomy, competence and relatedness needs, then a learner's inherent intrinsic motivation will be promoted (Ryan and Deci 2000a). When intrinsically motivated, outside incentives are unnecessary as the reward lies in the doing of the activity (Ryan and Deci 2000b). In contrast, students who are extrinsically motivated undertake activities for reasons separate from the activity itself (Ryan and Deci 2000a); for example gaining good grades, avoiding negative consequences, or because the task has utility value such as passing a course in order to earn a degree.

Ryan and Deci (2000a) recognised that learners will not be intrinsically motivated at all times and in all situations. SDT explains extrinsic motivation processes in terms of external regulation, as the reasons for undertaking the task lie outside the individual. However, the degree to which an activity is perceived as externally regulated can vary and therefore *different types of extrinsic motivation exist*. The taxonomy of human motivation details a continuum of regulation that incorporates amotivation (lack of motivation) at one end through to intrinsic motivation at the other, with different types of extrinsic motivation sitting between the extremes. The various forms of extrinsic motivation highlight a shift in the degree to which externally motivated behaviour is autonomously determined. They range from externally controlled with little or no self-determination, to more internal control and self-regulation where a learner engages in an activity because of its significance to their sense of self.

Research has shown that intrinsic and extrinsic types of motivation can and do co-exist (Lepper et al. 2005). It is the degree to which a student is intrinsically or

extrinsically motivated that is important, with more self-determined students experiencing positive learning outcomes even when extrinsically motivated (Reeve et al. 2002, 2004). Furthermore, autonomous forms of motivation have also been shown to have a potential buffering effect on less self-determined types of motivation (Ratelle et al. 2007; Sheldon and Krieger 2007).

According to this taxonomy, an *amotivated* individual lacks intention because he/she feels incompetent or has low self-efficacy. They feel that whatever they do it will not affect the outcome, or they place low value on the task being undertaken. Within the four patterns of extrinsic motivation, *external regulation* refers to individuals who are responsive to threats of punishment or the offer of rewards. This is the type of extrinsic motivation most often contrasted with intrinsic motivation, especially in earlier research. *Introjection* refers to students who engage in a task because they feel they should due to the expectations of others and feel guilty if they do not participate. Even though the feelings are internal, the individual is not self-determining as they are being controlled by their feelings (Ryan and Deci 2002). The third level of extrinsic motivation, called *identification*, is associated with individuals who engage in the task because it has personal value to them. The locus of causality is internal in the sense that the individual has chosen the goal or identifies with it and is aware of its importance. But the motivational pattern is still considered extrinsic in the sense that it is the utility value (a means to an end), personal importance and/or relevance of the task rather than the task itself that determines the behaviour.

The final level within the extrinsic motivation types is *integration*, where learners engage in the activity because of its significance to their sense of self. Both identified and integrated types of motivation share some of the qualities of intrinsic motivation (Ryan and Deci 2000a) and have similar consequences for learning and motivation. This has important implications as it highlights how educators can assist learners to appreciate the importance and value of learning activities even when they are not intrinsically interesting. More recently, Deci and Ryan (2012) have described the continuum of human motivation in terms of two meta-theoretical concepts, namely controlled and autonomous motivation to differentiate between externalised and internalised types of extrinsic motivation. External and introjected regulations are viewed as types of controlled extrinsic motivation while identified and integrated regulations are considered types of autonomous motivation in conjunction with intrinsic motivation. For a diagrammatic representation of the continuum see Ryan and Deci (2000a).

Research in traditional learning situations shows that autonomy support within the learning context leads to more self-determined forms of motivation among learners (Deci and Ryan 2008; Guay et al. 2008; Reeve 2009; Reeve et al. 2008; Van Etten et al. 2008). Examples of autonomy support include: providing rationales for tasks, the use of non-controlling language, and the provision of relevant and meaningful instructional activities that align with students' personal interests.

Conversely, external regulation such as deadlines, directives and compliance requests serve to undermine self-determined types of motivation (Deci and Ryan 2008; Guay et al. 2008; Ryan and Deci 2000a; Vallerand et al. 2008; Van Etten et al. 2008). Rewards can have a similar effect if used in order to control behaviour such as task engagement, completion or performance (Deci et al. 1999). Choice has also been shown to be supportive of learners' autonomy needs (Katz and Assor 2007; Patall et al. 2008). However, it is the perception of choice, or lack of it, rather than the actual choices offered that is critical in terms of self-determination (Reeve et al. 2003).

Support for the competence needs of learners is also necessary to facilitate motivation (Schunk and Zimmerman 2006). The provision of structure (Connell and Wellborn 1991) has been shown to be important in supporting competence needs and facilitating autonomous types of motivation (i.e. identification, integration and intrinsic motivation). Structure includes explicit, detailed information that clarifies expectations without seeking to control behaviour; provision of informational feedback given in a timely manner; and responsiveness to student questions, comments and suggestions (Deci and Moller 2005; Reeve et al. 2004, 2008).

The fact that high structure within the learning activity can co-exist and be seen as mutually supportive, rather than conflicting with the autonomy needs of learners, is something that has been previously noted in the general motivation literature (Jang et al. 2010; Reeve 2009). In addition to structure supporting learner competence, learning activities designed to be optimally challenging, that is where the challenge of the task is high and reasonably well-matched to learners' skill levels (Csikszentmihalyi 1985), encourage feelings of capability and more self-determined motivation.

The more an individual experiences having their autonomy and competence needs met within a supportive relationship, the more connected and trusting they feel towards that person (Ryan et al. 2005). In line with this, teacher involvement in terms of the amount of time invested, care taken, and attention given, have also been shown to be powerful motivators (Brophy 2010). Inclusion, which encompasses respect and connectedness, has also been identified as one of the basic conditions necessary for encouraging and supporting motivation across diverse groups of learners (Ginsberg and Wlodkowski 2000). Conversely, difficulties in relationships with teachers and other learners have been associated with a corresponding undermining of autonomy needs (Martens and Kirschner 2004).

Criticism of self-determination theory centre around the argument that the fundamental assumptions on which it is based adopt a distinctly Western perspective and may not be universal (McInerney and Van Etten 2004). In particular, the assumption that autonomy is a universal human need is questioned within collectivist cultures (Markus and Kitayama 1991). However, research in non-Western cultures supports SDT, although with slightly differing emphasis on autonomy and relatedness (for a summary see Reeve et al. 2004). Several researchers (Reeve et al. 2004; Ryan and Deci 2006) point out that this criticism often stems from the misunderstanding of the concept of autonomy where it is frequently equated with individualism and separateness. Research has shown that autonomy and relatedness

are compatible constructs (Ryan and Deci 2006). Further criticism originates from proponents of operant theory who argue that, contrary to SDT, contingent based rewards are the best motivators (Pierce et al. 2003).

Several online studies have utilised self-determination theory as a theoretical basis (Giesbers et al. 2013; Hartnett et al. 2011; Rienties et al. 2012). For example, Chen et al. (2010) showed that adressing the autonomy, competence and relatedness needs of learners is likely to enhance online engagement, achievment and course satisfaction. Collectively, other studies have demonstrated that feedback, the instructor's role in online discussions, choice, competence, challenge, interest, relevance and collaboration all influenced student intrinsic *motivation to learn* in the various online learning contexts. Few studies, however, draw on multiple perspectives (i.e., of both instructors and students) or examined more self-determined (i.e. autonomous) forms of extrinsic motivation. This has resulted in a tendency by some researchers to characterise online learners as intrinsically motivated (Rovai et al. 2007). The study by Hartnett et al. (2011) makes an important contribution by highlighting the complex, multifaceted, situation-dependent nature of motivation in online contexts by using the SDT continuum in addition to *all three* underlying concepts of autonomy, competence and relatedness as analytic tools.

2.5 Summary

With advances in technology that have enabled greater connectivity among learners contemporary learning theories, in particular social constructivism, have increasingly informed teaching and learning practices in online learning contexts. Constructivist principles that encompass concepts of collaboration, interaction and dialogue, where the context and situated nature of learning are integral considerations, have been shown to be important underpinnings in the development of successful online learning communities. Motivation has been identified as a key factor in developing and sustaining a sense of community as well as learning and achievement in online contexts.

This chapter has reviewed the existing research on *motivation to learn* in online settings while highlighting the limited number and scope of studies to-date. Moreover, it was argued that the majority of existing studies have either adopted a behaviourist approach, focusing on the environment or a cognitive perspective concentrating on the characteristics of the learner. Both overlook the dynamic and responsive nature of *motivation to learn*. Contemporary theories of motivation have been used to underpin some research. However, they have generally been applied in limited ways. Studies that have used a situated approach (where both the learner and the learning environment are considered) do exist, but are also limited in terms of the breadth of social and contextual motivational influences explored and their use of narrow conceptualisations of motivation. An example of this has been the tendency to focus exclusively on intrinsic motivation in studies using self-

determination theory as a conceptual framework. Taken together, these issues highlight the need for research that explores motivation from a contemporary situated perspective, in 'real-life' online settings that includes consideration of a broad range of social and contextual influences.

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Chapter 3
The Case Studies

Abstract This chapter reports on research from two case studies that investigated *motivation to learn* from a situated 'person in context' perspective. Specifically, it examines undergraduate students' motivation within two formal and separate online learning contexts. The chapter begins with descriptions of each of the cases. This is followed by the presentation of findings. The first part explores the nature of motivation of learners within the cases drawing on the continuum of human motivation from self-determination theory (SDT) outlined in chapter two. This is followed with a detailed exploration of the salient social and contextual factors that influence students' *motivation to learn* in these online environments. Throughout the second part of the chapter the underlying concepts of SDT, namely autonomy, competence and relatedness are used to organise the findings.

Keywords Online learning · Autonomy · Competence · Relatedness · Amotivation · External regulation · Identified regulation · Intrinsic motivation

3.1 Background to the Study

As has been highlighted in the previous chapter, there is a relative lack of research that has explored *motivation to learn* in online settings. Added to this, the majority of existing studies have either focused exclusively on the environment without taking into account the individual learner or, alternatively, concentrated on the characteristics of the learner to the exclusion of the environment in which they are learning. This chapter reports on a study that sought to explore the nature of *motivation to learn* of students in online settings, from a contemporary situated perspective where the learner, the learning environment and the dynamic relationships between the two were considered. This includes consideration of a variety of social and contextual influences. Inherent in this aim was the importance of seeking out student perspectives and exploring the nature of the learning context. The questions that guided the investigation are as follows:

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What is the nature of *motivation to learn* of students in online learning environments?

In what ways do social and contextual factors relate to students' *motivation to learn* in online learning environments?

The research methodology adopted for this investigation was case study because such an approach can be of value where the research aims to investigate a complex phenomenon in 'real-life' settings in a manageable way with a view to advancing understanding (Cousin 2005). Case studies are the preferred strategy for contemporary 'what', 'how' and 'why' questions embedded in the real world, where the scope is difficult to define and the case can only be understood within context (Yin 2009). A collective case approach was adopted (Stake 1994) where the central issue of interest was the nature of student motivation within online learning environments, situated within the context of a pre-service teacher education programme. Two cases were chosen to explore *motivation to learn* in-depth from personal, social and contextual perspectives. The rationale for choosing the two cases was for their instrumental value (Stake 1994), that is, their ability to advance understanding of the motivation of learners in online contexts while providing manageable volumes of data.

Purposive sampling methods (Patton 2002) were used to select two information-rich cases. Even though the broader institutional context was beyond the scope of the study, the impact such influences can have at the situational level has been noted previously (Vallerand and Ratelle 2002). Therefore, potential cases were identified from the same programme within the same institution in order to minimise differential contextual influences at the institutional level. Cases were chosen based on predetermined criteria of importance to ensure relevance to the research questions. In particular, (1) courses were required to be predominantly web-based, with only limited resources provided by alternative methods, such as print-based materials; and (2) course expectations required students to participate within the online learning community as an integral part of assessed coursework. A total of 24 participants (21 learners and 3 lecturers) across the two case studies chose to take part in the research project.

Data gathering tools included online questionnaires, semi-structured interviews with students and lecturers, online asynchronous discussion transcripts from the institutional learning management system (generated during the courses but collected after all coursework was completed, graded, and results submitted) and course resources.

The questionnaire collected demographic information; self-report measures of motivation using the situational motivation scale (SIMS) developed by Guay et al. (2000) that operationalises the self-determination continuum; and open-ended questions developed to gain insight into possible relationships between social and contextual influences and learners' motivation. The SIMS scale measures situational intrinsic motivation, extrinsic forms of motivation (identified regulation, external regulation) and amotivation using 16 seven-point Likert scales with four questions for each motivation subscale (see Guay et al. 2000 for the complete questionnaire).

Both open-ended questionnaire responses and interview questions were developed with reference to current motivation literature. Collecting online asynchronous discussion transcripts data and course resources enabled perceptions of both lecturer and student participants, evident from interview and questionnaire data, to be confirmed or anomalies highlighted.

The psychological needs and the continuum of motivation types outlined by self-determination theory provided sensitising concepts (Blumer 2006) with which to analyse the open-ended questionnaire, interview and online discussion data. SIMS subscale scores (collected via the questionnaires) were used to calculate a single motivation score called the self-determination index (SDI)[1] for each participant. This followed the weighted calculation described and used in previous research (Vallerand and Ratelle 2002). SDI scores can range from a minimum of −72 to a maximum of +72. Subscale scores were also retained and analysed as the SDI may not account for participants' endorsement of more than one type of motivation for engaging in an activity (Vallerand et al. 2008). In addition, descriptive statistics and comparisons between the two case studies motivation results were performed. Nonparametric statistical calculations were used because of the small sample size within each case study and because normality could not be assumed in the underlying population (Siegel and Castellan 1988).

The two courses that provided the context for the case studies were situated within the larger context of a pre-service teacher education programme at a New Zealand tertiary institution. Students in this programme were preparing to teach in New Zealand primary (i.e., elementary) schools. These courses were considered internet-based rather than fully online because students received some print material (study guide—in both case studies) and digital resources (CD-ROM—Case Study 1) at the beginning of their course. The online learning platform used was the institutional Learning Management System (LMS). The boundary for each case study centred on one assignment and its associated online activities.

While both cases were chosen from courses within the same programme, the design of each was different. Case Study 1 was situated within a compulsory integrated science and technology course. Teaching staff included a course coordinator with science expertise and a tutor with technology expertise. The tutor was responsible for the majority of the online teaching. Students typically took this course in the third and final year of their degree. The case study itself focused on a Problem-Based Learning (PBL) assignment undertaken over a six-week period worth 60 % of the final course mark. Students were required to work in small groups of three of their choice and submit a collaborative piece of work worth 45 marks. The workload was designed in such a way that undertaking it individually was not feasible. The remaining 15 marks were allocated to the part of the assignment students submitted individually. Of this, 10 marks were allocated for a reflective piece of work and 5 were allocated for a formative assessment activity

[1]Also referred to as the relative autonomy index (RAI).

completed during the third week. PBL is an instructional approach built around authentic, ill-structured problems that are complex in nature (Loyens et al. 2011).

Case Study 2 occurred within an introductory social studies curriculum course that formed a compulsory component of the same programme. Students usually took this course in the second year of their degree. An individual microteaching and reflection assignment, which required students to plan and teach two consecutive lessons to a group of four to six children in a school of their choice and then reflect on their experience, formed the boundary for Case Study 2. The first lesson had to include a diagnostic activity to identify the children's current understanding and prior experiences of the social studies concept the student wanted to develop. Based on the results of the diagnostic activity, the second lesson then developed the children's conceptual understandings in the chosen area, followed by a formative assessment task to provide evidence of the children's learning. During this time, students were also required to engage with peers in the wider class and contribute to weekly online activities designed to support this process. Students completed this assignment over a four-week period, and it was worth 40 % of the final mark. The course coordinator was responsible for all online teaching throughout the semester.

Students in both courses were located throughout New Zealand and undertook their courses at a distance from the main institutional campus. An invitation to participate in the study was extended to all students enrolled in both courses via a message posted within each online learning environment. A total of 21 student participants took part in the two case studies (12 in Case Study 1 and 9 in Case Study 2). The respondent group, matching the general demographics of the courses, comprised 2 males and 19 females (1 male in each case study). Participants' ages ranged from 18 to 55, with 90 % in the over-24 age group. Within each case study, all participants had similar prior experience of online learning and group assignments.

3.2 The Nature of Motivation

In the sections that follow, participants' results for all motivation types (SIMS subscale scores) and self-determination index (SDI, a composite measure of motivation) scores for each case study are presented and discussed.

3.2.1 Case Study 1

Situational motivation scale (SIMS) responses and self-determination index (SDI) scores for each participant are summarised in Table 3.1. A positive SDI score indicates that, overall, more self-determined forms of motivation outweigh more externally regulated types of motivation. A negative SDI indicates an overall experience of less self-determined motivational types (Vallerand et al. 2008).

Table 3.1 Case Study 1 participants' SIMS and SDI scores

	Sum of subscale scores				Weighted sum
Participant ID	Amotivation (AM)	External regulation (ER)	Identified regulation (IR)	Intrinsic motivation (IM)	SDI score
Student 2	5	8	22	19	**42**
Student 8	4[a]	16	22	22	**42**
Student 4	4	15	26	18	**39**
Student 10	4	8	20	15	**34**
Student 9	8	16	22	20	**30**
Student 3	4	27	20	22	**29**
Student 6	13	28	19	14	**−7**
Student 11	20	28	23	19	**−7**
Student 1	21	18	13	13	**−21**
Student 7	24	24	14	16	**−26**
Student 12	16	28	9	10	**−31**
Student 5	27	28	4	4	**−70**
Median (*Mdn*)	**10.5**	**21**	**20**	**17**	**11**
Interquartile range (*IQR*)[b]	**16.25**	**12.25**	**8.25**	**5.5**	**57.5**

[a]Participant subscale scores can range from a **minimum** of 4 to a **maximum** of 28
[b]A measure of the spread of the middle 50 % of the scores

With half of the Case Study 1 participants having positive SDI scores and half having negative scores it is apparent that the nature of *motivation to learn* is diverse among this group. For those with a positive SDI, in general, more internalised forms of motivation, namely identified regulation (IR) and intrinsic motivation (IM) were prominent. For example, Student 8's SDI score of 42 was comprised of higher subscale scores for identified regulation (IR 22), indicating she valued the activity, and intrinsic motivation (IM 22), indicating she found the activity interesting and/or enjoyable. Learners with negative SDI scores generally reported experiencing more externalised forms of motivation. This included: external regulation (ER), signifying they were complying with external requirements, and amotivation (AM), indicating they lacked motivation. The most extreme example of this was Student 5 with an SDI of −70, resulting from very high subscale scores for both external regulation (ER 28) and amotivation (AM 27).

Further supporting evidence for the differences in motivation, as measured by the SDI, were found in the interview data. For example, *Student 8* and *Student 5* summed up their experiences of the PBL assignment in the following way:

> Just felt I learnt a lot from it personally. As … an individual, you know. … 'cause it was lovely to do it right at the end of my [programme]. (Student 8, Interview)

> No there was nothing in the course that I would say that motivated me, you know. I never got to the stage where "ooo this is interesting, I want to know more. (Student 5, Interview)

While the calculation of the self-determination index (SDI) is a useful indicator of overall motivation, subscale scores show that SDI, on its own, does not account for participants' endorsement of more than one type of motivation.

Returning to *Student 8*, her subscale scores indicate that her high positive SDI score was the result of the most self-determined form of motivation (i.e., intrinsic motivation), **and** the more autonomous form of extrinsic motivation, identified regulation. Her strong sense of personal interest (an indicator of intrinsic motivation) and perception of the relevance of the task (an indicator of identified regulation) to her future role as a teacher are clear in her comments:

> … science and technology are my favourite things. (Student 8, Interview)

> I sort of felt it was a real practice run for being in school in a syndicate type situation. … So I think it was a really good practice run for what actually happens in school. (Student 8, Interview)

Student 8 also reported a moderate external regulation subscale score of 16, indicating that she was also motivated by external factors to some extent. This was reflected in her awareness of the high assessment weighting for the PBL assignment. Based on this, she took action to change groups when her original group members were unresponsive:

> I tried to email them and [got] no reply at all to anything. … I need to get proactive … I've only rung lecturers three times in five years ever, I'm just going to ring because I need to get on to it. It's worth too much and I'm too close to the end now to suffer. (Student 8, Interview)

What this demonstrates is that while a student such as *Student 8* may appear highly intrinsically motivated, this view is too simplistic. She was also simultaneously aware of the importance of assessment and wanting to achieve.

In contrast, *Student 5* reported that she was lacking in motivation (AM) and felt highly externally regulated (ER). Her lack of belief in her ability to succeed at the PBL task and perceptions of course expectations, requiring all students to engage with each other online in their PBL groups, as contrived and therefore externally regulated (because she and her peers were in regular contact by other means) gives some insight into self-reported high amotivation and external regulation scores:

> … I felt that, because my group members had a better grasp on what they were doing I was happy to take a back seat and I was happy to cruise along with what they were doing. (Student 5, Interview)

> So sometimes we would have meetings and then we would say we'll just go home and whatever we'd discussed we would just pop online so they [the lecturers] can see what we'd been doing. … We did do that and that was purely so they can see we are doing something. (Student 5, Interview)

The remainder of the participants sat somewhere between these two extreme motivation profiles and provide examples of how an individual can express significant levels of more self-determined forms of motivation (i.e. identified regulation and intrinsic motivation) *as well as* moderate levels of externally regulated extrinsic motivation (ER) resulting in an overall positive SDI.

Student 11 highlights the complexity of simultaneously held multiple motivations. *Student 11* had a SDI score of −7, indicating an overall experience of more externally regulated forms of motivation. However, when looking at her subscale scores, a multifaceted motivation profile emerged. She reported high to very high levels of less self-determined types of motivation, namely amotivation (AM 20) and external regulation (ER 28). These scores were supported by comments made during the interview where she questioned her self-efficacy development (an indicator of amotivation) "*I still haven't got a grasp on it* [PBL]" *(Student 11, Interview)*, and was aware of the expectations of her group (an indicator of external regulation), "*I had my other two peers saying, we need to get this together, we need to do that*" *(Student 11, Interview)*.

Despite this, she also expressed moderate to high levels of more self-determined types of motivation, namely identified regulation (IR 23) and intrinsic motivation (IM 19). The importance of the task to *Student 11* (identified regulation) is evidenced in the following comment that points to the utility value of the task, "*I felt it was very important. I think the experience was valuable*" *(Student 11, Interview)*. At the same time, it is clear from the statement, "*our problem was interesting, about graffiti*" *(Student 11, Interview),* that the topic chosen by her PBL group was appealing (intrinsic motivation).

Having explored the endorsement of different motivation types by individual participants, several notable points emerge for the Case Study 1 group as a whole (see Table 3.1). Overall, participants reported being more motivated (1) *towards complying with requirements and/or reacting to external demands* (ER *Mdn* = 21), and (2) *by the utility value of the task* (IR *Mdn* = 20), *than by the interest or enjoyment* (IM *Mdn* = 17) experienced while undertaking the PBL assignment. Furthermore, several of the research participants reported a high degree of amotivation.

3.2.2 Case Study 2

In contrast to the above, all participants reported positive self-determination index (SDI) scores ranging from 16 to 54 in Case Study 2 (see Table 3.2) indicating that, overall, more autonomous forms of motivation outweighed more externally regulated types of motivation during the micro-teaching experience. While all student participants reported positive SDI scores, there was still a considerable range among the group. Those participants with the highest SDI scores tended to report higher levels of identified regulation (IR) and intrinsic motivation (IM) and lower external regulation (ER) scores.

Evidence for the differences in overall motivation, as measured by the SDI, can be found in the interview data. For example, *Student 15* reported the lowest score (SDI 16). She described her experience, at least in part, as something that had to be done. *Student 21* in comparison, with a SDI score of 47, had a more profound experience:

Table 3.2 Case Study 2 participants' SIMS and SDI scores

	Sum of Subscale Scores				Weighted sum
Participant ID	Amotivation (AM)	External regulation (ER)	Identified regulation (IR)	Intrinsic motivation (IM)	SDI score
Student 17	4	15	27	25	**54**
Student 13	4	15	24	23	**47**
Student 21	8	12	23	26	**47**
Student 20	4	28	25	22	**33**
Student 18	14[a]	22	27	25	**27**
Student 14	4	26	23	16	**21**
Student 16	5	28	23	18	**21**
Student 19	8	28	21	20	**17**
Student 15	4	18	16	13	**16**
MEDIAN (*Mdn*)	**4**	**22**	**23**	**22**	**27**
Interquartile range (*IQR*)	**4**	**13**	**2**	**7**	**26**

[a]Student 18's amotivation score is not supported by her interview, open-ended questionnaire responses and asynchronous discussion data. This may be due to a misunderstanding as English is her second language

> It was a little bit like I was really busy and I sort of just wanted to do it and get it out of the way. (Student 15, Interview)
>
> I found it in a lot of ways I think, I found it empowering. It sort of gave you a sense of confidence to be able to make that choice and then create it from there. (Student 21, Interview)

Turning to the subscale scores, all participants reported low amotivation scores (resulting in the lowest possible group median), indicating that participants found value in the task and felt reasonably competent to undertake it. The value, relevance and importance of the task (i.e. the opportunity to practise teaching social studies within an authentic context) to participants was further reflected in their identified regulation scores. They range from moderate to high for the majority of participants within the group, resulting in a high overall identified regulation score (IR *Mdn* = 23) and a narrow interquartile range (*IQR* = 2).

There is, however, a greater range among external regulation and to a lesser degree intrinsic motivation scores that points to the multifaceted nature of participants' *motivation to learn* within this context. In other words, participants endorsed several motivation subtypes concurrently and to varying degrees. The diverse and complex nature of motivation can be found within individual participants' reported experiences. *Student 19* (SDI 17) is an example of a participant who reported one of the lowest self-determination index scores of the group. Looking more closely, her subscale scores highlight the salience of external regulation (ER 28) as well as moderately high levels of identified regulation (IR 21) and intrinsic motivation (IM 20). This indicates that she valued and enjoyed the micro-teaching task while

simultaneously being aware of external constraints. Questionnaire and interview data provide further insight into *Student 19* reporting intrinsic and extrinsic types (identified and external regulation) of motivation concurrently.

Feelings of external regulation stem primarily from time constraints, while valuing academic achievement as well as being personally interested in the subject matter (social studies), were reasons for her high identified regulation and intrinsic motivation scores respectively:

> … as a really busy mum, as well as mature student, I'm just focused on getting the job done without getting unnecessarily involved in the concerns of others. (Student 19, Questionnaire)

> Passing an assignment, not that it's easy, but it's sort of the easiest part of the process. Satisfying yourself would be the hardest part. (Student 19, Interview)

> Social studies, it's just a subject that I really enjoy. (Student 19, Interview)

Student 20 is another participant who reported high scores for several types of motivation, resulting in a high overall self-determination index score (SDI 33). Like Student 19, *Student 20* expressed feelings of constraint with some aspects of the assignment, hence his high external regulation score (ER 28). But rather than lack of time being the most significant aspect, he found working within the social studies curriculum framework constraining:

> Well it's like everything else in these courses you have to make it fit with the curriculum, the gospel of the curriculum. So it was like okay well this is what I want to do now how do I make that fit with the brief? I think that is probably what teachers have to do all the time because it has to fit within those guidelines … within that prescription. (Student 20, Interview)

While *Student 20* found the curriculum framework 'prescriptive', this did not prevent him from viewing the assignment and associated activities as highly relevant, as evidenced by his high identified regulation score (IR 25). In the message below, he explains how the online activity has broader personal relevance that goes beyond the relevance to his future teaching practice:

> What will this view mean to the way I teach social studies in a classroom? It's a good question, although I'm not sure it's one that I am yet ready to answer. I would hope that my perspective on this matter informs a lot more than "just" my social studies teaching, since it is, in many ways, at the heart of what made me choose to take this particular path at this time of my life. (Student 20, Online discussion)

A personal interest in what he was learning was one reason why *Student 20* also reported relatively high levels of intrinsic motivation (IM 22):

> I think it's generally when it is something personally engaging. … Something which touches a nerve or you know explore something they feel strongly about or are very interested in, then you will get more involved in it. (Student 20, Interview)

A further example, that highlights the complexity of participants' *motivation to learn* and how the same aspects within the environment affected different students in different ways, is *Student 17*. She had the highest self-determination index score

(SDI 54) within the participant group. Her identified regulation (IR 27) and intrinsic motivation (IM 25) scores were the highest (along with *Student 18*), indicating she found the micro-teaching assignment both meaningful and interesting as the following statement indicates:

> I guess because it's relevant, it's relevant to [the] everyday world. When I think about what I learnt in school and we're mostly talking about in the past, I don't recall doing anything about the future or the present or that sort of thing. But it makes it more exciting, more interesting. (Student 17, Interview)

The main difference in *Student 17*'s subscale scores when compared to Student 19 and Student 20, is her lower external regulation score (ER 15). Like Student 19, *Student 17* is aware of external factors such as time constraints. But it seems that she accepts them as part of life rather than viewing them as restrictive:

> But I mean you've got all these time constraints and that's just, that's just life at times. (Student 17, Interview)

Collectively, the results from the case studies demonstrate that for students in each context, their *motivation to learn* was a complex mix of multiple types of motivation as no one motivation sub-type was exclusively reported by research participants (see Tables 3.1 and 3.2). Instead, the participants reported varying degrees of amotivation (AM), external regulation (ER), identified regulation (IR), and intrinsic motivation (IM). This was because students had numerous, different reasons for engaging in the activity and situational factors (explored in the next section) such as questions about their self-efficacy, group experiences, and choice of topic, the relevance of the assignment, how interesting it was and perceptions of time constraints, also influenced their experiences. This translated to the simultaneous endorsement of extrinsic (i.e. identified regulation and external regulation) and intrinsic types of motivation.

3.2.3 Comparing the Cases

Having explored each case study individually, attention is now turned to a comparison of the two cases. The median SDI score for the Case Study 1 (Mdn = 11, IQR = 57.5), was lower than that for Case Study 2 (Mdn = 27, IQR = 26). However, statistical comparison via a Mann Whitney test showed that this difference was not significant (U = 34.0, p = 0.163).

Turning to the different types of motivation, a number of interesting patterns emerged across the two cases. While some similarities were evident, several important differences between the two contexts were observed. For example, median amotivation scores between the Case Study 1 (Mdn = 10.5, IQR = 16.25) and Case Study 2 (Mdn = 4, IQR = 4) appeared quite different. Nonetheless, Mann Whitney results indicated that overall the groups did not differ significantly (U = 19.5, p = 0.117). Similarly, there was no significant difference between the external regulation scores across the two cases (U = 52.5, p = 0.927). However,

this was not the case for the more autonomous types of motivation identified regulation and intrinsic motivation. A Mann Whitney test indicated that reported identified regulation scores were significantly higher in Case Study 2 than Case Study 1 ($U = 52.5$, $p = 0.012$, $r = -0.54$). Similar situational differences were also apparent in relation to intrinsic motivation with Case Study 2 participants reported significantly higher intrinsic motivation than Case Study 1 ($U = 25.0$, $p = 0.039$, $r = -0.45$).

Importantly, these motivational differences, in addition to the complex and multidimensional nature of motivation, would have remained hidden if a unitary scale, such as the self-determination index (SDI), was the only measure used to assess motivation. This is often the case with studies of motivation in online contexts.

3.3 Influences on Motivation

A range of social and contextual factors were also investigated in order to explore their relationship with students' *motivation to learn* in the case studies. In order to untangle the multiple influences on motivation that combine in complex ways in different contexts, self-determination theory (SDT) is used as an organising framework. Specifically, the concepts of autonomy, competence and relatedness are used to organise the findings that follow. Within each organising concept, key social and contextual factors are identified and explored to determine how they fostered or thwarted feelings of autonomy, competence and a sense of relatedness. It is important to note though, that no one factor enabled or thwarted all the psychological needs of learners.

3.3.1 Autonomy

When autonomous, students attribute their actions to internal reasons, feel volitional and experience a sense of choice over their actions. Research shows that autonomy support within the learning context leads to more self-determined motivation among learners. Conversely, external demands such as deadlines, directives, compliance requests as well as use of rewards to control behaviour serve to undermine motivation (Reeve et al. 2008).

3.3.1.1 Influences that Support Autonomy

Several important themes and sub-themes that facilitated the expression of autonomy among participants in both case studies emerged from the data. They include: relevance; interest; active learning; autonomy support from lecturers; perceptions of choice; and the role played in group decisions/tasks (Case Study 1 only). The order

in which they are presented reflects their relative prominence (i.e. the frequency with which they featured in the qualitative data).

Relevance

The relevance, meaning and/or importance of the activity emerged as the most salient theme that supported the autonomy of participants in both case studies. This indicates that learners found their assignment a worthwhile and valuable learning activity to engage in. Within this major theme, two key sub-themes emerged. These were: (1) *relevance to their future role as a teacher* and (2) *personal relevance*.

Of the two sub-themes, the most important was the *relevance of the learning experience to future teaching practice*. Participants who saw a clear link between their own experience of PBL (Case Study 1) or the micro-teaching activity (Case Study 2) and its relevance to their future teaching practice, reported high identified regulation scores. This was true for half of the participants in Case Study 1 and all of the participants in Case Study 2. For these participants, the relevance of the activity lay in its utility value as a future teaching and learning tool. *Student 9* (IR 22, Case Study 1) and *Student 17* (IR 27, Case Study 2), who both reported high identified regulation scores, clearly saw the value of their respective tasks to their future professional role as teachers:

> I like doing practical courses anyway because I can actually see that I can use it in the classroom. A lot of the other theory courses that we've done and it's like why are we doing these courses? This is not going to help me be a teacher. So for me personally, I prefer to do these types of courses anyway because they mean something. You can see that you can walk into the classroom and you can actually do that. (Student 9, Interview)

> This assignment was exactly what the course is about and indeed what we are studying to be is all about – teaching. (Student 17, Questionnaire)

The ability to transfer the PBL learning experience into future, professional teaching practice was an important consideration that influenced the development and inclusion of this assignment, as the comment from *Lecturer 1* (Case Study 1 course coordinator) indicates:

> They should be able to engage in that type of thinking and then be able to transfer their own experiences into a classroom. (Lecturer 1, Interview)

The link between the micro-teaching assignment and students' future professional practice was also intentional by *Lecturer 3* (Case Study 2 course coordinator). She was aware of the importance of adequately preparing students to teach social studies in the future, as the following comment indicates:

> Because for some this is all they get in their teacher education. So I have to be aware that … after this 40 hours they need to be able to feel that they could begin to teach social studies. It's an ongoing journey but they've got some pretty solid stuff to build on. (Lecturer 3, Interview)

Following on from this, the second sub-theme was *personal relevance and meaning* the activity engendered for participants. Here, participants highlighted the importance of being able to make connections from the course content to their

everyday lives by (a) investigating a personally meaningful problem that had immediate relevance to them within the broader context of their life experience (Case Study 1); and (b) choosing a focus based on existing interests and prior experiences (Case Study 2). This was the case for eight of the twelve participants for Case Study 1 and seven of the nine students in Case Study 2. For example, remarks from *Student 11* (IR 23) in Case Study 1 and *Student 17* (IR 27) in Case Study 2 demonstrate how incorporating personally relevant aspects into their respective assignments made the task more meaningful:

> An authentic problem that was happening in our community that was good … and meaningful knowing [there were] other people that we could talk to, that we already knew. That was good … that was motivating. (Student 11, Interview)

> I took in a couple of things that were personal to me. … I guess I sort of had to think about what that was going to be because I also wanted it to kind of appeal to the children. So I mean I didn't really think that my embroidered tablecloth that my grandmother did was going to be something that'd completely fascinate them, so instead I've got a boat in a bottle that my uncle actually made. (Student 17, Interview)

The lecturers in both case studies were aware of the value of encouraging learners to choose something that had personal relevance, as the comments from *Lecturer 2* (Case Study 1 tutor) and *Lecturer 3* (Case Study 2) show:

> I mean often these [are] issues and concerns which are right on their very … doorstep. We don't have to think globally … and to me the more localised they are … the more meaningful it becomes. Then they can access the knowledge and understanding behind it more readily. (Lecturer 2, Interview)

> But sometimes an issue comes up, a social issue, and I'll use that so that I'm able to … pick up on things that are happening right here and now to them and to me and I suppose that sort of brings us together as a group because even though we might live in different parts of New Zealand, we are still New Zealanders, we still have the similar sorts of issues and worries. (Lecturer 3, Interview)

The importance of the learning activity being relevant and meaningful to learners contributed to the relatively high identified regulation scores reported by each participant group (Case Study 1, IR *Mdn* = 20, see Table 3.1; Case Study 2, IR *Mdn* = 23, see Table 3.2).

Interest

The next most prominent theme that supported the expression of autonomy was interest. Two clear sub-themes emerged around what participants found intrinsically interesting or enjoyable about their assignment. Of the two, *situational interest*—interest generated by certain conditions in the learning environment that focused attention (Hidi and Renninger 2006)—emerged as the most salient. Seven out of the twelve Case Study 1 participants expressed interest in at least one aspect of the PBL process while all Case Study 2 participants reported being engaged, at least in part, because of the interest generated within the micro-teaching learning situation.

Participants identified several aspects of the PBL activity in Case Study 1 that were interesting. This included (1) the topic they chose as the focus of the PBL process which could be anything as long as it had investigable science and

technology components: "*we picked a topic that we were all interested in and we all had kids. We did playground matting, safety of playground matting, and it was all a topic that interested us 'cause we've all got young children*" *(Student 9, Interview)*; (2) the requirement to problem-solve: "*it's just the fun of actually trying to create some experiments that would actually do it, I thought we were relatively creative with what we came up with*" *(Student 7, Interview)*; and (3) the collaborative nature of the assignment: "*I did enjoy getting online discussing with the other two, so that was really enjoyable and something that was authentic*." *(Student 11, Interview).*

Case Study 2 students identified the lecturer's approach to teaching, in combination with the course content, as sources of situational interest:

> I mean, you could tell that she loves social studies by the amount of information that she gives you, you know, all her lecture notes are 2 or 3 pages or 4 pages long. You know, so she's got lots to share with you, she's not withholding anything she just wants social studies out there. (Student 17, Interview)

> The readings were really interesting and that was another part that you got to know [Lecturer 3] a little bit more because you got to read some of the research that she's done as well and the impact that she is having on social studies and it's like right here and now and a lot of the stuff was like what's going on in schools now, it wasn't dated, it was a really up-to-date course. (Student 16, Interview)

Participants in Case Study 2 also linked situational interest with levels of heightened engagement:

> A discussion topic might be put up by the lecturer and it would just, they were quite hot topics and I think that was the other thing too. They weren't safe subjects so they did generate a lot of discussion. … It got us talking and I think probably all, I got the impression that people were participating quite regularly online in that course because it's just interesting. (Student 19, Interview)

The second sub-theme related to *individual/personal interest*. Hidi and Renninger (2006, p. 111) describe individual interest as "a relatively enduring predisposition to reengage particular contents over time". Eight out the twelve participants in Case Study 1 identified science and/or technology as well-developed areas of individual interest that, in part, encouraged more self-determined motivation. Similarly, seven out of the nine Case Study 2 participants expressed a strong, well-developed individual interest in social studies content. The following comments from *Student 8* (Case Study 1) and *Student 14* (Case Study 2) highlighting their broader interest and enjoyment in the subject areas were indicative of comments from several participants in both cases:

> Science and technology are my favourite things. (Student 8, Interview)

> I definitely enjoyed social studies more than any other course just because I love social studies and how the lecturer brought it across. (Student 14, Interview)

Both situational and personal interest contributed to the high overall intrinsic motivation scores reported by the Case Study 2 participant group (IM *Mdn* = 22, see Table 3.2) in particular.

Active learning

The next most important theme highlighted the value of being able to apply the knowledge learned in an authentic context. Specifically, the practical hands-on approach to science and technology embedded within the PBL activity (Case Study 1) and learning about the social studies curriculum while having an experience of teaching one aspect of the curriculum of their choosing (Case Study 2), reinforced the importance and relevance of their respective activity for students.

Being able to use the knowledge they were learning in practice was seen as important and valuable by half of the Case Study 1 participants. Specifically, students were learning about a problem-based approach to learning while having an *experience* of PBL for themselves. This required them to understand and apply science and technology knowledge, relevant to their problem, in ways that explicated the problem and offered potential technological solutions:

> It was a very hands on/practical assignment which not only put the theory into practice but it also replicated exactly what would happen within the classroom situation if this was to take place. (Student 9, Questionnaire)

This was again something that was planned for during the development of this assignment. As *Lecturer 1* says, one of the "*key features* [of the PBL assignment is] *that it embeds a doing* [of science and technology] *as well as a theoretical understanding*" *(Lecturer 1, Interview).*

The importance of having the opportunity to put learning into practice in an authentic context was highlighted by all Case Study 2 participants. The following comment was indicative of those made by all participants:

> I think it related completely. I think it was probably the best thing that you could do … maybe other courses should do the same thing because it is so, you know, you learn all about social studies and you know it's a huge range. You know, we could be talking about the past, present or the future and then you are faced with the problem well, how am I going to teach that? You know, it's like, oh wow okay, I've just read all about it, so now I have to actually work out for myself how that's going to go. (Student 17, Interview)

Providing opportunities to apply knowledge in practice was an underlying reason that influenced the original inclusion of the micro-teaching assignment in the social studies course, as the following comment from *Lecturer 3* indicates:

> Part of the requirement is to work in another space and engage with the everyday complexities of a classroom with children that they might not, that they don't know. All the bigger things of the classroom are coming in. … It's demanding. (Lecturer 3, Interview)

Autonomy supportive lecturers

A fourth theme to emerge was the perception that the lecturers were supportive of learners' autonomy. Autonomy support is defined as the active support of an individual's capacity to be self-initiating and autonomous and research shows that autonomy support leads to more self-determined forms of motivation (Reeve et al. 2008).

Perceptions of autonomy support from the lecturers were reported by about half the participants in Case Study 1. The following comments indicate that the lecturers'

reasons for adopting a PBL approach to curriculum integration included support for learner autonomy. They believe there is a clear link between learner control (which they refer to as ownership), engagement and autonomous motivation:

> So again we give them options that they can decide and I think it's healthy when they decide because the ownership is on them and they're not being pushed and pushed and pushed into doing something that they really don't want to do. (Lecturer 1, Interview)

> I think the key word is intrinsic motivation. Students identifying their own opportunities, you know issues. So they get that sense of ownership right from the start, it's not imposed upon them. So that's sort of the driving force behind the whole maintaining that enquiry over the five weeks. (Lecturer 2, Interview)

Both lecturers saw offering choice around the problem to be investigated, the approach taken and the final presentation provided students with opportunities to take control and follow their own interests. The following comment from *Student 3* is one example that providing choice was also seen as supportive of autonomy. She saw her sense of control originating from the freedom to choose:

> We weren't told this is the way I want your groups to be or this is the way that I want you to do it. But we were given options because we know that there could have been other ways that we distributed tasks within the group and we knew that there were other ways to get the presentation done but we liked that idea. So we were given options, we were given examples we were given many different ways to do things. But we were given the choice to choose whatever we wanted to do. (Student 3, Interview)

Case Study 2 participants consistently identified an autonomy supportive lecturer as a factor that fostered their self-determination. The following comment from *Lecturer 3* shows that her underlying teaching philosophy is *autonomy supportive*. That is, one that endorsed learner self-determination, which she enacted through the sharing of power with students:

> For me it's a sharing of power, acknowledging I do have power, I'm marking their work that gives me power but I'm acknowledging it and … I'm trying to reach out and build them up. (Lecturer 3, Interview)

One of the primary ways in which *Lecturer 3* supported learners in their efforts to be self-determining, was by using informational rather than controlling language. The following online message was received by several participants in relation to their lack of discussion about their ideas for the upcoming micro-teaching activity. While she reiterated her expectations, she worded it in a way that emphasised her willingness to support them through the planning and development of their micro-teaching lessons:

> Hi there
>
> Just come into support your thinking about your microteaching… all other groups have been talking on line… I know you might meet but you also need to participate here so I can see/hear and add to your thoughts.
>
> Hope there's something up by Monday.
>
> Lecturer 3 (Online discussion)

Learners, in turn, perceived the teaching approach of *Lecturer 3* as autonomy supportive. In the example that follows, there is a clear sense of personal control and freedom to explore, question and discuss issues that arise during the learning process. This was particularly salient when contrasted with previous learning experiences:

> Because in a lot of them I'd sort of feel that the lecturer was here and we're down here, and there is no meeting in the middle you know. It's sort of my way or highway and you are learning, you don't know anything, so you do what you're told. Whereas, this … course we were able to discuss it and we were able to talk about it and come to some sort of meeting in the middle which makes quite a big difference. (Student 21, Interview)

In addition, the *course content*—social studies—also emerged as contributing to the satisfaction of the autonomy needs of learners in Case Study 2. The example that follows reveals the sense of openness experienced when engaging with the social studies curriculum:

> I guess compared to perhaps other subjects it's not black and white you know. There are lots of grey areas in social studies and therefore it's quite wide and there's no right or wrong way necessarily because it's all opinion and things. … As maybe compared to science where you know it is quite black and white. (Student 17, Interview)

Finally, *the activity* itself was seen as autonomy supportive by several participants. Lack of observation, the perception of having control and choice over the activity were cited as underlying reasons for this:

> It was good not to be observed because so often we are and it really does affect how you truly react. So it's nice to have that experience of just being yourself and do it the way you're going to do it and you know finding out by trial and error what works rather than having, sometimes it's nice not having feedback. … so that was, that probably helps because you come out of it being your own judge. (Student 19, Interview)

Perceptions of choice

A further significant theme to emerge that supported learners' autonomy was the perception of many choices being available to them. The entire participant group (with one exception) expressed perceptions of considerable choice in Case Study 2, whereas approximately half of the group did so in Case Study 1. Students described experiencing a range of choices that included the choice of topic and the approach taken in both cases. Additionally, the way in which collaborative group members worked together and how they presented their work were identified by Case Study 1 participants.

> I guess on the topic. Right from the start of what to do we had a very healthy debate on how we were going to present it. Choices on how many, like I wanted to do loads of samples but really it wasn't a good idea; choices whether to do the science or technology or keep it all together, whether to split it. Presenting and how much, how to do it … yeah lots. (Student 8, Interview, Case Study 1)

> … choose how you were going to go about it and which strand you were going to fit it into and how you were going to do it because if you're given a topic, it's more or less giving you the strand as well in a lot of ways. So yeah it was good. (Student 21, Interview, Case Study 2)

Participants in both cases also highlighted what the effect of choice meant, often linking it to relevance, meaning and/or interest:

> I think choice allowed me to choose what was of personal importance to me, to my life. So because it had relevance I was engaged and motivated. (Student 10, Questionnaire, Case Study 1)

> … some assignments you are told it's on this and you've got to write around that. But when you've got a choice … a variety of topics you can base your assignment on, it just makes it more interesting. (Student 13, Interview, Case Study 2)

By supporting student autonomy via the provision of choice, more self-determined forms of motivation, namely identified regulation (relevance and meaning) and intrinsic motivation (interest and enjoyment), were encouraged.

Significant role in group decisions and tasks

One final theme to emerge that contributed towards learners' autonomy in Case Study 1 only, were perceptions of having played a significant role in group tasks and decisions. Two thirds of participants perceived their peers as supporting their need to be self-determining within their small collaborative groups. Perceptions tended to fall into two distinct categories: (1) those whose need for autonomy was supported within the group via collective negotiation and decision-making processes; and (2) those who took a leading role in their group thereby supporting their own autonomy needs.

Collective decision-making was an important factor in the group of which Students 2, 8, and 9 were members. *Student 8* felt "*you had your say on everything*" *(Student 8, Interview)* while *Student 9* commented that "*we made decisions the whole way through*" *(Student 9, Interview)*.

Other participants didn't experience the same levels of negotiated decision-making evident above. However, those who found themselves in a position of leadership acceptable to their group, by default or design, also expressed a sense of autonomy. *Student 4* took on the role of coordinator to ensure her group was making sufficient progress, and in doing so, fulfilled her need to be self-initiating, self-regulating and autonomous:

> I think I had quite a lot of input actually. … what I found was that we seemed to talk a lot but not actually make the decisions really quickly. So … throughout … I'm trying to collate what we'd done and where we're at all the time. So we all know that this is what we're doing now and summarise what we'd been talking about and that we're all on the same page. (Student 4, Interview)

To this point, a range of salient environmental influences that were supportive of learner autonomy have been identified and explored within both case studies. However, not all participants experienced having their autonomy needs met. The following section describes social and contextual factors that contributed to the undermining of students' perceptions of autonomy.

3.3.1.2 Influences that Undermine Autonomy

When learners' autonomy needs are unfulfilled, the perception that one's actions are initiated and regulated by outside forces are prominent (Reeve et al. 2008). A number of important themes emerged from the data that contributed to the undermining of learners' needs for autonomy, primarily within Case Study 1, and provide further insight into the high external regulation scores reported by both groups (see Tables 3.1 and 3.2). The themes are divided into two distinct groups. The first group highlights several factors that were *only* evident within the Case Study 1 PBL context as contributing to perceptions of an external sense of regulation. The second group of themes emerged from research participants who reported high external regulation scores across both case studies.

Factors evident in Case Study 1 only

High workload; high stakes assessment; lack of relevance; course expectations and communications perceived as controlling; limited input into group decisions and tasks; and workload inequity were themes identified as undermining autonomy by Case Study 1 but not Case Study 2 participants.

Perceptions of a **high workload** emerged as the most salient theme that undermined the autonomy of Case Study 1 participants. Perceptions that the size and corresponding time and effort required to complete the task were significant, and had the effect of students feeling 'consumed' by the PBL process. Comments that it "*took a lot of time and effort to complete, and became all-consuming*" *(Student 5, Questionnaire)* and "*it was a heavy workload compared to other assignments. I'll be honest it was one of the heavier loads*" *(Student 10, Interview)* were echoed throughout interviews with all research participants.

Coupled with perceptions of high workload, the **high stakes nature of assessment** was clearly evident to all participants during the PBL task because the assignment was worth 60 % of the entire course mark. This not only had a detrimental effect on perceptions of enjoyment of the experience, thereby undermining intrinsic motivation, it also promoted anxiety leading to high reported amotivation scores by some participants:

> … the fact that 60 % of the mark came from one assignment and if you missed the mark on that then you are you're lost, you failed … and to me that's really tough and that worried me. (Student 6, Interview)

Even students who reported low external regulation scores (e.g., *Student 10*, ER 8) were aware of the high stakes nature of the PBL assessment and commented on the external pressure and feeling of lack of control this created: "*I mean this one was 60 %. It is a huge amount of marks that you can either lose or get*" *(Student 10, Interview)*.

Student 5 summed up how high stakes assessment and the resulting pressure had a detrimental effect on her enjoyment of the experience, thereby contributing to her high external regulation (ER 28) and amotivation (AM 27) scores:

> I did not enjoy the fact that [the PBL] assignment counted for 60 % of the total course mark. Throughout this assignment, our group always had to consider the fact that if we got it wrong, we'd have to repeat the course!! (Student 5, Questionnaire)

A perception of **lack of relevance** also undermined autonomy and was identified by approximately half of the Case Study 1 group. Importantly, it was a highly salient factor (in terms of the frequency of references in the data) for the participants who reported high amotivation and external regulation scores. These learners questioned the relevance of PBL in terms of the overall course focus on curriculum integration, how it related to classroom practice, how it connected to their previous experience and knowledge of science and technology, and whether it had any personal relevance.

The weighting of the PBL assignment (60 % of the course mark) meant that learners spent the majority of their time doing the PBL activity and had limited opportunity to explore other approaches to curriculum integration. The following comment highlights the dominance of the PBL task in the course, rather than just one approach to curriculum integration:

> The course was about science and technology integration, yet the weighting on [this] assignment … meant the course could be better described as Problem Based Learning. However, I question how much we have even learnt about PBL. Sure we have experienced the process and this is a good thing, but we have had no opportunity to critique PBL and understand it [at] a deeper level. I feel that this has occurred because [this] assignment … is just so focussed on getting the task completed. While PBL is related to the course curriculum, it is not the only approach and it is this over weighted focus that in the end detracts from its relevance to the overall course curriculum. (Student 7, Questionnaire)

Lack of connection to previous practical experiences in schools as well as lack of directly transferable knowledge or skills also contributed to perceptions of lack of relevance of the PBL activity:

> Nothing that I can practically use in a primary school classroom. (Student 5, Questionnaire)

> I doubt I will use this model in school anytime soon. It does not look like any integrated subjects I've seen in schools. (Student 1, Questionnaire)

Student 12 also struggled to make connections with her previous learning experiences with science and technology and PBL as an approach to curriculum integration:

> Well, to be quite honest, I don't think I've learnt anything. … I wouldn't say that I'm any clearer on integrated science and technology. … I had hoped it would build my science and technology skills and to be quite honest, I don't think it's done that. (Student 12, Interview)

Student 6 had difficulty in seeing any personal relevance in the activity because it was "*aimed at intermediate kids* [years 7 and 8] *or year 5 and 6 and most of us, most of us here at the moment aren't aiming to teach at that level. So it is a waste of time in some aspects*" *(Student 6, Interview).*

Course expectations required students to interact with each other online within their collaborative groups, assisted by the lecturers, irrespective of their

circumstances. These expectations were clearly stated in the course study guide and reaffirmed by the lecturers:

> I do expect to see them actively engaged so I can engage with them. So that teacher directed role initially. Sort of setting the scene, where to and allowing that… to develop and sort of tending to take a back seat but they must, to me, they must remain visual on the site otherwise I can't see what's going on, I can't probe. (Lecturer 2, Interview)

For several students, who were geographically close enough to meet physically, the immediacy of face-to-face communication allowed them to autonomously regulate the ongoing group decision-making processes characteristic of PBL. Consequently, the expectation that required them to be visible online discussing their ideas, without regard to their situation, engendered a sense of compulsion that undermined their autonomy needs. This contributed further to the feelings of external regulation expressed by these learners:

> When you're doing an online course and you're doing it with people that you talk to every day, [the LMS] is a handicap. Well not a handicap, it's a nuisance because you have to be seen to be using [the LMS]. There doesn't seem to be a … understanding of the fact that we were working, we had to be seen to be working … we were expected to be putting something on a regular basis which was a nuisance from our point of view. (Student 6, Interview)

The only useful purpose communicating online did serve was that it provided opportunities to interact with teaching staff. "*We started using it ... as much in my opinion, part of my motivation, was that we were displaying our thinking and our ideas to the lecturers*" *(Student 7, Interview)*. But "*when we became aware of the limited involvement and feedback from lecturers, we migrated toward what we felt were more efficient forms of communication*" *(Student 7, Questionnaire)*.

Not having a genuine need to enter into online discussions with each other coupled with feedback from teaching staff that decreased over time (a feature of the PBL approach used in this course), meant that the requirement to interact online to 'show' progress contributed to high reported external regulation scores by several participants:

> The only time we used it is when we thought our lecturer was gonna come on and check to see whether we'd actually gone through the process correctly. (Student 11, Interview)

Added to this, approximately half of the participants perceived the **communication style used by lecturers as controlling**. The following message, received by several participants early in the PBL process regarding the lack of engagement by some groups, seeks compliance:

> A review of the PBL groups reveals that no/or little interactions relating to the set tasks (phases) have occurred on line. While you may indeed be meeting face-to-face please note it is our expectation that the phases that ask you to provide comment on must be posted on line.
> …
> We note many groups up to date or exceeding the requirements.
> …
> Kindest regards
> Lecturer 2 (Online discussion)

The effect of the use of controlling language is evident in the response from *Student 1* who reported moderate to high levels of external regulation (ER 18) and amotivation (AM 21):

> After that little reminder from Lecturer 2 I felt a little pressured to have a go. (Student 1, Online discussion)

As well as messages containing directives, commands or indicating the right way to do the task (as in the case of mentioning groups who were up-to-date in the above message), other communications couched as suggestions but perceived as directives were evident in several of the PBL discussion transcripts. For example, one group received the following message from *Lecturer 2* relating to technical innovations associated with their chosen problem of graffiti:

> Greetings,
>
> I had indicated earlier the concept of a waterfall type defence system as a possible line of investigation (as a prompt to perhaps an innovative solution) that could be carried out.
>
> Many homes and business are being targeted not only by graffiti but now by etching. Question for your consideration. If water is steaming down a wall would it discourage folk as they may get soaked?
>
> Consider the possibilities here. (Lecturer 2, Online discussion)

Although couched as a suggestion, the wording and reiteration (i.e. the idea was first discussed in a previous message) resulted in the learners perceiving it as a directive (and therefore limiting choice), as the comment from *Student 11* indicates:

> I felt it was, the answer came from our lecturer and I didn't like that 'cause I thought we should be coming up with the answer. … he did give us direction but basically he told X we should be looking at how to solve this through water investigation and I said to them that is not what problem based learning is. We needed to come up with the problem not our lecturer. So they didn't like it [but] that's what he's telling us so that's what we're gonna do. I mean if we diverted off that, it would have been even worse for us, I think. But I was a bit annoyed with that, with that concept that he had come up with. But you know I want to please the lecturer so we probably weren't gonna divert off that idea. (Student 11, Interview)

What these perceptions of controlling course expectations and communications indicate is that the expressions of autonomy support from the lecturers, discussed under supportive influences, did not consistently translate to perceptions of autonomy supportive language and behaviour by participants. In other words, learners' sense of 'ownership' of their problem and process was undermined by the perceived need to meet external expectations (e.g., collaborative online communication). The differentiated nature of the relationship between lecturers and students (i.e. lecturers have the power of assessment), also affected some learners' perceptions of autonomy. This was because the expectations and requirements stipulated by the lecturers were perceived as not being sensitive to participants' needs or situations.

A further theme that was apparent among Case Study 1 participants who expressed less self-determined forms of motivation was perceptions of having **limited input into the tasks and decisions processes of their group** or not being

consulted at all. In other words, these participants perceived their contributions as having little or no influence in the overall actions of the group. This resulted in feelings of limited control over the process and outcome. For example, lack of consultation was a common theme for *Student 11* that contributed to her perception that she had little personal control:

> So I kind of put my argument forward. But it got knocked out straight away without any further discussion and I thought it was actually a quite valid science and technology investigation. (Student 11, Interview)

Unlike Student 11, *Student 1* did have input into decision-making processes throughout the assignment. However, a member of her group failed to consult her over a critical decision (submission of the assignment) which left her feeling that the product of the learning process was out of her control. This, in turn, undermined her sense of autonomy and contributed to her moderate amotivation score:

> However, when it came to putting the assignment together Z did the presentation, she put it in. I didn't think she would and we didn't get to see the assignment before it was submitted. So there wasn't any editing there. There wasn't any opportunity … and that's a really tough one. (Student 1, Interview)

In other words, the actions of others, in this case their peers, contributed to the undermining of several participants' autonomy needs through lack of consultation or contributions being ignored. This not only had a detrimental effect on an individual's autonomy needs, it also undermined their relatedness needs. This is discussed later in the chapter.

A quarter of Case Study 1 participants described how some group members contributed more than others (i.e. **inequitable workloads**) and the difficulties this presented:

> I learnt that group members may be unreliable, non-collaborative or have little integrity which is a huge downfall of this type of assignment. Equity issues are huge when it comes to collaborative assignments. (Student 1, Questionnaire)

Given that 75 % of the final assignment mark was allocated to the group presentation, group members who were perceived as not doing their share were an intense source of frustration for their peers. This undermined the autonomy needs of participants (as well as relatedness needs discussed later):

> I think what was frustrating … that we couldn't move on and that we were going round in circles with our decision-making and we needed, I really needed to be more forceful I guess and say hey move on. We've discussed that enough. I think that … process we've fully done and that was really frustrating for me. (Student 11, Interview)

Factors evident in both Cases

As well as the contextual factors described above undermining perceptions of autonomy, several additional themes emerged from the research participants from both case studies who reported high external regulation scores. They were: time constraints; the mismatch between the technology used and the learning activity and perceptions of limited choice.

Time constraints

For all Case Study 1 participants, the combination of perceptions of high workload and the salience of assessment (discussed above) contributed to the emergence of the third important theme, perceptions of time constraints. The common observation "*that the timeframe was very short and we were scrambling to get the project completed to our satisfaction*" *(Student 11, Questionnaire)* left many participants feeling that much of the learning process was beyond their control, that is, externally regulated. One consequence of having limited time available was the limiting of time spent on other study commitments to free up more time for the PBL task. The all-consuming nature of the task "*made you neglect other courses which if you're ... not as strong academically might be to your detriment*" *(Student 10, Interview)*. While Student 10 was able to keep up with her other studies, *Student 4* did feel the amount of effort required "*was to the detriment of... a couple of other subjects*" *(Student 4, Interview)*.

While all participants considered that the workload associated with the micro-teaching assignment in Case Study 2 was manageable and "*set at the right level and it wasn't too much*" *(Student 16, Interview)*, several students described constraints on their time being a significant factor contributing to high external regulation scores. However unlike Case Study 1, these participants described factors outside the immediate learning context, such as work and other study commitments, impacting on the time available to focus on their assignment:

> … because in a week I would have a schedule of each course I do, which day. I do the longest one, those with most readings, during the days I'm off work because I have like the whole day for myself. (Student 18, Interview)

Technology constraints

Case Study 1 participants' perceptions of being time poor (discussed previously) resulted in the time-consuming nature of asynchronous communication medium becoming more prominent. The act of communicating via the LMS discussion board was perceived as "*very time consuming*" *(Student 7, Questionnaire)* and "*slowed down the communication*" *(Student 6, Interview)* particularly in terms of the "*endless hours* [spent] *typing questions*" *(Student 11, Questionnaire)*. Delays were also experienced in the communication process "*when it came time to having to make a group decision on things. Sometimes this ended up taking several days just to decide*" *(Student 9, Questionnaire)*. The net result of these multiple external pressures saw learners turning to synchronous forms of communication in an attempt to autonomously regulate their own learning process. Synchronous types of communication included meeting face-to-face, phone calls and conversations on Skype as well as via internet-based messaging tools. Learners adopted synchronous approaches that better suited the communication and management requirements of the PBL task (i.e. frequent, ongoing, collaborative decision-making processes):

> I found it hard to express myself on the internet when a phone call or SKYPE can help clarify and discuss the issue faster. (Student 11, Questionnaire)

Even though synchronous technologies were helpful, there remained a common perception among all participants that the chosen technology did not provide a suitable environment in which to undertake the PBL activity. In particular, the requirement to collaborate via the LMS asynchronous discussion board contributed greatly to the perception that the technology did not fit the required activity (i.e. technology/task mismatch):

> [The LMS] does NOT compliment this course. I strongly believe that this type of 'hands on' practical course should be taught face-to-face. (Student 5, Questionnaire)

The LMS asynchronous online environment was also perceived as constraining by several Case Study 2 participants. A number of participants who reported higher external regulation scores commented on the limitations of the text-based asynchronous medium. In particular, they highlighted the reduced cues nature of the medium, lack of immediacy and time delays, especially when compared to previous face-to-face learning experiences:

> While I agree that discussion with peers/colleagues is an excellent way to enhance learning in a classroom setting, when artificially forced in a clunky online environment such as [the LMS] it loses much of its benefit. I would rather spend time discussing my learning and ideas in real-life conversations with friends, local school teachers etc., than using twice as much time holding protracted, technically frustrating and (as a result) often superficial "discussions" on [the LMS]. I would love to meet and discuss ideas with fellow [distance students] if possible, but as we can't, it seems silly to pretend that using a bulletin board achieves the same level of discussion as face-to-face contact. (Student 19, Online discussion)

Perceptions of limited choice

The final theme identified by participants across both cases who reported high external regulation scores related to perceptions of being limited or constrained for choice. When asked about the choices available to them during the PBL activity, approximately half of the Case Study 1 participants who expressed a lack of choice focused on the compulsory nature of the programme/course/assignment "*We didn't have any choice about doing the course its compulsory*" *(Student 6, Interview)* or the requirement to work in small groups "*overall, there was no choice we had to do the assignment*" *(Student 7, Questionnaire)*.

When it came to working collaboratively, while some participants were in a position to "*choose who you wanted to work with*" *(Student 5, Interview)*, *Student 12* felt she had little choice because of decisions made by other students early on in the course:

> Although the suggestion I think was to choose someone that or partners that you were in tune with, realistically in a classroom you probably could do that because you knew everybody and you knew who worked well at this, that and the other and who had certain skills. But over the website, it's a case of I know some of the people had already chosen their partners for the second assignment long before we'd even done the first one. (Student 12, Interview)

Rather than being an indication of the actual choices available to them, the focus on compulsion is an expression of the lack of freedom and an external sense of control experienced by these participants during the PBL assignment. This is further supported by their high external regulation scores.

When asked about the choices available to them during the micro-teaching activity, the majority of Case Study 2 participants expressed perceptions of extensive choice. However, some participants perceived their choices to be limited to some degree. Those who expressed a lack of choice focused on the compulsory nature of the assignment "*I felt there was not much choice in this assignment. I needed to do it for this course*" *(Student 15, Questionnaire)* or the constraints imposed by the social studies curriculum:

> I know there still have to be some kind of guidelines but I think they have to be treated as guidelines [the social studies curriculum]. I mean I look at it a lot like the way it's treated is almost like it's some kind of a religious gospel and you can't go outside of that and I think that's wrong. You know it should be a guideline just as anything, any set of rules are guidelines ultimately. (Student 20, Interview)

3.3.1.3 Summary of Autonomy Influences

Self-determination theory tells us that learners whose autonomy needs are met within the learning context are likely to experience more self-determined forms of motivation (identified regulation and intrinsic motivation). This was the case for approximately half the Case Study 1 and the majority of Case Study 2 participants. In line with this, a range of environmental influences were identified as supporting the autonomy needs of learners.

However, not all participants experienced having their autonomy needs met within the Case Study 1 context in particular. This resulted in high levels of reported external regulation (both cases) and amotivation (Case Study 1) scores. Table 3.3 summarises the social and contextual factors that facilitated and undermined perceptions of autonomy across the cases. It is interesting that, despite the features of the learning activity being the same within the context of each case study, some factors were identified as supportive or undermining of learners' autonomy needs depending on an individual's perception. This was the case for perceptions of choice in both cases as well as perceptions of relevance in Case Study 1.

Table 3.3 Social and contextual factors that facilitate and undermine perceptions of autonomy

Autonomy supportive themes	Autonomy undermining themes
Task relevance and meaning (professional or personal)	High workload
Interest (situational or personal)	High stakes assessment
Actively use knowledge in practice	Lack of relevance
Autonomy supportive lecturer	Course expectations and language perceived as controlling
Provision of choice	Limited input in group decisions and tasks
Input into group decisions and tasks	Workload inequity
	Time constraints
	Technology constraints
	Limited choice

3.3.2 Competence

According to self-determination theory, support for competence facilitates motivation (Deci et al. 1991). External events can convey information about a person's competence or skill level if they are perceived in an informational, non-controlling way. When they are linked to progress or performance actually achieved, then they can increase perceived competence and therefore support self-determined forms of motivation.

3.3.2.1 Influences that Support Competence

Several important themes and sub-themes that facilitated the expression of competence among participants in both case studies emerged from the data. They include: ongoing guidance and supportive feedback from lecturers; perceptions of clear guidelines and expectations; responsiveness of the lecturers; positive efficacy judgements; helpful and supportive peers; perceptions of useful course resources; and perceptions of the activity as optimally challenging. The order in which they are presented reflects their relative salience in the data.

Ongoing guidance and supportive feedback
The most prominent theme to emerge in supporting learners' competence needs across the cases was perceptions of quality ongoing guidance and supportive feedback from the lecturers. Participants who received feedback from the lecturers that guided, facilitated and clarified the learning process, perceived the lecturers as supporting their need to feel effective within the context of their assignment. Approximately half of the participants in Case Study 1 and all of the participants in Case Study 2 perceived that the information they received from the lecturers supported their need to feel effective. The effect of the combination of ongoing guidance, support and feedback on learners' perceptions of competence and motivation is summed up in the following comments:

> Without the guidance from the tutor at the beginning I think we may have not got off to such a good start. (Student 2, Questionnaire, Case Study 1)

> This course has been fabulous. We have all got lots of support and positive feedback which encourages us to keep trying it also keeps our motivation up. (Student 21, Questionnaire, Case Study 2)

Clear guidelines and expectations
Learners who perceived the structure and guidelines of their respective assignment as clear and explicit knew what was expected of them. This, in turn, supported their need for competence because it assisted them in making accurate judgements about what was required to achieve success. The amount, clarity and quality of information relating to the goals, guidelines and expectations of the assignment were perceived as sufficient and appropriate for their needs by three quarters of the participants in Case Study 1 and all learners in Case Study 2. Students in Case

Study 1 expressed feelings of their competence needs being supported, without feeling constrained by the guidelines:

> The assignment was well-structured with lots of additional information to support learning. (Student 4, Questionnaire)

This corresponds with the lecturers' intentions when developing the assignment structure that ensured learners 1) could make their own decisions about what needed to be done, and 2) assess their own progress. As *Lecturer 1* says "*they go to the assessment criteria and can reflect on that about the learning and what needs to be done and then move forward*" *(Lecturer 1, Interview)*.

Case Study 2 participants perceived the micro-teaching assignment as clear and explicit, providing a framework to accurately judge the requirements for success:

> The assignment structure and information provided were both very complete and useful. In terms of my approach, this meant I was free to simply "get on with it" and didn't need to seek clarification. I felt clear about what was required. (Student 19, Questionnaire)

As well as meeting the competence needs of participants, information that was clear, straightforward and unambiguous also supported autonomy needs, thereby promoting self-regulatory practices. The importance of this in an online learning context was something *Student 20* elaborated on in relation to other online experiences:

> In this area, Lecturer 3, I would have to say that I think you have been one of the exceptions. I have found both your online communications and those in the study guide to be pretty clear and easy to follow. Your efforts in providing us with some kinds of examples or models of what you are after, as mentioned in another thread, go a long way towards easing the problems in this area. As Student 16 says, we're not in a position to simply put up our hands and ask "excuse me, can you please clarify what you mean by….?". I spent well over half an hour earlier today, going back and forth through the course materials of one particular course, just trying to make sense of exactly what was required from a series of exercises. Others have been doing the same – which is obvious from the online discussions. It's frustrating, time-wasting and unnecessary. Clear, concise and unambiguous instructions, along with a good example or two, would save an awful lot of hair-pulling and despair … Not to mention that it would also model good teaching practice.;-). (Student 20, Online discussion)

In conjunction with an assignment that was comprehensible and straightforward, the expectations of the lecturer, particularly around online participation, were perceived by the participants as clear and worded in a way that was non-controlling as the following example shows:

> One thing I thought was good too, was Lecturer 3 was right from the word go, you knew what the expectation was. Like she would say "okay I'm still waiting for so many people to respond to this and I expect everybody", it's just the way she worded it. Every other course there is that expectation but I think it was just her approach to work or wording that just let you know yeah, she is keeping an eye on it and she is expecting everybody to contribute something and I thought that was good. (Student 16, Interview)

Responsiveness of the lecturers

Following on from this, being available, approachable and answering queries promptly were viewed by the participants as important ways in which the lecturer provided support for their competence needs. Across both cases, participants perceived the lecturers to be responsive, available and approachable. When a participant posed a question or needed assistance, the lecturers always replied quickly, giving the impression that they were always present online as the following remarks demonstrate:

> …he [Lecturer 2] was always online and always giving us feedback and if you asked a question he was very prompt at replying. (Student 9, Interview, Case Study 1)

> She is very helpful. Actually she is one of the most helpful I've encountered since I started the … [degree], always giving us notes and tips and always there and when you ask her something she replies. Even if you put it on student initiated discussion or private email, she would always reply. Because that's very important for us that lecturers reply to us even if it's just some trivial questions. Because they told us that if you have questions, no matter how simple or how complex, we have to ask it. (Student 18, Interview, Case Study 2)

Responsiveness was viewed as an important part of the facilitation process, particularly by *Lecturer 2* (Case Study 1) and *Lecturer 3* (Case Study 2) who both mentioned the critical nature of online teaching presence:

> I think … it's that humanistic approach to it. If I'm offline for 48 hours and … you're seeking an answer … if you're waiting for your lecturer or somebody to come online you just lost 48 hours … you become more uncertain. To me it's that sort of ongoing feedback is critical. (Lecturer 2, Interview)

> But it's made me more aware of what I do and how I do it and the importance of students feeling listened to and responded to and that there is someone here. It's very easy to – they're not physically in my face, in my room. I could ignore them quite easily. But I can't and I think that's the teacher part coming out in me. (Lecturer 3, Interview)

Collectively, clear guidelines and expectations as well as lecturer support, feedback and responsiveness served to support participants' ongoing judgements of competence.

Positive efficacy judgements

The next most prominent theme to emerge that supported learners' competence needs was positive judgements of efficacy. This was expressed in different ways in the two case studies due to the collaborative nature of the PBL activity in Case Study 1 versus the individual nature of the micro-teaching activity in Case Study 2.

Perceived collective efficacy refers to group members' beliefs in their collective capabilities to successfully undertake the actions required to achieve a desired outcome (Bandura 2000). Perceptions of high collective efficacy (in Case Study 1) supported several participants' competence needs even when individual self-efficacy for the PBL task was, at times, called into question. Belief in the collective abilities of the small group were central to students' beliefs that they could succeed, as was strategically choosing group members with the goal of composing a high collective efficacy group:

> … but sometimes one felt unsure what you really should be doing for each phase. The information was minimal as we had to take responsibility for our own learning. The collaborative nature of the assignment however aided in this respect as we soon became aware of strengths and weaknesses and responded to them. (Student 10, Questionnaire)

In Case Study 2, the majority of participants expressed belief in their individual ability to complete the task successfully on *commencing* the micro-teaching assignment. Learners primarily used information from actual experiences (Bandura 1997) to make judgements of efficacy. Previous related experience, both in terms of micro-teaching and lesson planning, and prior subject knowledge were the key factors in participants' high efficacy judgements on commencing the micro-teaching assignment:

> … but also just from the lessons that I had taught in the past. I just sort of used the ideas from that and the planning and things like that from PIP [Professional Inquiry and Practice]. (Student 15, Interview)

Being able to successfully put into practice planned lessons in an authentic context saw learners' sense of competence continue to grow throughout the activity.

> I probably wouldn't have improved my experience/knowledge as much if I hadn't tested out my plan in a real classroom. (Student 19, Questionnaire)

Verbal persuasion from the lecturer (Bandura 1997) in the form of ongoing encouragement, feedback and support mentioned previously, was a further important source of information that facilitated student judgements of efficacy. The following remark indicates that the lecturer was aware of the importance of her role in the development of learner efficacy:

> … just whenever there is success, mastery, I'm straight there to say "wow that was a really well considered response online, for these reasons". I'm also highlighting vicarious success, so they are seeing someone else like them succeed online too. So I think that is fairly powerful. So and so did that and I see myself as similar to that person so therefore I can succeed. And that emotional response for self-efficacy making themselves believe in themselves. When you're feeling nervous, you're tummy has kind of got butterflies in it, you're body is giving you a message. So when you're encouraged and praised and believed in, those physical feelings can disappear a little bit. When students are feeling more confident, they will put an idea out there even though they're not sure if they should they'll take the risk and do it. Yeah… I think it's also the verbal persuasion, so I'm always doing that. (Lecturer 3, Interview)

The message below indicates that *Lecturer 3* was successful in her attempts to develop learners' efficacy beliefs:

> A 3rd HIP, HIP HOORAY!! Isn't it lovely to feel worthwhile & capable & valued. (Student 21, Online discussion)

Helpful and supportive peers

A further theme that worked in conjunction with responsive, supportive lecturers to meet participants' competence needs was the support and help received from peers. Being able to rely on each person's expertise within the small group (Case Study 1) or the wider class (Case Study 2), in addition to the support and help provided when

needed, served to facilitate learners' needs to feel proficient. Two thirds of Case Study 1 and all of Case Study 2 participants identified the helpfulness and supportiveness of peers as important in terms of meeting their competence needs:

> Personally I received a lot of support from my group, and would not have been able to complete this assignment successfully without them. My peers were very important in helping me understand what needed to be done. (Student 5, Questionnaire, Case Study 1)

> There have been lots and lots of feedback in just general discussions and also in the private mail area, where someone has wanted to ask a question but not in the open forum, we've been quite comfortable to do that for each other which has been really, really supportive; really wonderful because it can be quite isolating. (Student 21, Interview, Case Study 2)

Perceptions of useful course resources

A further theme to emerge that supported students' competence needs was the perceived usefulness and completeness of the course resources. Participants who perceived the resources (CD-ROM and study guide in Case Study 1; and study guide, exemplars and online resources in Case Study 2) as useful in terms of (1) providing guidance that assisted learners in navigating their way through the learning process; (2) offering templates that could be used during the assignment; and (3) supplying exemplars that clarified expectations in terms of quality of work, expressed confidence in their capabilities to complete the assignment successfully. This view was endorsed by approximately half of the participants in Case Study 1 and all of the Case Study 2 participants.

> These templates and readings were very useful in providing us with guidance in how to work collaboratively, i.e. roles, and how to fulfil our tasks within each role, i.e. science investigation questions and more, like presentation examples and NTK [Need to Know] templates, etc. (Student 3, Questionnaire, Case Study 1)

> The study guide, lectures and readings were very useful – providing a lot of information about planning for social studies, and strategies for inquiry, values exploration and social decision making in the classroom. I did not require any additional resources (other than on-line exemplars) – the study guide, lecture notes etc. for this course were very complete. The example assignment posted by the lecturer on [the LMS] was the MOST useful resource in terms of providing a guide as to what was expected. (Student 19, Questionnaire, Case Study 2)

Lecturer 3 (Case Study 2) continued to offer additional, online resources to students throughout the assignment (and course). These were also perceived as interesting and useful by participants:

> … there was always something. She would post you a website to have a look at, that was really interesting, put it there to find bits of information or ideas which is always good. (Student 13, Interview)

Optimal challenge

The final theme that emerged in support of learners' competence needs related to how challenging the activity was perceived to be. Those who experienced it as an achievable challenge, where skill level and challenge were high and reasonably well-matched (Csikszentmihalyi 1985), also talked about a sense of enjoyment and satisfaction in their achievements. This is an indication that their competence needs

had been met. Two thirds of Case Study 1 and all of Case Study 2 participants perceived the task to be reasonably well-matched to their existing knowledge and skill levels and thus sufficiently challenging to allow them to further develop their competence in these areas as these comments highlight:

> It was a challenge and this pushed one forward, one step at a time and by the end it was quite surprising what we had achieved. (Student 10, Questionnaire, Case Study 1)

> I felt this assignment was fantastic for bringing together all of my skills and what I have learnt in this paper. (Student 17, Questionnaire, Case Study 2)

Self-determination theory proposes that both the competence and autonomy needs of learners must be satisfied in order for more self-determined forms of motivation to be encouraged and maintained. Significant factors supporting learners' needs to feel capable and competent have been identified and explored above. However, not all participants experienced having their competence needs met within their learning context. This was predominantly true for participants in Case Study 1. The following section describes social and contextual factors that contributed to the undermining of students' perceptions of competence.

3.3.2.2 Influences that Undermine Competence

A number of important themes emerged from the data that contributed to the undermining of learners' needs to feel capable and effective in Case Study 1. In order of significance they are: perceptions of unclear and complicated guidelines; insufficient guidance and feedback; judgements of low self-efficacy; a learning design that gradually reduced lecturer input; perceptions that resources were not useful; and perceptions of being overly challenged. Judgements of low self-efficacy was the only factor identified that undermined some learner's perceptions of competence in Case Study 2.

Perceptions of unclear and complicated assignment guidelines

While perceptions of clear guidelines and expectations were identified previously as supportive of learners' competence needs, perceptions of unclear and complicated guidelines also emerged as the most important theme that undermined the competence needs of approximately half the participants in Case Study 1. For learners who perceived the assignment guidelines as inadequate, the complexity and quantity of the information provided in the study guide was the primary reason.

In providing "*probably one of the most extensive ... outlines there is*" *(Lecturer 2, Interview)*, the intention of the lecturers was to offer support for learners in developing their understanding of PBL (Study Guide pp. 11-16). The outline offered practical guidelines that clarified the steps involved in the PBL process as well as expected timeframes for completion (Study Guide pp. 16-21). In addition, example problem scenarios (Study Guide pp. 26) were provided and the criteria used to assess completed work (Study Guide pp. 27-33) were listed. By offering detailed success criteria in particular, the objective was to support learners'

competence by providing the appropriate information necessary to make self-judgements about progress:

> Each of those aspects of the assignment have indicator statements, what we call success criteria statements, and they're generic enough but specific enough that as they work through and march along they are able to take a look at those assessment criteria and say we're doing this right. … they can self-assess and say look we are not demonstrating this, we've got to do something about it. (Lecturer 1, Interview)

However, by offering such extensive information an unintentional consequence was feelings of confusion and being overwhelmed:

> But because they had the learning right throughout it was probably about six pages, the process was about six pages it was too much for me. … if they'd broken it down a little bit I think that would have been helpful and it was all a bit mucky. Like you had to go from here to here and then flip over here and then go back here and turn the pages here and it just it was too muddly. (Student 11, Interview)

This perception of the learning environment as overwhelming led to these learners making statements about the structure of the assignment being inappropriate to meet their competence needs:

> Whilst I recognise that the purpose was to change the learning from lecturer-driven to student-driven, there wasn't enough structure for me to feel confident about the direction to take and I seemed to drift in my own direction. (Student 12, Questionnaire)

Insufficient guidance and feedback

In addition to a complex assignment structure, perceptions of insufficient guidance and feedback from the lecturers emerged as a second highly salient theme that undermined several participants' need to feel capable. Perceptions of insufficient guidance meant individuals and groups had difficulty in making accurate judgements about the group's ability and progress. This state of uncertainty was summed up by the unanswered question raised by several participants "*are we on the right track?*" *(Student 6, Interview)*.

When asked about how they communicated progress to learners, Lecturer 1's response was:

> Well it's a constant feedback you know of popping in and saying look that's an interesting thought. If that is being said how does it link to such and such? (Lecturer 1, Interview)

This impression of constant, ongoing feedback is different to the perceptions of several Case Study 1 participants as the comment below indicates:

> However, sometimes we just lacked direction because we didn't get it from the lecturer. (Student 11, Questionnaire)

Judgements of low self-efficacy

Participants, in Case Study 1, who questioned their ability to complete the task successfully on commencing the PBL assignment continued to struggle with conceptions of their capabilities as the activity continued. Judgements of low self-efficacy resulted from participants questioning their ability to demonstrate science and technology understanding within the context of a PBL activity. The lack of

related prior experience had the effect of lowering self-efficacy. Receiving feedback from the lecturer that called into question learners' progress and ability to succeed was a further important source of information that undermined student efficacy. Finally, anxiety and worry interpreted as a lack of skills or ability also contributed to these participants' judgements of low self-efficacy.

A perception of a tenuous link between previous learning experiences and the PBL assignment: "*we did technology in year one … and I can't say I could link what I did then with what I did now. … It was just it was like two different … courses almost*" *(Student 5, Interview)*; led *Student 5* to doubt her ability to succeed.

Procrastination by *Student 12*, when commencing the required activities, was due to that fact she was struggling to understand what she needed to do and deal with the feelings of anxiety this engendered:

> I was slow getting underway I think because when I looked at it and thought oh my goodness what do I do here? I was feeling as though I was floundering to start off with. (Student 12, Interview)

Student 12's low efficacy judgements were compounded by *Lecturer 2*'s response. The slow start by her group, rather than being seen as a sign of low self-efficacy, was interpreted by *Lecturer 2* as a lack of willingness to engage in the PBL process, as indicated in the message below:

> Folks, it is extremely disappointing to note that no online interactions have occurred this week. This week is an important week in considering aspects of PBL and sharing your understanding through directed 'MUST DO' online phases.
>
> You should be at/or nearing the stage where you are considering and sharing your ideas for the PBL inquiry.
>
> I do not intend to post messages of this nature in this site in the future. You all need to take personal ownership of the requirements working in the [online] environment that includes active engagement. PBL does require your focused attention over a sustained period of time.
>
> PBL does not absolve the teaching responsibilities we wish to actively engage in your learning journey particularly at the front end of the journey. Your presence online is required for this to occur.
>
> Failure to respond will no doubt impact on your ability to pass this course.(Lecturer 2, Online discussion)

The language (i.e. seeking compliance) used in this posting does have the required effect of prompting a response from *Student 12*. But it has the additional consequence of further undermining her self-efficacy and contributed to her unwillingness to seek help when she needed it:

> I felt we were warned about our level of participation and then left floating. … We could have/should have asked for more assistance, but I felt that rather than be given that assistance we would have been criticised. (Student 12, Questionnaire)

While judgements of low self-efficacy relating to lack of prior experience and knowledge were not evident in Case Study 2, two students did question their ability

to successfully complete the micro-teaching assignment (to some degree) because of the requirement to learn within an online environment. These students were located at a satellite campus of the institution and the majority of their courses (not including this one) were offered in a face-to-face mode. This meant they had less prior experience with online learning which led to anxiety and questions about their ability to succeed:

> I felt slightly more anxious than I usually would for classes that I attend face-to-face with my lecturer. This is because I worried that I hadn't understood the assignment right or not. Even though I knew it was probably fine, I always had this idea in the back of my head making me think that I may have forgotten to look at something online that would contribute to my assignment. (Student 15, Questionnaire)

However, their lack of confidence (i.e. low online self-efficacy) centred on their uncertainty around regulating their own learning rather than their ability to use the technology. The requirement to be self-regulating, and the challenge this entailed, is evident in the following remark:

> I've never had distance learning before. I've never been in that kind of environment before and because I've always had things handed to me or things are right in front of me and I could just run with it. But because it was online learning and I had to take full responsibility of it. (Student 14, Interview)

The sense of unsureness, expressed by these learners, was mitigated to a degree by their familiarity with the requirements of the micro-teaching assignment, the clarity of expectations, the support and guidance they received from the lecturer and the relevance of the activity. As a result, this factor alone did not result in experiences of amotivation as indicated by the low amotivation scores reported.

The remaining three environmental factors that contributed to the undermining of learners' needs to feel capable and confident were particular to Case Study 1.

Factors evident in Case Study 1 only

Students were made aware of the **gradual reduction of guidance and feedback**, inherent in the design of the PBL activity, prior to commencement of the task. This was done in the study guide via the incorporation of the Torp and Sage (2002, p. 70) model. Students were also reminded of it during the first three weeks of the assignment:

> … so in that particular course admin guide we have what the students should be doing but we also have the teachers' role alongside of it so that marries up, and say "hey look if you want the expectation we'll be in there with you for the first 2–3 weeks but we'll slowly remove ourselves once we have got you on track and let you continue to take the bull by the horns and direct it in whatever way you want to". (Lecturer 1, Interview)

This type of approach to learning in some cases proved to be in direct opposition to the competence needs of the participants. This was particularly true for students who were already questioning their ability to complete the task successfully (i.e. judgements of low self-efficacy). For example, *Student 11* felt that the reduction of lecturer initiated feedback and guidance left them struggling without a clear sense of direction or understanding:

> And then when you get a gap [in knowledge] or when you don't understand then where do we go to for support? I know they're saying they're trying to drop off their support but that does not mean they can't give us the guidelines to work through. I really feel that was under, under-utilised there. (Student 11, Interview)

Participants who perceived the learning **resources as unhelpful** did so primarily because they failed to provide sufficient information or information in a way that enabled them to develop their understanding of curriculum integration and PBL. This view was endorsed by approximately half of the participants in Case Study 1.

For example, *Student 5* found the lack of additional recommended learning resources a problem as this was something she was used to from past study experiences: "[if] *you want to go read more, there's all these recommended sources that are there for a reason. This course didn't have any of that*" *(Student 5, Interview). Student 11*, on the other hand, found the CD-ROM lacked a clarity that would have enabled her to make sense of the PBL process:

> Oh we had a … CD and it had all the information on there and it had exemplars that we could follow. Some of them I found weren't, weren't clear enough. … There are still gaps in there that we think well how did you get from that stage to that stage? … trying to follow what they think… was not clear to me. … I still didn't think that they were quite adequate. (Student 11, Interview)

Finally, participants who experienced the PBL assignment as overly challenging (i.e. beyond their perceived capabilities) expressed feelings of apathy or a lack of control consistent with less self-determined motivation types. This, in turn, led to expressions of helplessness in some cases:

> And I just felt the challenge was too great for me and I tended towards the end to just not bother whatever will be will be and we'll just have to live with it. (Student 12, Interview)

The **overly-challenging** nature of the assignment led *Student 5* to question her own abilities which consequently affected her input into group discussions:

> I was really struggling with this course and Student 6 often said to me that I was really quiet whenever we had group discussions. I was the quiet one and I hardly ever contributed but it felt to me that I was under all this pressure to do all this work and some of it was, you know, over my head. (Student 5, Interview)

3.3.2.3 Summary of Competence Influences

As is clear from the above discussion, a variety of social and contextual factors were identified and explored that either facilitated or undermined the competence needs of learners in both case studies. Table 3.4 summarises the these influences. While most facilitated students' capability needs and contributed to the high identified regulation and intrinsic motivation scores reported by learners in Case Study 2, it is interesting that, in Case Study 1, some factors were identified as either supportive or undermining of learners' competence needs depending on an individual's perception. This was the case for guidance, resources, assignment guidelines and challenge.

Table 3.4 Social and contextual factors that facilitate and undermine perceptions of competence

Competence supportive themes	Competence undermining themes
Ongoing guidance and supportive feedback	Unclear/complicated guidelines
Clear guidelines and expectations	Insufficient guidance and feedback
Responsiveness of the lecturer	Judgements of low self-efficacy
Positive judgements of efficacy	Teacher input gradually reduced
Helpful and supportive peers	Resource perceived as not useful
Perceptions of useful learning resources	Challenge too great
Optimal challenge	

3.3.3 Relationships

According to self-determination theory, relatedness support facilitates motivation in autonomy supportive contexts (Deci et al. 1991). McCombs (1994) argues that supporting relatedness needs within a social context can be achieved "by creating a climate or culture of trust, respect, caring, concern, and a sense of community with others" (p. 54).

3.3.3.1 Influences that Support a Sense of Relatedness

In general, participants who expressed more self-determined forms of motivation had their need to feel connected to others met within the social setting. Two themes emerged as supportive of learners' relatedness needs across both cases. These were: the relationship with the lecturers and relationships with other learners. These needs were met primarily by the lecturer in Case Study 2. However, in Case Study 1, peers within collaborative PBL groups were most important in meeting individual relatedness needs.

Relationship with lecturers

The relationship with the lecturers emerged as an important theme in meeting the relatedness needs of the participants in both case studies. Within this main theme, three sub-themes emerged. In order of significance, participants perceived the lecturers as (1) as sociable and considerate (both cases); (2) willing to share personal information (Case Study 2 only); and (3) modelling inclusivity and respect (Case Study 2 only).

Both lecturers, in Case Study 1, viewed their role in the PBL process as one of a mentor alongside students rather than a traditional student-teacher power relationship. They expressed this in terms of being part of a community of learners and seeing teaching and learning as a two-way dynamic process. Developing relationships with students was intentional:

> So I would like to think I become part of that group rather than sort of a facilitator or lecturer per se, but a member. And they're free to discuss and sort of welcome my presence into their group and we're on an equal sort of basis. (Lecturer 2, Interview)

Lecturer 3, in Case Study 2, also worked hard to make connections with students as she saw this not only as a cornerstone of effective teaching practice but who she was as a person:

> I suppose that's the bottom line but it's a lot more work for me, it would be much easier to just say "oh well, there's the work". But I can't do it, I just can't. Yeah, so it's to my own detriment sometimes but then that's my passion in life and I have to live it out and as I say sometimes it's in humour, sometimes it's just in an email to someone who I know who is going through a difficult patch and I'll just say "how's it going this week?" … I'm connecting to people. That's a humanness thing and damn it, the technology connects us I can't physically be with them but I can be with them in the way that I string my words together and the little pictures I might send out on the way. (Lecturer 3, Interview)

Approximately half the learners in Case Study 1 and all of the participants in Case Study 2 highlighted the considerate approach of the teaching staff as an important factor in meeting their relatedness needs. Student comments below articulate their sense that the relationship with their lecturers was important and their appreciation for for them as individuals:

> … the support was just amazing. … they [were] just welcoming. Like if it was just a little small silly thing, they'd still value our, what we were thinking and stuff like that and there was nothing too small, nothing too big that they weren't willing to help us with. Yeah it was really supportive. (Student 3, Interview, Case Study 1)

> … her enthusiasm for her students which is a separate thing. A lot of the lecturers are really keen on their topic but just don't relate well to people so that was probably another stand out feature with this course. … and it's because we are at a distance it makes it even harder to even communicate. You just have to be that much more skilled and I think Lecturer 3 really managed that in the course. (Student 19, Interview, Case Study 2)

Two further sub-themes emerged, that enhanced relationships between the lecturer and students, which were particular to Case Study 2. The first of these was the willingness of *Lecturer 3* to share personal information. For example, she began many of her online messages with a small story about something that she was doing in her non-work life. In this way, students' felt like they got to know her as a person. The following message is an example of how being willing to share her own personal experiences in a sociable, humorous way, helped to build a sense of connectedness with learners and encouraged the development of a learning community:

> Buenos dias mi acidemicos
> Good morning my students
>
> ¿Como esta?
> How are you?
>
> ¿Como es?
> What are you like?
>
> I've now had three Spanish lessons and a little bit of knowledge can make you feel very clever and show-offy! Last night we learned about adjectives to describe ourselves – interesante, sincero, academico, social, politico, importante, bonito, generoso, – that was so easy as the words look like English! But the pronunciation is so different. Take interesante.

> We might say inter-res-anty. But no. The Spanish say inter-res-SARNTEY (spit out the last bit!). It is such a beautiful language to listen to but so hard to get the kiwi nasal twang round their vowels – (vocales) and consonants (consonantes) :)
>
> OK off the Spanish – on to social studies. (Lecturer 3, Online discussion)

This was appreciated by participants who saw it as a way of breaking down barriers and personalising the learning process:

> Like she would always start off by greeting everybody in a different language and she would always let us know what she's been up to and her family life and stuff. So she, I really liked that because you could relate to her as a person and not a lecturer. Yeah just know her as she was from day to day. So I really liked that, how she did that and then after that was finished then she would get into the business of things. But she would always tie it up with being a person again. So she would go person, lecturer, person, halfway lecturer. So that's one thing I really loved about her. (Student 14, Interview)

Learners also highlighted the importance of feeling respected and included within the Case Study 2 learning community. Participants recognised that *Lecturer 3* was primarily responsible for this because she modelled respect and inclusiveness throughout her interactions with learners:

> The lecturer … because she was so embracing I guess is the best way to put it. And there are so many different personalities, so many different outlooks on life, be it through culture, visibly whatever. She embraced the whole lot of us as individuals but as a group we were all valid, everybody's point of view is valid. The fact that we could all be open and honest and feel safe to do that. (Student 21, Interview)

Creating a respectful, inclusive community of which she was one member was a deliberate act on the part of *Lecturer 3*. In this way she was able to develop quality relationships with learners:

> I think I see the environment as ours. That I've written a study guide that they get sent and yes I've written the assignments that you have to do to get through. But … I'm trying to create a community on there of which I am one member and they are in there as well. Some of them come into that far more willingly than others. … But I believe it is important to develop a relationship, a learning relationship, a caring relationship, a respectful one online with these students even though I never see them. (Lecturer 3, Interview)

The importance placed by *Lecturer 3* on the development of a respectful, inclusive online community created an environment where supportive relationships between learners could flourish.

Relationships with other learners

In general, those students who expressed more self-determined types of motivation throughout the learning activity within each case study also described relationships with their peers as sociable, considerate and respectful. This occurred almost exclusively at the small group level in Case Study 1. In contrast, the individualised nature of the micro-teaching assignment in Case Study 2 meant that relationships with peers in the wider class context were most relevant. The following comments highlight reasons why participants felt connected to their peers:

> I guess the thing how friendly the other people were and they really included me. … So it was very friendly and went from there you know very chatty and they were very supportive. You know, when F died they were very, you know. If you need time out or whatever or you need help, they were very quick to offer support which was great. (Student 8, Interview, Case Study 1)

> Every now and then you'll get an email come through that people say "oh sorry I haven't whatever, kid has been in hospital or, this one" and we'd say "oh we're thinking about you, just come back when you can, we'll help you out". The support is amazing from people. (Student 13, Interview, Case Study 2)

Valuing the contributions made by peers and respecting them for the skills and abilities they brought to the activity was a second sub-theme that emerged as encouraging the development of effective relationships. Participants believed that everyone had something of value to contribute, within their small groups in Case Study 1 and in the wider class in Case Study 2:

> … this was a real positive of it I think, is the group work. … I think we had a good group, having the confidence that others can do the job. … So you can't do them all by yourself. So you do by default become reliant on working with your team members. So it's building that sort of group work, that faith, that yep somebody will do that. Also they might do it in a different way than you thought but in actual fact that's quite alright as well [smile]. (Student 7, Interview, Case Study 1)

The inclusiveness and respect modelled by *Lecturer 3* and experienced by participants contributed to the development of effective relationships among peers in Case Study 2:

> I suppose it's so inclusive. Everyone has got an opinion; everyone is valued for their opinion. Yeah, just the inclusive and the acceptance of ideas and things. (Student 13, Interview, Case Study 2)

Overall, participants clearly articulated their sense of belonging to the online community established in Case Study 2 and felt connected and respected by other community members, including the lecturer. However, not all participants in Case Study 1 experienced having their relationship needs met within the context of the PBL assignment. In the section that follows, the social factors that contributed to the undermining of students' perceptions of relatedness, which were evident only in Case Study 1, are explored.

3.3.3.2 Influences that Undermine a Sense of Relatedness

Generally, participants whose relationship needs were not met during the PBL assignment described communication issues and disagreements with their peers. Limited interaction with the wider class exacerbated this situation as the nature of the assignment necessitated that learners work within their small groups, almost exclusively, during this period of time.

Factors evident in Case Study 1 only

Lack of communication between group members in addition to **misunderstandings** of what was being discussed were the main issues identified that undermined relationships between peers in Case Study 1. Lack of communication was a problem identified by *Student 12*. The absence of the central nature of relationships with her peers is evident in the next remark where the focus was on messages from the lecturers:

> I mean, we did check in each night but because each of us wasn't communicating within our group so much, we were just looking to see if there was any announcements or anything we needed to know. Which the lecturers were obviously providing on a group by group basis which was why we wouldn't have found anything in the announcements section, so ended up just drifting along from there. (Student 12, Interview)

For *Student 1*, a misunderstanding led to problems among the members of her group:

> And what actually happened is because X hadn't been in the conversation she missed the fact that when we were doing our science experiment we were testing things that are in the home. … Well she missed the fact that we'd actually been doing that because she's going well where's the science in this? … And when you're not in the conversation when you're not present … and you're just skimming over the top, then it messes things up. (Student 1, Interview)

The second theme that undermined learners' needs for connectedness, and in some cases accentuated issues within the small groups, was the **limited amount of interaction among the wider class**. The PBL assignment was perceived primarily as a small group activity that offered little opportunity to interact with students in the wider class. The following comment reflects those of all Case Study 1 participants who talked about being on their own within their small group and having little opportunity to see what other groups had produced:

> … as a class, we didn't have a lot of interaction. … we didn't have it. It was a very isolated course in that sense that you were basically working with individuals you chose as your group. (Student 10, Interview)

The view of the participants was in direct contrast to the one held by the lecturers who included a formative assessment point, early on in the process, as an opportunity for learners to engage with each other by asking critical questions about their projects, as well as a mechanism for creating a learning community:

> … the formative assessment they did in week three, was actually quite successful. They were able to look at other people's work and … question their directions as well. Some key questions in there and it gave that sense of a community of learners rather than just a lecturer-student. (Lecturer 2, Interview)

While the intention was to encourage the development of a learning community within the wider class, the practicalities of the assignment and time constraints required learners to focus their attention on the task at hand. The perceptions of participants indicate that the formative assessment process was not successful in fostering a class-wide supportive learning community. This meant that learners

Table 3.5 Social and contextual factors that facilitate and undermine perceptions of relatedness

Relatedness supportive themes	Relatedness undermining themes
Relationship with lecturers	Communication issues & disagreements
Relationships with other learners	Limited opportunities for interactions in wider class

were reliant on their peers within their PBL group to meet their relatedness needs. If, as was the case for the participants described above, the group they were part of did not function effectively, these needs went unmet because relationships within the wider class context had not been sufficiently developed.

3.3.3.3 Summary of Relatedness Influences

A summary of the various social and contextual factors that were found to either support (both cases) or undermine (Case Study 1 only) the relatedness needs of learners in the online learning contexts investigated here can be found in Table 3.5.

3.4 Summary

Evidence presented in this chapter demonstrates that students' motivation, when undertaking the online activities described, is multifaceted (i.e. students endorsed multiple motivation types), situation-dependent (i.e. student motivation comprised various combinations of amotivation, extrinsic motivations and intrinsic motivation that depended on the nature of the activity in which they were engaged) and complex (i.e. certain environmental factors supported learner motivation in some cases and undermined it in others). Important social and contextual factors were also identified and explored to understand how they supported or undermined *motivation to learn* using the SDT concepts of autonomy (see Table 3.3), competence (see Table 3.4) and relatedness (see Table 3.5) within and across the two case studies.

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Chapter 4
What Do the Case Studies Tell Us About Motivation?

Abstract This chapter discusses and synthesises the key findings across the two cases reported in chapter three both in terms of the motivation of learners and the ways in which certain social and contextual influences supported or hindered the expression of different types of motivation. The concepts of autonomy, competence and relatedness, from self-determination theory, are used as lenses to show how the identified social and contextual influences either supported or undermined learners' psychological needs and, consequently, their motivation. Important commonalities as well as differences, between the two cases, are explored and discussed. Attention is also drawn to how these findings extend and build on the existing body of research on motivation in online education.

Keywords Motivation · Autonomy-supportive · Competence-supportive · Relatedness-supportive · Autonomy-undermining · Competence-undermining · Relatedness-undermining

4.1 Introduction

Chapter three reported on the two cases which explored the motivation of learners situated within online environments and the influence of social and contextual factors on their *motivation to learn*. The use of a person-in-context approach, where an individual's motivation dynamically influences and is influenced by the context in which they are learning, represents an important step forward as it recognises the limitations of previous studies and seeks to go beyond them. These limitations are the tendency to conceptualise motivation exclusively in terms of: relatively stable characteristics of learners (Yukselturk and Bulut 2007); *or* influences within the learning environment (Zaharias and Poylymenakou 2009) but rarely both.

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4.2 The Nature of Motivation

This section begins by highlighting the nature of motivation from a cross-case perspective. Then, motivation comparisons across the cases are explored in more detail to highlight key differences between the two. Throughout, and across both cases, results suggest that motivation in online learning contexts is *complex*, *multifaceted* and *situation-dependent*.

4.2.1 Motivation Is Affected by Context

Case Study 1 results reported in the previous chapter (see Table 3.1) indicated that higher quality, more self-determined types of motivation (i.e. identified regulation and intrinsic motivation) were only slightly more evident than the traditional type of extrinsic motivation (i.e. external regulation) and amotivation and that there was quite a wide range of experiences within the group. In comparison, autonomous (i.e. higher quality) types of motivation were more prevalent and more consistently experienced in the Case Study 2 participant group (see Table 3.2).

The Case Study 1 findings are different to previous research that online students possess more self-determined types of motivation, in particular intrinsic motivation (Xie et al. 2006). Case Study 2 results, on the other hand, appear similar to other research. What this indicates is that *motivation to learn* is *situation-dependent*, as other researchers have argued (Paris and Turner 1994). That is, various factors within the immediate learning context, specific to each case study, had different effects on the motivation of learners. This was apparent in Case Study 1 (see Chap. 3), where the same factor (e.g., perceptions of relevance, choice and lecturer guidance and feedback) supported the motivation of some participants while undermining the motivation others. In comparison, Case Study 2 learners experienced the environment as predominantly supportive of their *motivation to learn*. But even here several learners reported high external regulation scores due to perceived external constraints (e.g., time), while others did not because they did not see these same factors as restrictive.

While the calculation of SDI scores was useful, it is a composite measure of motivation and, taken on its own, may give the impression that motivation is a sliding scale from low to high self-determination. Exploring the different types of motivation (i.e. SIMS data) across the two cases provided a more comprehensive picture of the complex and multidimensional nature of motivation which would have otherwise remained concealed.

A number of patterns emerged from comparisons of the SIMS subscale scores across the two cases. While some similarities were evident, several important differences between the two contexts were observed. For example, median amotivation scores between the case studies appeared quite different. While there wasn't a statistically significant difference between the two groups' amotivation scores, there

was a much wider variation in amotivation scores for Case Study 1 compared with a small variation in Case Study 2. This, in conjunction with the low median amotivation score, suggests that Case Study 2 participants more consistently experienced the micro-teaching activity as valuable to them and they believed in their capabilities to successfully complete the task. In contrast, factors such as perceptions of lack of relevance and judgements of low self-efficacy contributed to the higher amotivation scores reported in Case Study 1 (see Sect. 3.3.2).

Similarly, there was no significant difference in external regulation scores with both groups reporting moderately high levels. This suggests that, in both contexts, learners' perceived that some aspects within the environment were not within their control. In other words, the differing nature of the activity, roles played by the lecturers and the support given by peers in the two cases didn't significantly affect the external regulation scores reported by each group. Therefore, it may be that features common to both tertiary online contexts were influential. For example, students in both case studies were aware of the importance of meeting assignment deadlines and gaining passing grades in order make progress toward gaining a degree.

While amotivation and external regulation scores were similar across the cases, the more autonomous types of motivation identified regulation and intrinsic motivation were significantly different. Case Study 1 results for identified regulation were moderate with wide variation. In comparison, Case Study 2 results were consistently high with little variation. This suggests that students situated within the context of Case Study 2 experienced the micro-teaching activity as significantly more important and meaningful compared to Case Study 1 participants experiencing the PBL activity. Reasons for this included the relevance of the task. While all Case Study 2 participants found the micro-teaching activity relevant (both professionally and personally), only half of the Case Study 1 participants saw the relevance of the PBL assignment. In fact, the remainder actively questioned the purpose of completing the PBL activity (see Sect. 3.3.1).

Similar situational differences were also apparent in relation to intrinsic motivation. While results indicate comparable variation in both case studies, Case Study 2 participants reported significantly higher intrinsic motivation than Case Study 1. All Case Study 2 participants highlighted situational interest (generated by certain factors within the learning environment) as influencing their intrinsic motivation. In contrast, approximately half of Case Study 1 participants experienced situational interest in the PBL context. For the rest, other factors within the environment undermined interest and therefore intrinsic motivation (see Sect. 3.3.1). This contrasts with the literature which describes PBL as highly intrinsically motivating to students because learners are given choice to pursue what is interesting and relevant to them (Loyens et al. 2011). As described in the findings for Case Study 1, provision of choice does not always translate to perceptions of choice.

4.2.2 *Different Types of Motivation Co-Exist in a Complex Mix*

Collectively, results show that no one motivation sub-type was exclusively reported by participants. Instead, the participants reported varying degrees of different types of motivation. In other words, apart from amotivation, where several participants from both case studies reported the lowest possible score, no participant in either case study scored highly on only one motivation subscale. Importantly, in both tertiary online learning contexts investigated, perceptions of external regulation were present alongside more self-determined forms of motivation (identified regulation and intrinsic motivation). Notwithstanding this, Case Study 2 participants reported significantly higher identified regulation and intrinsic motivation than those in Case Study 1. In other words, the intrinsic motivation of Case Study 2 participants was not lowered by the external constraints and demands (external regulation) salient in the environment. This was not the case for Case Study 1 participants.

From this we can conclude that, across the cases, both extrinsic (i.e. external regulation and identified regulation) and intrinsic types of motivation can and do co-exist. This is somewhat different to other research that argues that students studying in online contexts are primarily intrinsically motivated (Rovai et al. 2007; Wighting et al. 2008). Rather than choosing online study for intrinsic motives, participants in this study indicated that it was often external constraints, such as family commitments, that influenced their initial decision to study online, as has been noted previously (Moore and Kearsley 2011). While taking a pragmatic approach doesn't preclude intrinsic reasons, it adds support to the findings reported here, that the motivation of online learners is complex and context dependent.

There are a number of possible reasons why these results differ from previous research findings. First, research investigations to-date have tended to measure student motivation at a more global level, asking learners about their online study experiences in general, rather than at a situational (i.e. activity/task) level (Rovai et al. 2007). Previous studies have also reported intrinsic and extrinsic motivation as opposing concepts (Wighting et al. 2008), or measured the intrinsic motivation of students in online learning environments without reference to other types of motivation (Martens et al. 2004) in an attempt to identify factors that support it (Shroff and Vogel 2009; Xie et al. 2006). In contrast, by retaining situational motivational subscale data here and not limiting the analysis to a single composite measure of motivation (i.e. SDI scores), the multidimensional nature of learners' motivation has emerged.

What is also apparent across both cases is that identified regulation—a type of extrinsic motivation—was an important type of self-determined motivation (i.e. as important as intrinsic motivation) reported by participants within the respective online learning contexts. What this means is students were often motivated to a greater degree by the value, meaning and relevance of the activity they were undertaking (identified regulation) than the inherent interest or enjoyment they derived from it (intrinsic motivation). This was particularly true in Case Study 1.

In support of this finding, personal relevance and task value have been linked to motivation and online success in previous studies (Artino 2008; Park and Choi 2009).

In conjunction with this, learners across the cases generally also reported experiencing feelings of external regulation. Both identified regulation and external regulation are types of extrinsic motivation. External regulation was highest in Case Study 1 because a range of social and contextual influences contributed to the undermining of learners' psychological needs. However, external regulation scores were also significant in Case Study 2 where conditions were generally supportive of students' needs for autonomy, competence and relatedness. This finding suggests that while students may engage at the situational level for reasons of interest, meaning and importance, this does not preclude learners from concurrently attending to and being influenced by external contingencies and constraints inherent in tertiary online study (e.g., the importance of grades; juggling competing demands on time).

The above discussion has shown that the nature of motivation in the online contexts explored here was complex, multifaceted and situation-dependent. An explanation for the differences observed within and across the cases can be found in the multiple influences highlighted by participants in their immediate learning environments, which either supported or undermined their *motivation to learn*.

4.3 Supportive Motivational Influences

The degree to which an individual expresses self-determined forms of motivation, including intrinsic motivation, depends on the degree to which their innate needs of autonomy, competence and relatedness are met within the learning environment (Deci and Ryan 2000). When autonomous, students feel volitional and experience a sense of agency and choice over their actions (Reeve et al. 2008). Support for competence is also necessary to facilitate motivation (Deci et al. 1991) and external events convey information about a person's competence or skill level. Autonomous motivation is also more likely to flourish in situations where learners experience a secure sense of belonging (Deci et al. 2000).

With this in mind, a range of important social and contextual features were found within each case study that served to support learners' autonomy, competence and relatedness needs, thereby supporting the expression of more self-determined types of motivation (i.e. identified regulation and intrinsic motivation). Influences associated with the *teacher*, the *learning activity* and *other learners* are categorised based on the psychological needs they support. Factors common to both case studies and others unique to one case are also highlighted. It is important to note that no one factor enabled all the psychological needs of learners. Rather, learners' *perceptions* of the extent to which their needs were met were formed from multiple influences that combined in complex ways that were dependent on the learning environment in which they were situated.

4.3.1 The Role of Teachers

Key themes, which relate to the influence of the teacher(s) within each context, show that what these teachers did and the approach they took, in part, influenced the quality of motivation experienced by learners. More specifically, teachers who provide ongoing guidance and feedback, are responsive, are supportive of students' autonomy, and develop considerate and sociable relationships with students, foster the inner motivational resources of learners.

4.3.1.1 Teacher Influences that Support the Competence Needs of Learners

The most salient group of themes that emerged from both case studies, associated with supportive motivational influences of the teacher(s) in each context, related to the perceived competence support available to learners. Within this, the provision of *ongoing guidance and supportive feedback* were viewed as the most important actions that lecturers performed that supported participants' needs to feel capable and successful. This was followed by the *responsiveness* of the lecturers.

Learner support was provided on a group by group basis throughout the PBL assignment in the Case Study 1 context, whereas the majority of communication from the lecturer occurred at the class level in Case Study 2. In both contexts, participants who perceived that the information they received from the lecturers guided, clarified and facilitated the learning process, were able to make ongoing accurate judgements about their progress and the likelihood of success. The sense of accomplishment and progress this engendered, in turn, promoted feelings of competence and capability.

This is consistent with findings from previous research that also found that perceptions of competence were linked to the level of supportive feedback received (Deci et al. 2005). The importance of positive, informational guidance and feedback from the teacher is also well-documented in the motivation (Reeve 2006), online teaching (Rienties et al. 2012), and higher education literature (Zepke et al. 2009).

While consistently offering quality guidance and feedback was important in supporting learners' competence needs, the timeliness of that support emerged as the second most prominent theme across the cases. Being available, approachable and answering queries promptly were also viewed by the participants as ways in which the lecturers provided support for their developing understanding.

The importance of instructors being responsive in terms of availability, approachability, timeliness and online presence is supported by existing online studies (Artino 2007; Bekele 2010). Instructor availability, frequency of response and detailed feedback were found to be important influences on student self-regulation strategies and increased learner self-efficacy. Likewise, Xie et al. (2006) found that the frequency of instructor participation was a critical part of student motivation for participation in online discussions.

4.3.1.2 Teacher Influences that Support the Autonomy Needs of Learners

The second most important group of themes associated with teacher supportive motivational influences, related to autonomy support. Across both cases, the lecturers were described by learners as autonomy supportive. This was a consistent finding in Case Study 2 which was also present in Case Study 1 but to a lesser degree. The lecturers in Case Study 1 encouraged and supported students to take responsibility and ownership of their learning process. In a similar vein, the lecturer in Case Study 2 described working with learners as a process of negotiation and shared power. The promotion of *situational interest*, the *provision of choice* and the use of *non-controlling language* were perceived as the most important ways in which lecturers supported learners' needs to feel autonomous.

The primary way in which teachers supported learners' autonomy needs, in both cases, was through the promotion of situational interest—interest generated by certain conditions in the learning environment (Hidi and Ainley 2008). The type of situational interest described by participants across the cases was maintained situational interest. Maintained situational interest tends to be more sustained and has the effect of focusing attention over an extended period of time (Hidi and Renninger 2006).

Interest is always content specific (Krapp 2002). Situational interest was promoted and sustained in Case Study 1 through the use of problem based learning as an instructional strategy which encouraged participants to engage with science and technology content. Participants expressed interest in at least one aspect of the PBL process—a new learning approach for the students. Examples included the collaborative nature of the activity and the potential for various approaches to solving the chosen problem. This interest was further supported by the lecturers who encouraged students to pick a topic that piqued their interest and/or was personally relevant to them. Case Study 2 participants were also encouraged to focus on a topic that was personally meaningful. Additionally, the lecturer created ongoing situational interest by the inclusion of regular online activities and resources that were topical, relevant and meaningful, both personally and professionally. These findings correspond with prior research that has linked situational interest with personal relevance (Hidi and Renninger 2006), enjoyment of small group collaborative work (Blumenfeld et al. 2006) and the utility value of tasks to participants (Hidi 2000).

The promotion of situational interest is an important finding. This is because it demonstrates that while the potential for interest lies within the individual (Hidi et al. 2006), the environment—in this case the teaching approach—also has an important bearing on its development and therefore, by definition, intrinsic motivation. Maintained situational interest may also lead to more enduring individual interest (Hidi and Renninger 2006). There is an obvious overlap here between the influence of the teacher and the learning activity, but as it was the lecturers who determined the design, structure and approach of the learning activity in these cases, it is included here.

In conjunction with situational interest, the provision of choice emerged as a second, prominent theme that learners identified as supportive of their autonomy needs. Across the cases, participants who perceived themselves as having choice identified several areas where they were given opportunities to choose. These included: the topic they focused on, how they went about it, and the presentation of their work. In practical terms, the provision of choice and corresponding perceptions of choice enabled learners to make connections between what they were learning and their personal and future teaching goals. Case Study 1 learners also identified the opportunity to choose their peers as a further key area where they could make their own decisions. However, this tended to occur only for those students who approached other learners early on in the process and therefore had more potential group members from which to choose. In line with this, the study by Van Etten et al. (2008) showed that group work could undermine or promote learner motivation depending on group composition and the degree of choice students had in selecting their group members.

Being given opportunities to choose how and when to act, in ways evident in these cases, promoted perceptions of choice, an internal locus of causality, and greater volition similar to previous research results (Reeve 2002). In other words, the choices offered were not seen by these participants as trivial or superficial as can sometimes be the case with, for example, option choices (Reeve et al. 2003). Here, the provision of choice was autonomy supportive because it provided opportunities to pursue topics and activities in ways that were interesting, relevant and meaningful. Understandably then, these learners reported higher levels of self-determined types of motivation, namely identified regulation and intrinsic motivation. Findings concur with those previously reported in the literature on *motivation to learn* in both face-to-face (Katz and Assor 2007) and online (Shroff and Vogel 2009) contexts.

The third and final theme that participants identified as supporting autonomy needs was evident in Case Study 2 and related to the way in which expectations and feedback were communicated to learners. While less salient than the previous two themes, the provision of clear expectations and feedback using informational, non-controlling written language was identified by students as a feature of the lecturer's communication style that they considered autonomy supportive. This informational style revolved around information-rich messages that identified what was required, written in a way that conveyed flexibility and personal responsibility to the learner rather than seeking compliance through control or coercion. The use of explicit, detailed information that clarifies what is required without seeking to control behaviour has been identified previously as an important characteristic of autonomy supportive teachers (Reeve 2009).

The decision to use this type of approach was a conscious one by the lecturer who was philosophically committed to the sharing of power with learners. As such, she was aware of the potential undermining consequences of using controlling language, a finding noted previously in online research (Anderson 2006a). By responding in this way, the lecturer was able to encourage and support students to find ways of coordinating their own inner resources, a further feature of autonomy supportive teachers (Reeve et al. 2008). Although there was some suggestion of the

use of an informational style of communication in Case Study 1, it did not emerge as a strong theme. Among other reasons, this may be due to the collaborative nature of the PBL assignment in Case Study 1 which saw the focus of communication centred on learner to learner interactions. The PBL approach also saw the gradual reduction of lecturer input, which again tended to focus the attention of participants on the interactions among group members.

4.3.1.3 Teacher Influences that Supported the Relatedness Needs of Learners

Following on from the ways in which the teacher(s) supported the competence and autonomy needs of participants, one theme emerged as important in terms of providing support for their relatedness needs. Though not as salient, the relationships between lecturers and learners were significant in the promotion of self-determined types of motivation. The fact that relatedness support was perceived as less important than competence and autonomy support by learners is consistent with self-determination theory that views relatedness as a more distal construct (Deci and Ryan 2000). The lecturer—student relationship contained three sub-themes, namely the perception that the lecturers were *sociable and considerate*, the *use of self-disclosure* and the *modelling of inclusiveness and respect*.

Participants in both cases identified the sociable, considerate approach of the lecturers as an important influence in meeting their relatedness needs and thereby encouraged greater levels of self-determined types of motivation. This was particularly evident in Case Study 2 where the supportive, considerate approach of the lecturer was a key feature of participants' experiences. The sociable nature of the lecturers was also evident in Case Study 1 but not to the same extent.

The considerate approach taken by the lecturer(s), being supportive of more self-determined types of motivation, mirrors other motivation research findings. Teacher involvement, in terms of the amount of time invested, care taken and attention given, has been shown to be a powerful motivator for learners (Brophy 2010; Reeve 2006) because it meets their relatedness needs. Online studies of motivation have also found that involvement of the instructor was critical in supporting students' intrinsic motivation (Xie et al. 2006) and that instructors interpersonal skills "strongly influence motivation to e-learn" (Rentroia-Bonito et al. 2006, p. 29). More broadly, the value of social bonds in the online learning process (Rovai and Lucking 2003), the social role of the online tutor (Jones and Issroff 2007), and the need for skilful online facilitation by the instructor in order to nurture social presence and the development of an online community (Rovai 2007) are well-recognised in the online literature.

In addition to being considerate and sociable, the sharing of personal information through self-disclosure (by the lecturer) was highlighted by Case Study 2 participants as a further way in which their need to experience personal connections (i.e. relatedness) was supported. The use of self-disclosure has been identified as a way of encouraging the development of relationships in online environments

(Cutler 1995) and is one of the affective indicators of social presence in online settings (Rourke et al. 1999).

Experiences of feeling included and respected by the lecturer was the final sub-theme identified by participants in Case Study 2 that further supported the development of relationships and consequently the expression of more self-determined types of motivation. The adoption of a respectful and inclusive approach by the lecturer, where multiple perspectives were appreciated, encouraged the development of an inclusive and respectful attitude among learners within the learning community. The importance of inclusion in the development of online communities and feelings of connectedness and the social presence this can engender has been noted previously (Rovai 2007).

Additional support for this finding can be found in the motivational framework for culturally responsive teaching (Ginsberg et al. 2000) that considers inclusion, which encompasses respect and connectedness, as one of the four basic conditions necessary for encouraging and supporting motivation across diverse groups of learners (Ginsberg 2005). Furthermore, acceptance of the individual and respectful communication are two important ways in which students feel secure and supported in their relationships, a necessary precondition for motivational strategies to be effective (Brophy 2010).

While the themes of self-disclosure and the modelling of inclusive and respectful practices by the teacher were evident in participant responses in Case Study 2, they were not apparent in Case Study 1. The nature of the learning activity in Case Study 1 is likely to play a role in this difference. That is, the small group collaborative nature of the PBL assignment had a tendency to emphasise relationships with peers as most important in terms of affective support. This observation has been noted elsewhere (Anderson and Simpson 2004). In contrast, the individual nature of the micro-teaching assignment called attention to support from both lecturer and peers equally.

4.3.2 Learning Activities

Collectively, key themes relating to the learning activity within each context that fostered learners' inner motivational resources did so primarily through support for learners autonomy and competence needs. The most prominent group of themes related to autonomy support embedded in learning tasks. This was closely followed by the competence support inherent within each activity. Meeting the relatedness needs of learners within the learning context was also important, but participants did not associate this with the learning activity itself. Instead, learners connected relatedness support with the *people* within the learning environment, namely the lecturer(s) and fellow students (see Sects. 4.3.1 and 4.3.3 respectively).

Many of the characteristics of the learning activity that follow also lie within the influence of the teacher(s) in the investigations described here. They could, therefore, be considered as motivational influences associated not only with the tasks but

the people who design and teach them. However, it is sometimes the case that the instructional design and the teaching of online courses are undertaken by separate individuals. Moreover, given these factors were experienced by participants as influences while actually doing the task and therefore associated with the activity, they are addressed here. However, this delineation is not clear cut.

4.3.2.1 Learning Activity Influences that Supported the Competence Needs of Learners

Contextual features of the task that served to meet the competence needs of learners featured strongly in both case studies. Collectively, these influences were only slightly less salient than the autonomy supportive characteristics of the learning activity in fostering self-determined types of motivation. For consistency, environmental factors associated with the learning activity that facilitated the development of competence among learners are addressed first. Across the two cases, features of the learning activity including *clear guidelines and expectations*, the *usefulness and relevance of the resources* provided and *optimal challenge* were consistently identified as important in meeting the competence needs of learners.

Learners who perceived the structure and guidelines of a learning activity to be clear and explicit knew what was expected of them. This, in turn, supported their need for competence because it assisted them in making accurate judgements about what was required to achieve success. The amount, clarity and quality of information relating to the goals, guidelines and expectations of the assignment were perceived as sufficient and appropriate for their needs by participants across both cases though not to the same degree. From the perspective of these participants, the quality of information provided a framework that assisted them in working towards the learning objectives of the activity with a measure of confidence without necessarily feeling constrained by the guidelines. It also enabled them to make connections between assignment requirements and course goals, something highlighted previously as a factor in promoting positive patterns of motivation (Van Etten et al. 2008).

The fact that high structure within the learning activity can co-exist and be seen as mutually supportive, rather than conflicting with the autonomy needs of learners, is something that has been noted in the literature (Jang et al. 2010). In fact, structure has been positively correlated with the provision of autonomy support (Reeve 2009). This conceptualisation of structure and autonomy as two independent, mutually supportive contextual variables (Connell and Wellborn 1991) is somewhat different to the notions of learner autonomy and structure in the distance education literature (Moore 1993). In distance education, learner autonomy has frequently been equated with independence or individualism, and structure defined as the degree of rigidity or flexibility within an educational programme. Therefore, autonomous (independent) learners benefit from little structure while less autonomous (dependent) learners often prefer more structure. However, other researchers in the field have argued that the term autonomy has suffered from the lack of clear

definition (Garrison and Baynton 1987). Instead, they use the concept of control that incorporates independence as one dimension along with competence and support (Baynton 1992). In the latter conceptualisation, similar to self-determination theory, in order for learners to be independent and exercise personal control (autonomy) there is a requirement for the necessary supporting structures (i.e. competence support) to be in place (Dron 2007).

In conjunction with the quality of information, the perceived usefulness and relevance of the resources was also identified by participants across both studies as important in supporting their competence needs. Participants who perceived the learning resources as useful in terms of (1) providing guidance that assisted them in navigating their way through the learning process, (2) offering templates that could be used during the assignment, and (3) supplying exemplars that clarified expectations in terms of quality of work, expressed confidence in their capabilities to successfully complete the assignment.

Participants, who endorsed the usefulness and relevance of the resources, typically reported higher levels of self-determined types of motivation than participants who did not feel this was true. This is a similar finding to that of Martens and Kirschner (2004) who discovered that students with high intrinsic motivation also perceived the learning materials as being more useful. It also reflects previous studies that have demonstrated the importance of the availability of sufficient and appropriate resources to scaffold learners through a learning task in both traditional (Reeve et al. 2004) and online (Rentroia-Bonito et al. 2006) settings.

Those participants who perceived the learning activity to be optimally challenging, that is where skill level and challenge were high and reasonably well-matched, experienced a sense of satisfaction and achievement that contributed to expressions of higher self-determined motivation. This was despite the fact that in the Case Study 1 context, participants were experiencing problem-based learning for the first time. Previous social studies and micro-teaching knowledge and experience meant that skill and challenge levels were well matched in the Case Study 2 context. This finding is consistent with prior research (Csikszentmihalyi 1985; Shroff et al. 2008) that emphasises the importance of moderate challenge in facilitating quality (i.e. more self-determined) motivation.

Closely related to the optimal nature of the challenge, one further factor associated with the learning activity was unique to Case Study 2.

The ways in which self-efficacy was fostered during the Case Study 2 micro-teaching assignment was perceived as important by participants in meeting their competence needs. Primarily, the self-efficacy of participants was fostered because the micro-teaching assignment built on the prior knowledge and experience of learners. This included micro-teaching and lesson planning mastery experiences, as well as existing subject knowledge. These were key factors in high self-efficacy judgements made by participants on commencing the assignment. Moreover, opportunities to put knowledge learned into practice in an authentic context and verbal persuasion from the lecturer, in the form of feedback and support mentioned previously, saw learners' sense of competence continue to grow throughout the activity.

Actual experience plays a major role in assessing self-efficacy for a task, with success generally raising self-efficacy and failure lowering it. Having a trusted person tell you that you have the ability to succeed is a further important source of information (Bandura 1997). Both of these conditions were present in Case Study 2. It is not unexpected then, that all participants expressed high academic self-efficacy with regard to the micro-teaching task. High self-efficacy for a given task has been linked to willingness to engage and persist on tasks (see Schunk et al. 2014 for a review). This was the case here, with all research participants successfully completing the micro-teaching assignment.

Given the collaborative nature of the PBL assignment in Case Study 1, collective (Bandura 2000) rather than personal efficacy emerged as an important theme in terms of meeting learners' competence needs. Group efficacy is considered a function of the relationship between an individual participant and their peers in this discussion, therefore collective efficacy is discussed in the other learners section that follows (Sect. 4.3.3).

4.3.2.2 Learning Activity Influences that Supported the Autonomy Needs of Learners

Contextual influences of the learning activity that served to meet the autonomy needs of participants also featured strongly. Collectively, they demonstrated that learning activities that were *relevant and meaningful* to learners, enabled students to *actively learn*, and provided opportunities that allowed learners to pursue topics that were of *personal interest* to them, represented important ways in which learners' autonomy needs were supported.

Across the two cases, the importance of the learning activity in terms of its relevance and meaning emerged as a central theme that fostered the expression of autonomous motivation among learners. Within this, two clear sub-themes were identified in terms of what participants found relevant and meaningful about their respective assignments. First, participants who saw a clear link between their own experience during the activity and its relevance to their future teaching practice experienced higher levels of self-determined motivation. For these learners, the usefulness or utility value of the activity they were undertaking was clear and something they identified with. The relevance of the activity in terms of developing competence for a future goal—in this case becoming a teacher—has been found to be a significant source of motivation in previous online research (Rentroia-Bonito et al. 2006).

The second sub-theme was associated with the relevance of the activity in terms of the personal relevance and meaning the activity engendered for participants. Being able to make connections from the course content to their everyday lives, in terms of existing interests and prior experiences, enhanced the meaningfulness of the task and encouraged personal involvement for the majority of participants. The provision of learning activities that are relevant to personal goals, values and interests have previously been shown to be autonomy supportive (Blumenfeld et al. 2006).

The importance of the learning activities being relevant to learners was further underscored by the identified regulation scores reported in both studies. Across the cases, participants reported moderate to high identified regulation scores. Case Study 1 participants reported higher identified regulation scores rather than intrinsic motivation as the most salient self-determined type of motivation. Case Study 2 participants reported similar levels of identified regulation and intrinsic motivation. This indicates that the importance and value of the task was at least as important to learners (and more so in Case Study 1) as the enjoyment or interest experienced (i.e. intrinsic motivation) while engaging in the activity. This finding illustrates that, overall, the participants involved in the investigation described here found their respective tasks meaningful and relevant. Support for personal relevance and task value being important sources of *motivation to learn* in online contexts can be found in a number of previous studies (Artino 2008; Yukselturk and Bulut 2007). Beyond affirming existing research, this finding has further significance because it demonstrates that the relevance and meaning of an activity was as important an influence on student motivation as the interest or enjoyment experienced during the activity.

While relevance was identified as a significant reason why participants willingly engaged in their respective learning activities, it was not the only one. Being given opportunities to actively learn was the second theme that emerged across both cases as supportive of autonomy. Students preferred being active and being able to put into practice what they were learning in an authentic way. Participants across both cases highlighted having opportunities for action as a key feature that helped them to understand the importance, relevance and value of their respective tasks, particularly to their future teaching practice. Being able to undertake a PBL activity in Case Study 1 and a micro-teaching task in Case Study 2, rather than undertaking the more traditional-type essay assignment, was also seen as enjoyable by learners. Tasks that involve a high degree of participation and activity have been shown to promote motivation (Van Etten et al. 2008), learner engagement (Zepke et al. 2009), and encourage deeper understanding (see Brophy 2010).

A final theme that emerged as promoting self-determined types of motivation among learners was the provision of opportunities to pursue personal interests. When the choices available were perceived as appealing, this allowed learners to align learning activities with their individual interests. Participants identified the opportunity to choose the topic of the assignment, in particular, as key to this alignment process. This association between interest and choice further supports the finding that the provision of this choice by teachers, identified earlier (see Sect. 4.3.1), as an autonomy supportive factor. Case Study 1 participants expressed interest in the topic they had chosen that, in part, encouraged more self-determined motivation. For some, being able to pursue science and technology subject knowledge in a way that encouraged autonomy enhanced an already well-developed personal interest in one or both content areas.

Consistent with this finding, Case Study 2 participants also highlighted being able to explore topics of interest to them as an important autonomy supportive learning approach. The main difference between the two cases was the majority of

students from Case Study 2 expressed a strong, well-developed individual interest in social studies content which was further enhanced by the autonomy supportive context of the micro-teaching task. Opportunities to link learning activities to areas of personal interest have been shown previously to promote quality (i.e. autonomous) motivation (Hidi and Renninger 2006; Renninger et al. 2011).

While relevance, active learning and interest were common autonomy supportive characteristics of the learning activity across the cases, one additional factor emerged as supportive of learner autonomy that was unique to Case Study 2.

Within the context of Case Study 2, the *course content and nature of the task* itself were seen as contributing to learners' experiences of autonomy (encompassed within perceptions of the lecturer as autonomy supportive—see Sect. 3.3.1.1). First, the course content—social studies—emerged as contributing to the satisfaction of autonomy needs. Social studies content was viewed as conceptually broad and able to accommodate multiple perspectives. Subject knowledge was also seen as flexible, where there was no right way, but instead many ways of interpreting the content. This, in conjunction with the autonomy-supportive approach of the lecturer, translated to feelings of openness and freedom. Differences in the nature of subject matter across disciplines and their effect on student motivation have been noted previously (Van Etten et al. 2008).

Second, the micro-teaching activity itself was viewed as autonomy supportive by several participants. This was due to the lack of direct evaluation during the delivery of their micro-teaching lessons, which led to perceptions of having greater control of the activity. For the most part, learners also felt they were able to make their own decisions about what and how they taught during the micro-teaching task. This was contrasted with previous teaching experiences, where there was often a requirement to fit in with the needs of the classroom teacher. By being able to make decisions and try different approaches, student self-determination was fostered as has been noted previously (Reeve et al. 2004).

4.3.3 Other Learners

Having addressed the influences of the teacher(s) and learning activities that supported the psychological needs of learners, attention is now turned to the third and final area of influence—other learners. Given the different contexts of the two cases, peers within a learner's small collaborative group were most important in Case Study 1. As such, peer support for a participant's competence needs emerged as most important in this context. This was not unexpected given that learners' ability to succeed was dependent on the capabilities of their peers. This was made more salient by the limited amount of class-wide interaction and the gradual reduction of lecturer input—a feature of this type of PBL approach. This was closely followed by the ways in which peers provided for the relatedness needs of their fellow group members. Finally, learners' who were supported in making contributions to group tasks had their autonomy needs met within the small group context.

In contrast, the individualised nature of the micro-teaching assignment in Case Study 2 meant that peers within the wider class were most relevant. In this context, the ways in which students were able to meet their fellow learners' relatedness needs were the most salient. Following on from this, the ways in which class members provided support for individuals' competence needs emerged as the next important area. Again, this is not unexpected given that completion of the assignment was not dependent on input from peers. Support by peers for autonomy needs did not feature in the context of this individualised assignment. In other words, the role peers played in meeting the different psychological needs of participants was dependent on the context.

4.3.3.1 Peers Influences that Supported the Competence Needs of Learners

The role played by other learners in meeting the competence needs of individual learners was evident in both case studies. Perceptions of fellow learners being *helpful and supportive*, in terms of learning, was identified as the most important factor in meeting the competence needs of learners and in doing so promoted the expression of more self-determined types of motivation.

Learners whose competence needs were met by their peers within the context of the PBL assignment tended to function more effectively as a group. Case Study 1 participants identified the helpfulness and supportiveness of peers within their small group as most salient in terms of meeting their competence needs. This is not unexpected in the context of the PBL environment where lecturers encouraged learners to take ownership of their 'problem'. This meant as lecturer guidance tapered off, students were predominantly reliant on each other to interpret guidelines and expectations, make decisions, and undertake activities in order to make progress toward assignment completion. Research has shown that fellow students within the small group are most important when it comes to the provision of support for learning (Anderson and Simpson 2004) and motivation (Van Etten et al. 2008). Those participants who perceived their small group peers to be helpful and supportive had their need to feel capable and successful met within the PBL environment.

Support at the level of the whole class did not emerge as a dominant theme in Case Study 1. However, in Case Study 2 it was the most important way in which students met the competence needs of their classmates. Here, the ways in which learners within the whole class provided learning assistance and support to each other, in the form of clarifying expectations, sharing ideas or offering suggestions, contributed to individuals' competence needs being met. Being able to seek and gain assistance from classmates was seen as a source of support and encouragement that, in conjunction with a supportive lecturer, met participants' needs to feel proficient within this context. It also demonstrated that tasks that may be difficult to accomplish alone could be achieved with the help of more competent others

(Vygotsky 1978). This, in turn, contributed to positive (i.e. more self-determined) patterns of motivation.

The value of collaboration has been well documented in the motivation (e.g., Schunk et al. 2014) and online learning (e.g., Anderson 2006b) literature, often in terms of meeting learners' relatedness or social connectedness needs. In the case studies described here, support from peers also assisted in supporting the competence needs of students. This corresponds with previous studies that have identified other students as a source of assistance (Van Etten et al. 2008) and feedback (Wang and Lin 2007a) that contribute to online learners feeling capable and competent. The importance of fellow learners providing learning assistance and thereby supporting the competence needs of their peers can be found in the community of inquiry model (Garrison et al. 2000) and the concept of teaching presence (Anderson et al. 2001; Mayes 2006). Teaching presence is concerned with the role of the teacher in online environments, which encompasses instructional management, development of understanding and direct instruction (Garrison et al. 2000). According to Anderson (2008), teaching presence is not always the sole responsibility of the instructor and is often assumed by students who contribute their own knowledge and skills to build understanding among the learning community.

One further way in which learners' competence needs were supported by their peers emerged within the collaborative context of Case Study 1. Group members' beliefs in their collective capabilities to successfully undertake the actions required to achieve a desired outcome (Bandura 2000) provided further support for participants' competence needs. Perceptions of high collective efficacy supported participants' competence needs even when personal self-efficacy for the PBL task was, at times, called into question. Consistent with Wang and Lin (2007b), high collective efficacy had positive effects on discussion behaviours and group performance in this online collaborative PBL learning context.

4.3.3.2 Peer Influences that Supported the Autonomy Needs of Learners

While factors supporting competence needs were highlighted as important in both studies, the ways in which autonomy needs were supported by fellow learners were less salient. Only one theme emerged from Case Study 1 in connection to this.

Learners in Case Study 1 who played a *significant role in their group's decision-making processes and completion of tasks*, perceived their peers as having contributed to supporting their autonomy needs. In other words, they believed their contributions were not only endorsed by their peers but also influenced the overall action taken by the group. Whether this took the form of collective decision-making processes or the role of leader, several participants perceived their peers as supporting their need to be self-determining. Moreover, participants who viewed their autonomy needs as being met in terms of the ways in which they contributed to group tasks and decisions also reported mutually supportive relationships with their peers. For these participants, autonomy and relationship support from peers were

complementary. This finding is consistent with other SDT research that has shown that individuals feel most related to other people who support their own autonomy (Hodgins et al. 1996).

Support by peers for the autonomy needs of their fellow learners did not feature in Case Study 2. This was due to the independent nature of the micro-teaching assignment. While participants did consult with their peers before making decisions about choice of topic, teaching approach and possible resources, decisions were not dependent on the suggestions made by other students.

4.3.3.3 Peer Influences that Supported the Relatedness Needs of Learners

Following on from peer support for the competence and autonomy needs of learners, the ways in which other learners provided for the relatedness needs of their fellow students was a significant category in both case studies. The importance of relationships with peers across the cases, both within the small group and the wider class contexts were more prominent than autonomy support provided by those same people.

Within the main theme of *supportive relationships between learners*, two sub-themes emerged. The most salient of these was the perception that peers were sociable and considerate, followed by feelings of being respected and valued. Peers who were perceived as sociable and considerate valued the contributions made by each individual and respected what they had to offer. These students established mutually supportive relationships with fellow learners. This occurred almost exclusively at the small group level in Case Study 1, with lack of interaction at the whole class level often cited as the main reason why a wider supportive community was not established. Feeling respected, valued, and cared for by fellow group members was also considerably more salient than the sociable and considerate nature of the lecturers. This finding supports research that has highlighted the importance of learners within a small working group in meeting fellow students' affective needs (Anderson and Simpson 2004).

In contrast, the individualised nature of the micro-teaching assignment in Case Study 2 meant that relationships with peers in the wider class context were most relevant. That said, the ways in which students in the wider class were sociable and considerate, valued individual contributions and demonstrated a respectful attitude, contributed to learners' relatedness needs being met in similar ways to Case Study 1. In addition, participants in Case Study 2 commented on the importance of the inclusive learning community in which their learning was situated. The role played by the lecturer in modelling this type of approach was highlighted by participants as critical to the development of an inclusive, respectful community.

The importance of inclusion and respect have been noted in the research literature in terms of (1) encouraging and supporting motivation across diverse groups of students (Ginsberg and Wlodkowski 2000), and (2) enabling the development of online communities along with the feelings of connectedness and social presence

this can engender (Rourke et al. 1999; Rovai 2007). Rentroia-Bonito et al. (2006) and Xie et al. (2006) also found that positive social experience and feeling within the group contributed to learners' *motivation to learn* and participate in e-learning environments.

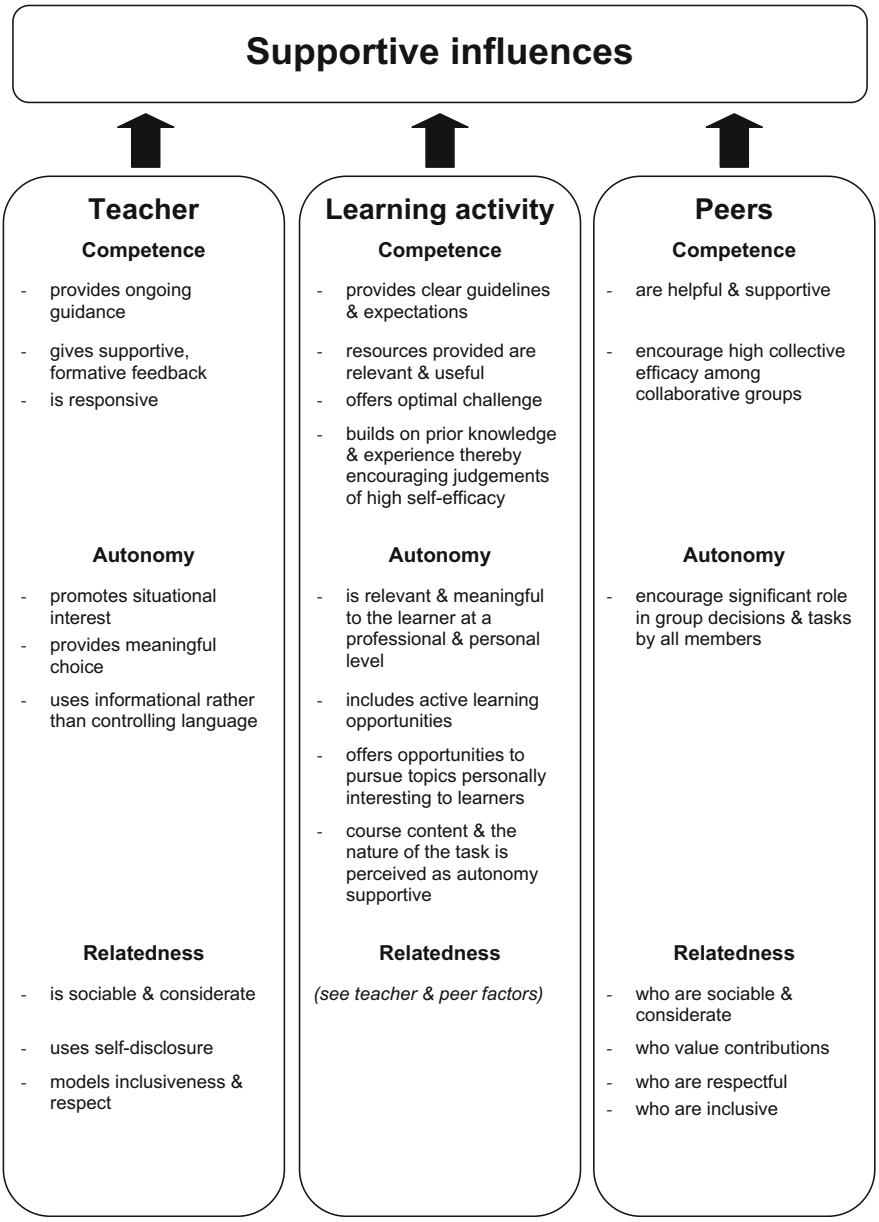

Fig. 4.1 Social and contextual influences that support self-determined types of motivation

In the ways just outlined, the *teachers*, *learning activities* and *other learners* fostered the inner motivational resources of learners and contributed to the more self-determined motivation reported by participants. Figure 4.1 summarises the influences that were supportive of learners' motivation across the two cases.

4.4 Undermining Motivational Influences

While it is clear from the above discussion that learners experienced having their psychological needs met within the two learning environments explored here, it was also the case that some participants' needs were left unmet to varying degrees. This was because a number of social and contextual factors undermined rather than supported them, and the same objective features of the learning environment were perceived in different ways by individual students. A range of important social and contextual features were found that undermined learners' autonomy, competence and relatedness needs. This was particularly apparent within the context of the PBL assignment in Case Study 1. It is important to recognise that learners' perceptions of the extent to which their needs were undermined were formed from multiple influences that combined in complex ways and it these perceptions of events which determined whether they undermined *motivation to learn*. For example, approximately half of the Case Study 1 participants felt they had received insufficient guidance and found the PBL activity lacked relevance, while the remainder felt the guidance received was sufficient and the activity highly relevant.

4.4.1 The Role of Teachers

Factors associated with the teacher that undermined the psychological needs of learners were salient in Case Study 1 only. The thwarting of competence and autonomy needs by the actions of lecturers were evident due to perceptions of *insufficient guidance and feedback*, and perceptions *of course expectations and communications as controlling*. These findings demonstrate that when students perceive their needs to be unsupported, this can have a detrimental effect on their motivation. In other words, while it may have been unintentional, the quality of support provided and the way it and expectations were articulated did, in part, influence the quality of motivation experienced by learners.

4.4.1.1 Teacher Influences that Undermined the Competence Needs of Learners

Half of the participants in Case Study 1 perceived that the ongoing guidance and feedback they received from the lecturers were insufficient for their needs. This was

despite extensive information provided in the study guide and supporting resources. The asynchronous online transcripts showed a noticeable difference in the messages posted by the lecturers to the different collaborative groups which contained scaffolding, guidance and ongoing support. Overall, the less self-determined participants (those with a negative self-determination index) received less scaffolding/guidance type messages from the lecturers than the more self-determined participants. In some cases, this situation was exacerbated by learners' lack of online interaction with their peers in their collaborative group. While differences in motivation have been shown to influence the type of contributions by learners to online discussions (Rienties et al. 2009), too little input from the teacher in online discussions and activities is also known to be problematic from both quality of outcome (Jones and Issroff 2007) and motivation (Moos and Azevedo 2008) perspectives.

In contrast, perceptions of insufficient ongoing guidance and feedback were not evident in Case Study 2. This is due, in part, to participants' prior knowledge and experience of the micro-teaching activity, which meant that they were already familiar with the process. Moreover, given that the micro-teaching assignment in Case Study 2 was undertaken individually, it was extremely difficult for the lecturer to respond to each student separately. Instead, where possible, she shared her responses to questions posed by individual students with the wider class. In this way, the whole class benefited from the regular guidance and feedback provided. Making responses to individual students available to the wider class was a teaching strategy only occasionally used during the PBL activity of Case Study 1.

4.4.1.2 Teacher Influences that Undermined the Autonomy Needs of Learners

Course expectations required students to communicate with each other asynchronously online, assisted by the lecturers. However, a number of students used synchronous alternatives, such as Skype and phone calls, in addition to, and in some cases instead of, asynchronous online communication in order to make progress on the assignment as they provided a good fit with the ongoing group decision-making processes characteristic of PBL. Consequently, the expectation that required them to be visible online discussing their ideas in an asynchronous environment engendered a sense of compulsion that undermined their autonomy needs.

Not having a genuine need to enter into online asynchronous discussions with each other, coupled with feedback from teaching staff that decreased over time (a feature of the PBL approach used), contributed to the high reported external regulation and amotivation scores reported by several participants. Previous research has identified the importance of learners having an authentic reason to communicate online with their peers, both in terms of engagement (Rovai 2007) and motivation

(Xie et al. 2006). It has also been noted that requirements to interact online imposed by lecturers can have a detrimental effect on personal agency (Anderson 2006a).

Added to this, several participants perceived the language used by the lecturers as controlling. Messages containing directives or commands, as well as messages couched as suggestions but perceived as directives, were evident in several of the PBL online discussion transcripts. The effect of this external pressure, applied through the use of language perceived as controlling, undermined their need to feel capable and contributed to the high reported levels of external regulation. In line with this finding, other research has highlighted how controlling responses from teachers can lower self-determined motivation among learners (see Reeve 2009).

This finding also indicates that the expressions of autonomy support from the teachers in Case Study 1 did not consistently translate into autonomy supportive language and behaviour. This finding aligns with research by Reeve and colleagues (Reeve et al. 2008), who established that the use of controlling language such as directives or commands can lead to students feeling pressured and beliefs that their behaviour is initiated and regulated by outside forces.

Reasons why expectations and language were not perceived as controlling in Case Study 2, even though the lecturer also used directives, were primarily associated with that lecturer's philosophy of teaching and consequent behavioural style. Lecturer 3 acknowledged that, as a teacher, she was in an inherently powerful situation. However, she strove to build considerate, learning relationships based on power sharing, trust and inclusion. As a result, learners viewed her comments on their involvement (or lack of it) as supportive rather than controlling. Being mindful of not overly relying on the control and power inherent in the teacher's role is a characteristic of autonomy supportive teachers (Reeve 2009).

4.4.2 Learning Activities

Having explored the influences associated with the teachers, attention is now turned to factors associated with the learning activity that thwarted the competence, autonomy, and relatedness needs of learners. In terms of the social and contextual factors that contributed to undermining the psychological needs of learners, the majority related to the learning activity. These influences predominantly related to Case Study 1, although several were also common to Case Study 2. The ways in which the identified factors undermined the autonomy and competence needs of learners were most important. Lack of support for relatedness needs was evident in Case Study 1 only, as an unintended consequence of the instructional design of the learning activity.

Several of the factors discussed below also lie within the influence of the teacher. As such they could be considered as motivational influences associated not only

with the task but with the people who design and teach the activity. However, as they were experienced by participants as influences within the task, they tended to be associated with the activity.

4.4.2.1 Learning Activity Influences that Undermined the Competence Needs of Learners

Several important influences were identified in Case Study 1 in particular, which contributed to the undermining of learners' competence needs. Of these, perceptions of u*nclear and complicated assignment guidelines* emerged as the most prominent influence that undermined participants' judgements of their capabilities.

Several Case Study 1 participants perceived that the assignment guidelines were unclear or overly complicated. Reasons for this centred on the complexity and quantity of the information provided in the accompanying course resources. Exhaustive information was provided up-front to support learners and encourage them to take ownership of their learning. An unintentional consequence, however, was that several participants felt overwhelmed by the amount and detail of information. This led learners to make statements about the structure of the assignment being unsupportive in meeting their competence needs as they felt unable to make accurate judgements about their ability to succeed.

Connell and Wellborn (1991) note that in order to meet a learner's need for competence, positive structure in terms of the right amount, quality and clarity of information is necessary. If learners do not perceive the structure to be supportive, this can lead to confusion and anxiety (Reeve 2009), as was the case for these participants. Course outlines that make course requirements appear overwhelming have also been shown to undermine motivation (Van Etten et al. 2008). Brophy (2010) makes the observation that struggling students often need more ongoing, explicit structuring and scaffolding during the learning process. In line with this, students commented that the scaffolding they received was insufficient, particularly as lecturer input was gradually reduced as the assignment progressed. This finding is also consistent with some distance education literature that argues that structure is necessary for learners to exercise personal control (Baynton 1992). However, the notion that the greater the autonomy of the learner the less dialogue and structure is needed is central to Moore's (1993, 2007) theory of transactional distance and the self-directed nature of PBL within online learning contexts (Hmelo-Silver et al. 2006). This finding points to a possible tension between one interpretation of self-direction as requiring minimal structure and another that highlights the need for structure because it supports self-direction by fulfilling an underlying need for competence (Reeve 2009).

Unlike Case Study 1, Case Study 2 participants did not find their activity lacked appropriate structure. Reasons for this can be found in the different nature of the learning task, the familiarity of students with micro-teaching, existing subject knowledge, and the structure provided by the lecturer through the use of weekly communications and frequent informal messages.

Perceptions of unclear and complicated assignment guidelines, in Case Study 1, were exacerbated by students' lack of prior knowledge and experience with PBL. This resulted in several participants questioning their ability to successfully complete the activity on commencement as well as throughout the task. Primarily, the lack of previous related experience with PBL and unclear connections with prior science and technology knowledge had the effect of lowering the self-efficacy of several participants. Added to this, feedback from the lecturer, early on in the process that was perceived as negative, contributed to the anxiety and worry experienced by these learners. This resulted in judgements of *low self-efficacy*. For these participants, feeling less efficacious contributed to expressions of less self-determined types of motivation. In line with this, Kirschner et al. (2006) have argued that learner-centred approaches such as PBL are most effective when students have the necessary prerequisite knowledge and some prior experience. Juwah (2006) also argues that in order for learners to participate successfully online, they must have the necessary prerequisite knowledge.

Judgements of low self-efficacy related to lack of prior experience and knowledge were not evident in Case Study 2. This was because students were familiar with the micro-teaching activity that encompassed planning, teaching and assessment components. However, issues with self-efficacy associated with online and distance learning did contribute to undermining the competence needs of two participants in this case. Previous studies (Kuo et al. 2013; Moos and Azevedo 2009) have shown self-efficacy to learn online to be significantly related to performance in the context of online instruction. However, these studies have tended to focus on learners' experience and confidence in using the technology. In contrast, Case Study 2 students questioned their ability to regulate their own learning within a distance online context based on limited previous experience. In a similar fashion, prior successful experience in online learning contexts has been shown to be important for learners to feel efficacious about future learning in similar contexts (Shen et al. 2013).

The remaining three environmental factors that contributed to the undermining of learners' needs to feel capable and confident were particular to **Case Study 1**. They included a learning design that *gradually reduced teacher input*, the perception that *resources were not useful*, and perceptions that the *challenge of the PBL assignment was too great*. Of these, an instructional design approach that gradually reduced lecturer input was the most significant factor that caused participants to question their perceived competence as the PBL activity progressed. Together, they highlight how specific factors in the learning activity can undermine the motivation of learners in important ways.

The PBL activity commenced with significant input from the lecturers. This was gradually reduced as learners clarified their approach and direction and took ownership of their 'problem'. In doing so, this had the unintended consequence of undermining the competence needs of several participants. In particular, for students who were already struggling with perceptions of low self-efficacy, the increasing lack of guidance and feedback inherent in the design of the PBL activity proved to be in direct opposition to their need to feel capable.

This is not surprising, given that frequent, informative, performance feedback is necessary for an individual to make cognitive evaluations about his or her perceived competence level (Reeve 1996). Furthermore, previous research (Jang et al. 2010) has shown that self-determined types of motivation are most prevalent in learning environments where teachers provide high structure (e.g., provision of regular, constructive feedback) in an autonomy supportive manner (e.g., using informational rather than controlling language). Regular instructor input has also been shown to be a crucial part in supporting students' *motivation to learn* in online (Shroff et al. 2008; Wang and Wu 2008) and traditional educational contexts (Reeve 2006; Van Etten et al. 2008).

In conjunction with the planned reduction of lecturer input, the perceived lack of usefulness and relevance of the resources further contributed to the undermining of learners' needs to feel capable within the online PBL environment. Participants who perceived the resources as unhelpful did so primarily because they failed to provide sufficient information to develop their understanding of curriculum integration and PBL. Lack of readily available resources beyond those provided (i.e. study guide and CD-ROM), compounded this view. The importance of sufficient and appropriate resources to scaffold learners through the learning tasks have been identified previously (Reeve et al. 2004). Consistent with Martens and Kirschner (2004), participants who questioned the usefulness and relevance of the resources typically reported lower levels of more self-determined types of motivation.

The final theme that did not support learners' competence needs was related to the challenging nature of the activity. Participants who experienced the PBL assignment as challenging beyond their perceived capabilities expressed feelings of worry, and in some cases helplessness, consistent with less self-determined types of motivation. This result corresponds with current understandings of competence development (Brophy 2010) and reflects results reported previously (Van Etten et al. 2008). Feelings of being overwhelmed and the task being out of the learner's control occurred because task difficulty was perceived to exceed ability (in conjunction with lack of supportive feedback).

Negative perceptions about resources and feeling overly challenged were not mentioned by learners in Case Study 2. This was primarily because learners perceived themselves as having the requisite prior knowledge and understanding necessary to undertake the micro-teaching task. In addition, the lecturer in Case Study 2 offered alternatives which students could follow up if they wished.

4.4.2.2 Learning Activity Influences that Undermined the Autonomy Needs of Learners

In addition to environmental influences that did not support participants' competence needs, several important factors were identified in **Case Study 1**, in particular, which contributed to the undermining of learners' needs for autonomy.

Easily the most salient factor that contributed to the undermining of learner autonomy was the perception of a *high workload* associated with the PBL assignment. The pressure of workload was further exacerbated by the *high stakes* nature of the task (60 % of the overall course mark). Together, these influences were experienced as external pressures that contributed to the high external regulation scores reported by the Case Study 1 participant group as a whole. This finding is in agreement with prior research studies (Reeve 2002; Reeve et al. 2004) that have shown that external events such as deadlines and evaluation can have a detrimental effect on perceived autonomy and therefore more self-determined types of motivation.

Possible reasons for the consistency in perceptions of high workload may be found in the practicalities of undertaking a PBL activity in an online environment. That is, the requirement for regular, ongoing communication and decision-making among group members contributed to the workload. Alternatively, lack of necessary prior knowledge and experience associated with PBL may have also contributed to learners' perceptions of high workload.

After issues of workload and salience of marks, a perception of *lack of relevance* was the next most important influence that undermined autonomy. Learners who questioned the relevance of the PBL activity did so at several levels. The dominance of the PBL task in the course caused some participants to question its relevance to the overall course objectives. This, in turn, caused them to question the value of what they had learned, something that Van Etten et al. (2008) discovered can undermine tertiary students' motivation. These learners felt it was a course about problem based learning rather than alternative teaching approaches to integrating science and technology. The lack of explicit connection to (1) classroom practice, and (2) previous science and technology experience and knowledge meant the activity held little value for some participants. Lack of alignment of the task with learners' personal goals, values and interests, both while doing the task and beyond, was the final way in which learners' sense of autonomy was undermined.

As Brophy (2008) notes, the value placed on engaging in a learning activity is an important area of motivation that teachers need to be concerned about. Students who do not value an activity often feel this way because it does not hold any inherent interest for them or they cannot see why it is important (Reeve et al. 2002). Given the strong evidence linking relevance and personal importance with motivation among learners in traditional (Reeve et al. 2008) and online settings (Park and Choi 2009), learners' perceptions of value are an important consideration. This is made even more challenging for the teacher in an online setting where an individual student's appreciation for a particular task may be difficult to determine.

Unlike Case Study 1, Case Study 2 participants did not find their activity lacked relevance. While the relevance of the micro-teaching task was more obvious, the frequent modelling of skills by the lecturer further emphasised the value and importance of all aspects of the activity. Two further contextual factors that also served to undermine the autonomy needs of learners were identified across **both case studies**. These were time constraints and technology constraints.

The combination of high workload and salience of assessment resulted in perceptions of *time constraints* among all participants in Case Study 1. This left many participants feeling that much of the learning process was beyond their control (i.e. externally regulated). One consequence of the perceived high workload, high stakes nature of the activity and the limited time available to complete it, was the limiting of time spent on other study commitments to free up more time for the PBL task. This had consequences for several participants who felt their other studies suffered because of their need to pass the PBL assignment.

Time constraints were also a factor identified by several participants in Case Study 2. While all participants considered the workload associated with the micro-teaching assignment to be manageable and the assessment weighting reasonable, several students described constraints on their time being a significant factor contributing to high external regulation scores. However, unlike Case Study 1, these participants described factors outside the immediate learning context, such as personal and other study commitments, impacting on their time available. The impact of time pressures due to external factors on student motivation (Reeve et al. 2004) and decisions to persist or dropout (Lee et al. 2013) are well documented. Time constraints have also been linked to decreasing intrinsic motivation of online learners (Cheung et al. 2008) and level of involvement in asynchronous discussions (Anderson 2006a).

Perceptions of high workload, time and assessment pressures in Case Study 1 highlighted the *constraining nature of the technology*. In other words, asynchronous communication was perceived by all participants as being not well-suited to the frequent, ongoing, collaborative, decision-making processes characteristic of PBL. The net result of these multiple pressures saw learners turning to synchronous forms of communication to speed up group processes in order to meet externally imposed deadlines. Even though synchronous technologies were helpful, there remained a common perception that there was a mismatch between the technological environment they were required to use and the nature of the PBL activity.

This was an unintended consequence of the design of the learning activity. The lecturers used the asynchronous discussions to 'see' what students were doing, particularly in the early stages of the process, in order to provide necessary guidance and scaffolding. This finding is supported by the research of Kortemeyer (2006) and Anderson and Simpson (2004), who also found that the asynchronous discussion format can disrupt problem-based and problem-solving discussions.

The constraining nature of the online environment was also evident in Case Study 2, but in a different way. Though not as prominent as Case Study 1, several participants who reported higher external regulation scores commented on the limitations of the technology medium. While the nature of the task was not dependent on the use of the asynchronous medium (as in Case Study 1), the narrowness of text-based asynchronous communication and perceived time delays associated with it were seen as constraining.

Other researchers have also highlighted the constraining nature of asynchronous discussions (Jones and Issroff 2007), that all technology imposes its own constraints

(Dron 2007), and the need to match appropriate technology with the learning task (Andresen 2009). This finding also demonstrates that the technological medium can contribute to the undermining of student autonomy, a finding noted by Anderson (2006a). This contrasts with the view that sees online learning as generally supportive of learner autonomy (Lindgren and McDaniel 2012). Therefore, it is important to consider the possible implications of context specific factors, such as the appropriateness of the technology for the required task, as they may undermine student motivation.

The final factor that contributed to less self-determined types of motivation, across the case studies, was the perception of *limited choice.* Several Case Study 1 participants expressed a lack of choice or feeling constrained for choice. Obviously, a number of actual choices were available to learners but as this finding demonstrates and other research suggests (e.g., Katz and Assor 2007), provision of choice does not necessarily translate to perceptions of choice by learners.

If learners do not perceive that meaningful and relevant choices are available to them, simply offering choices will not encourage more self-determined types of motivation. The choices available were not particularly appealing to these learners, resulting in their sense of volition being undermined. Artino (2007) also found that online course requirements that restricted meaningful choices appeared to undermine the perceived autonomy of learners. In addition, having to adopt a PBL approach to curriculum integration and meeting prescribed assignment outcomes were seen as imposed and restrictive in terms of choice. Case Study 2 participants also had prescribed assignment outcomes but these were not perceived as constraining. However, the externally imposed social studies curriculum (which the assignment was focused on) was seen as restrictive but only by one participant. In this case too, the learner's sense of autonomy was undermined. This finding is consistent with other research that highlights that any external event has the possibility to control or inform (Reeve et al. 2003).

4.4.2.3 Learning Activity Influences that Undermine the Relatedness Needs of Learners

Environmental influences connected with the learning activity that contributed to the undermining of competence and autonomy needs of learners have been highlighted above. One final social factor emerged that undermined learners' need to feel connected. Again, this theme was evident in **Case Study 1** only. No social or contextual factors were identified in Case Study 2 that inhibited the relatedness needs of learners.

The single influence identified as not supporting learners' needs for social connectedness was the *limited amount of interaction among the wider class*. The PBL activity was perceived primarily as a collaborative group exercise that offered little opportunity to interact with other learners in the wider class context. This was not the intention of the lecturers, who incorporated a formative assessment point, early on in the process, as an opportunity for learners to engage with each

other. While the intention was to encourage learners to think deeply about their direction and approach, the reality of time and workload pressures resulted in students focusing their attention on the task at hand. Therefore little, if any, ongoing discussion occurred between groups. This meant that learners were reliant on their peers within their small group to meet their relatedness needs. If, as was the case for several participants, they found themselves in difficult relationships with their collaborative group members, their need to belong and feel connected was undermined.

Several researchers have emphasised the importance of providing opportunities for learners to build personal relationships with each other to promote the development of an online community (Rovai 2007; Swan and Shea 2005). Further, social presence has been shown to be performative, that is dependent on visible activity and something that cannot be established without opportunities for interpersonal interaction (Lin et al. 2008). Feelings of belonging and connection via interaction in online environments have also been shown to have a positive motivational effect on learners (Xie et al. 2006). But as Rovai (2007) notes, authentic, purposeful, task-oriented discussions that are clear and well-structured are necessary in order to encourage ongoing interaction among learners. This did not occur in Case Study 1. Participants were unsure of the purpose of the exercise and, in several cases, it was only after the completion of the formative assessment that they realised this.

4.4.3 Other Learners

A third and final area of influence that served to undermine the psychological needs of learners was other learners. Given the differing contexts of the two cases, social influences of peers that undermined the psychological needs of learners were unique to **Case Study 1**.

4.4.3.1 Peer Influences that Undermined the Autonomy Needs of Learners

Participants who found themselves in groups where communication issues and disagreements were prevalent also expressed difficulties with *decision making processes* and *workload inequality*. This resulted in an individualised approach to the PBL assignment. Together, these issues served to directly undermine some learners' autonomy as well as their relatedness needs. The same issues may have also indirectly undermined competence needs of participants, but these did not emerge as significant.

Learners who perceived they had limited or no input into the decision-making processes of their group expressed less autonomous forms of motivation. In others words, a number of participants felt that their contributions had little or no influence

in the overall actions of the group. Alternatively, some participants expressed frustration at not being consulted when key decisions were made. This not only had a detrimental effect on an individual's autonomy needs, it also undermined their relatedness needs.

The undermining of several learners' autonomy needs was further aggravated by perceptions of inequitable workloads among group members. A number of participants in Case Study 1 described how some group members contributed more than others and the difficulties this presented. This was further exacerbated by the relative lack of individual accountability, as 75 % of the assignment (worth 60 marks) was allocated to the group presentation. Therefore, group members not doing their fair share were a source of frustration for some students. Not being able to significantly change the situation, even when assistance was sought from the lecturer, contributed to perceptions of having little or no control over their learning, a finding noted elsewhere (Blumenfeld et al. 2006).

Satisfying the need for autonomy involves perceptions of self-determination rather than necessarily acting independently of others (Hodgins et al. 1996). However, learners tended to take an individualised approach to the PBL activity in an attempt to gain some personal control over the learning process and outcomes. This involved group members breaking the assignment down into smaller tasks and assigning these to individual group members who then took responsibility for completing them. These were then brought together late in the assignment process, often with limited discussion. According to Dillenbourg (1999), this type of approach is characteristic of a cooperative rather than a collaborative approach, which "is a process by which individuals negotiate and share meanings relevant to the problem-solving task at hand" (p. 70).

Collaborative group work has been shown to facilitate learning in a number of important ways (Slavin 2011). However, research has also shown that high quality cognitive engagement is hard to achieve (Blumenfeld et al. 2006) and students often dislike collaborative group work because of its dependence on all participants making adequate contributions to the group effort (Anderson and Simpson 2004). The decrease in motivation students feel when required to work with group members who do not pull their weight, has been highlighted previously (Payne et al. 2006).

4.4.3.2 Peer Influences that Undermined the Relatedness Needs of Learners

In conjunction with the issues described above, communications between group members characterised by disagreements contributed to feelings of isolation and disconnection experienced by some participants. These issues included lack of communication within the group, misunderstandings about what was being discussed, and disagreements about possible courses of action to take. Collectively, these communication problems and disagreements led to expressions of frustration. Together, these problems undermined some participants' connection with their

group and its goals. Those who experienced difficulties with relationships also expressed feelings of their autonomy needs being undermined, a fact that has been noted by others (Martens and Kirschner 2004).

Given the PBL assignment was scheduled early in the course, there was little time for learners to establish online relationships with each other prior to its commencement. Furthermore, few guidelines were given with regard to individual responsibility for the group effort and little information regarding acceptable behaviour was provided to students. In line with this, Brophy (2010) argues that

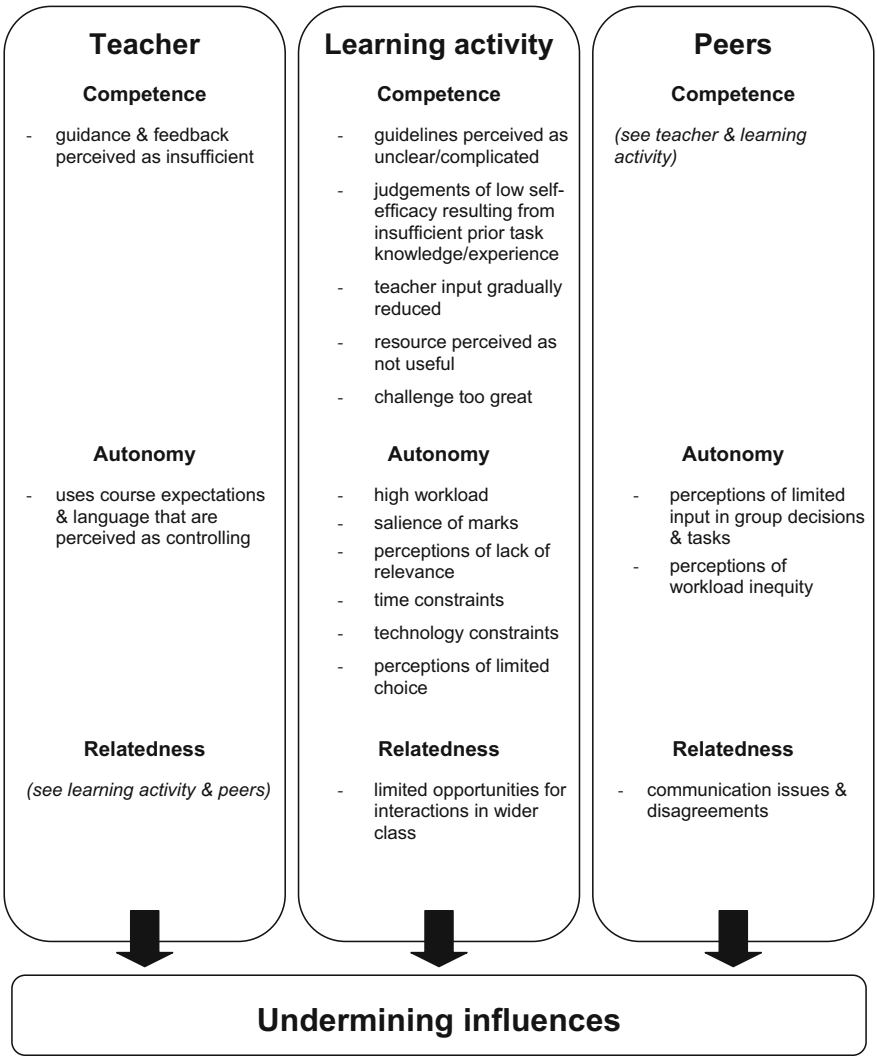

Fig. 4.2 Social and contextual influences that undermine self-determined types of motivation

collaborative learning will only work in some contexts, specifically those in which a community of learners has already been established. If this is not the case then conflict and hurt feelings may feature more prominently than collaboration. Payne et al. (2006) point to the need for clear goals for learners as well as appropriate strategies for managing and behaving in groups. In addition, teachers need to model and insist on mutual respect, inclusion, responsibility and participation from students (Ginsberg and Wlodkowski 2000). Once established, groups require ongoing input from the teacher, as too little input has been shown to be problematic when there is a need for intervention (Jones and Issroff 2007).

Negative perceptions of peers were not mentioned by learners in Case Study 2. This was primarily because the independent nature of the micro-teaching assignment afforded learners a clear sense of autonomy. However, even in the wider class peers were consistently seen as supporting relatedness needs rather than undermining them. Moreover, participants in Case Study 2 commented on the importance of the inclusive learning community in which their learning was situated. The role played by the lecturer in modelling this type of approach was highlighted by participants as critical to the development of an inclusive, respectful community. Figure 4.2 summarises all identified factors that were detrimental to learners' motivation across the two cases.

4.5 Summary

Learners in the online contexts explored here were not primarily intrinsically motivated. Instead, both intrinsic and extrinsic types of motivation were found to co-exist and were sensitive to situational influences (e.g., situational interest, perceptions of relevance and time constraints). Taking into consideration the different types of motivation, participants across the two cases reported moderate to high levels of extrinsic types of motivation (external regulation and identified regulation). Only Case Study 2 participants also consistently reported high levels of intrinsic motivation. However, important distinctions were noted between the two cases in terms of the quality of motivation reported by learners. Specifically, identified regulation and intrinsic motivation were significantly different between the two online courses.

Various social and contextual influences, associated with the teachers, learning activities and peers, were found to dynamically influence participants' *motivation to learn* within the given environments. Of these, a significant number were shown to be supportive of the expression of more self-determined (i.e. high quality) types of motivation by learners (see Fig. 4.1). Other factors, however, were shown to undermine learners' autonomy, competence and relatedness needs, resulting in the expression of less self-determined types of motivation (see Fig. 4.2).

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Chapter 5
Motivation Guidelines for Teachers, Designers and Learners

Abstract Chapter five builds on the previous chapter and discusses how the findings can be used to develop practical guidelines for professionals tasked with building online educational environments as well as those teaching and learning within them taking into consideration the motivational needs of learners. These include useful suggestions that instructors can apply to their online teaching; ideas for professionals responsible for the ongoing development of staff teaching online; suggestions for instructional/learning designers and academic managers responsible for the development, quality and retention rates of online courses and programmes; and learners who want to understand the conditions needed to support *motivation to learn* in online courses.

Keywords Motivation guidelines · Online teachers · Online developers · Online learners

Understanding the complexity of motivation in online contexts, such as those explored here, is important because it has practical implications for teachers, developers, managers and learners as *motivation to learn* has been shown to play an important role in determining whether learners persist in a course of study, their level of engagement, the quality of work produced, and the level of achievement (Schunk et al. 2014).

Motivation to learn in this study was shown to be situation-dependent and influenced by online teaching practices, the design of learning activities and courses, assessment practices and the social aspects of tasks. This is hardly surprising given our current understanding of the situated nature of learning (Lave and Wenger 1991; Wegerif 1998). In fact, the situated nature of motivation was an underlying premise of this investigation (Turner and Patrick 2008). The implication here, though, is that differing circumstances of students within the learning context need to be considered and, where possible, accommodated in order to support the expression of high quality (i.e. more self-determined) motivation among learners. St. George et al. (2014) argue that this requires "qualitatively differentiated learning

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experiences … [that must] begin *with* the students, aligning what they learn (content), how they learn (processes), and the outcomes of their learning (products) with who they are" (p. 133).

The use of self-determination theory as a motivational framework aided the identification of a number of social and contextual influences that combined in complex ways to support (see Fig. 4.1) and, in some cases, undermine (see Fig. 4.2) the motivation of learners. These findings are not intended to be used as a definitive list or a set of prescriptions. Nor will all factors affect all people in all contexts. Rather, they need to be considered as suggestions or indicators situated within specific online learning and teaching contexts. They do, however, provide a starting point for the re-consideration of online learning and teaching practices from the perspective of nurturing the psychological needs of learners and in doing so creating the conditions necessary to encourage the expression of more self-determined motivation. In the sections that follow, the findings are used as a basis for practical advice, guidance and suggestions that support the autonomy, competence and relatedness needs of learners.

5.1 What Teachers Can Do to Support the Motivation of Online Learners

This study has shown the crucial motivational role played by teachers in online learning environments. The ways in which the teachers were able to support the autonomy and competence needs of learners, in particular, emerged as important considerations and that if these needs were unintentionally ignored then motivation was undermined. This occurred both directly, encompassing the ways in which the teachers met these needs throughout the learning activities, and indirectly via the nature and organisation of the learning activities themselves.

5.1.1 Autonomy Support

To support the autonomy needs of learners, online teachers need to take the time to find out the individual circumstances of students and remain alert to anything that might result in course requirements being perceived as constraining in some way. In practice, this means going beyond the requirement for students to briefly outline their background, current situation and course goals that often form the basis of introductory exercises in online courses. By establishing frequent, ongoing communication with learners, where they feel able to discuss issues in an open and honest manner without fear of censorship, online teachers are in a better position to

accurately monitor and respond to situational factors that could potentially undermine learner motivation.

Situational interest—interest generated by certain conditions in the learning environment, is an important way in which teachers can support the autonomy needs of online learners. It can be promoted and sustained through the use of different strategies such as the use of interesting learning approaches (e.g., problem based learning, project based learning, scenario-based learning, inquiry learning) to engage with curriculum content, offering learners options to explore alternative pathways within a chosen strategy and encouraging learners to engage with content from a range of perspectives. Additionally, opportunities for collaboration (both class wide and within smaller groups), discussions centred on controversial topics, students being encouraged to ask questions that stimulate thought, and participation in regular online activities that are topical, relevant and meaningful to learners can promote curiosity and situational interest. Also, where possible, offer choice so learners can explore topics that pique their interest.

Following on from this, offering meaningful choices (i.e. not just option choices), that allow learners to pursue topics that align with their existing interests, can enhance students' sense of autonomy and motivation. This is important because lack of real choice can leave learners feeling they have little control of their learning. In practical terms, choices can include students setting their own learning goals, the topic focused on, the approach taken, the resources accessed, the academic literature read, the technological tools used, and the presentation of work. Opportunities to choose peers, in the case of collaborative activities, are further ways where learners can be supported to make their own decisions. Be aware though, choice of peers tends to occur for those students who make connections with other learners early on in the process and therefore have more potential group members from which to choose.

The tone of the teacher's communication is also important when reminding learners of course requirements and expectations such as online participation and assignment requirements. In these situations, teachers can offer assistance and then remind students of their responsibilities, doing so in a way that is direct and specific without being controlling (i.e. avoiding words such as 'should', 'have to', 'must', 'got to', 'disappointing'). This is important because lack of participation or engagement may be a sign of low self-efficacy. If these learners receive censure rather than support, their motivation is likely to be undermined.

Teachers also need to be aware of the ways in which unsupportive relationships among learners have the potential to undermine autonomy if problems emerge that are not addressed. This is particularly important when learners are engaged in collaborative assignments where success is dependent on input from all group members. Teachers also need to be willing to actively intervene to ensure all members are aware of their responsibilities and held to account if these are not met because learners want assistance when they experience difficulties with other group members.

5.1.2 Competence Support

Online teachers need to be prepared to offer support in a differentiated manner as the majority of learners will require varying degrees of ongoing task or product-related guidance and formative feedback to ensure that judgements of competence and ability to succeed remain high. This guidance needs to be offered in a timely, responsive and informational manner (i.e. how to do it and not just what to do). Specifically, feedback needs to be specific and detailed in order to clarify areas of student work that need addressing and needs to be communicated in a way that highlights these as problems to be solved (with support) rather than as criticism. Keeping students informed, via regular communication, about course developments, such as turnaround times for marking assignments, when to expect feedback and other commitments that may affect the teacher's ability to respond in a timely manner, are further ways in which online teachers can facilitate student motivation via competence support.

Guidance and feedback can be built into the online system itself. For example, weekly announcements, in the form of online postings, podcasts or video logs, that clarify the focus for the week and draw attention to any deadlines that are coming up, aid students in planning and managing their study load. Similarly, online timetables and self-assessment checklists provide some structure to the course and help students maintain progress which, in turn, supports their competence needs. Scheduling regular synchronous sessions that give learners the opportunity to discuss course content and learning activities as well as any issues or problems they are experiencing can also provide the support in a more immediate, timely fashion.

For learners who feel overly challenged or are having difficulties may need more overt structure (even when the design of the learning activity calls for an increasingly learner-directed approach) and their progress monitored as not all students will feel they have the necessary knowledge and skills to succeed. This may take the form of questioning that helps draw out current understanding, more detailed assignment instructions, more frequent feedback, suggestions of additional resources to aid development of understanding, exemplars that show the standard of work required, and more intermediate deadlines to aid progression toward task completion. Some of these additional competence support aids (e.g., additional assignment information, exemplars, and further resources) can be integrated within the online system once they are developed and teachers can direct individual students to them as and when needed.

To make competence support more manageable, teachers can also build in feedback mechanisms that encourage peers to provide feedback to each other. For this to work well, explicit guidelines (e.g., detailing the specific areas students need to focus on and rubrics) need to be developed, particularly for less-experienced learners, so they know what and how to provide feedback to other learners. Online teachers can support this process by providing detailed examples of the kind of feedback expected prior to students undertaking it themselves. Examples of previous students' work and how they meet the learning requirements are particularly

helpful for students to judge the standard of feedback required. Making this process open to all (i.e. everyone can read the feedback received) adds a further feedback loop that allows students to learn from each other. It does, however, require a culture of respect and collaboration to be established first by the teacher. Even with mechanisms in place to encourage students to learn with and from each other, teachers need to be available to provide additional support and guidance if needed as not all learners will be able or willing to engage independently.

5.1.3 Relatedness Support

By not equating autonomy with independence, this study has shown that learner autonomy and social relatedness can not only co-exist but combine in ways that promote *motivation to learn*. Therefore, establishing a supportive network among learners within the wider class is an important motivational consideration for both collaborative and individual online activities. The teacher is a knowledgeable member of any online group (in ways that students are not) and is therefore central to the development of any effective online learning community. Interaction is an essential element of a supportive community and must be built into the course. To do this, teachers need to maintain an active online presence through a variety of means. This includes regular, input into discussions and online activities that incorporates content expertise and insight as well as procedural, and administrative information where needed. Online presence can also be built into the online system through, for example, the use of online videos and presentations introducing new topics and modules, rich media elements explaining difficult concepts or ideas, and recordings of synchronous sessions that are subsequently made available to all students to watch at a later time (Fig. 5.1).

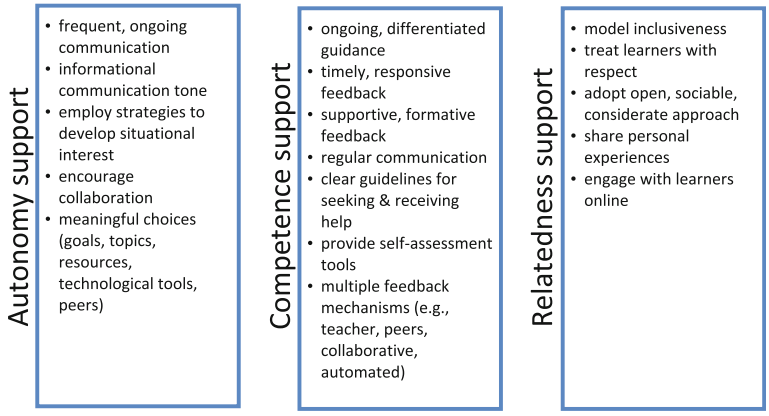

Fig. 5.1 What teachers can do to support the motivation of online learners

Respect, concern for others and a culture of inclusiveness, also help to promote quality online interactions and these need to be modelled by the teacher. Strategies such as adopting an open, sociable approach to communication, using salutations, students' names and humour where appropriate, being willing to share relevant personal experiences and encouraging all learners to share their developing understanding while providing explicit guidelines for learners to follow when responding online, are ways in which teachers can develop and model supportive online relationships that, in turn, facilitate *motivation to learn*.

5.2 What Designers Can Do to Help Support Learner Motivation

Instructional designers, learning designers and teachers (in some cases), responsible for the planning, design, and development of online courses, need to be aware of the important role they play in facilitating the motivation of learners particularly via the provision of support for leaners' autonomy and competence needs. Learners' relatedness needs also need to be considered when designing activities that require learner collaboration and interaction.

5.2.1 Autonomy Support

By ensuring the relevance and value of activities within a course are clearly identified and linked to learning objectives, designers can help learners understand how they can aid in the realisation of personal goals, aspirations and interests, both in the short (e.g., passing a course) and longer term (e.g., pursuing a chosen career). To do this, designers need to develop activities that students currently perceive as relevant and meaningful but also foster an appreciation of the value and usefulness of what they are learning as this may not be immediately apparent. This can be done by including rationales for content and activities, explaining why the learning is important and worth doing. Enabling learners to make connections from the course content to their everyday lives, in terms of existing interests and prior experiences, further enhances meaningfulness and encourages personal involvement which, in turn, supports autonomy and motivation. What's more, designing activities that enable students to apply new learning in an authentic way (e.g., simulations, scenarios, work-based practise, case studies) can promote immediate interest as well as help them to appreciate the larger importance of what they are learning.

Study loads, assessment and time commitments are further important considerations when it comes to supporting the autonomy needs of learners because if they are perceived as overly burdensome they can result in decreased motivation. Providing clear indications of expected workloads and time requirements (as well as

timeframes) for the various activities and assessment components that make up a course (and programme) that align with the general expectations of the level of study they are undertaking (e.g., undergraduate, postgraduate) are ways in which you can support the autonomy of learners. In addition, where possible, try to ensure that the outcome of any single piece of assessed work does not determine learner success or failure for the course of study as a whole as this can result in anxiety and helplessness if learners believe they don't have the capacity to succeed. Following on from this, incorporating differentiated assessment practices within collaborative activities, which acknowledge the contribution made by each learner, are also important as they can help to alleviate the frustrations often experienced when some group members do more than others.

Finally, when deciding on the technological tools to incorporate in online activities and courses, it is important to ensure that those chosen are well matched to the tasks learners are being asked to undertake. This is particularly true for courses and that are hosted within learning management systems (LMSs) where online interactions often occur via asynchronous communication tools such as discussion fora. For activities that require frequent, ongoing, collaborative, decision-making processes among learners, synchronous tools need to be offered as alternatives. Where possible, provide several options that learners can choose from so that they are able to determine what tool best suits their needs for a given activity at any given time.

5.2.2 Competence Support

A key way in which designers can support the motivation of learners is through the inclusion of positive structure in terms of the right amount, quality and clarity of information. This is important because if learners do not perceive course structure to be supportive, this can lead to confusion, frustration and anxiety. By providing guidelines and expectations at the outset of learning, that are as clear, detailed and as unambiguous as possible, designers can support learners' competence needs. To do this, it is important to provide an overall learning 'narrative', that encapsulates the main components of a module or course of learning such as the objectives, content to be covered, activities to be undertaken, resources available, assessed work, expectations of online engagement, choices available and time requirements. This allows learners to build an overall 'picture' of what is required to be successful. This may be harder that it first appears as too much detailed, complicated information can be perceived by some learners as undermining their competence needs. Providing high level information (e.g., about learning goals, overall course structure and assessment information) initially, followed by more detailed information that learners can easily access when ready, can help learners to manage the cognitive load.

The resources provided within a course must be relevant and useful to support the competence needs of learners. Providing resources that: help learners to navigate their way through the learning process; are directly relevant to the activities they are being asked to do; are relevant to their future goals and aspirations (particularly in courses that are professionally focused); scaffold the development of assessed work (e.g., templates, guided assignments); and assist learners in understanding the standard and scope of work required (e.g., exemplars, rubrics) are ways that learner motivation can be supported. The quality, relevance and quantity of resources made available are also important considerations particularly in the connected world we now live in. It is all too easy to include links to multiple sources without consideration of the additional load, both cognitively and time wise, that can unintentionally undermine a learner's need to feel competent. This can be addressed by providing some relevant supplementary resources (in addition to core resources) that learners can access by choice. But it is important to remember not to overdo this.

Learning activities also need to be optimally challenging (i.e. where skill level and challenge are high and reasonably well-matched) by building on the prior knowledge, skills and experience of learners. This requires designers to incorporate ways that students' prior knowledge can be assessed and develop activities accordingly. Incorporating opportunities for self-assessment of prior learning is one way that can assist students in judging their level of competence early on in a course. Requiring students to complete prior knowledge quizzes that provide feedback as well as point them to activities that need to be undertaken if any 'gaps' in knowledge are apparent, are ways in which learners with additional needs can be supported. It also alerts teachers to learners who may need additional guidance either within the course or to make a decision to enrol in a different course, where appropriate. Learners who are competent also need support via activities that challenge them. Different levels of challenge can be built into courses either via increasingly difficult/complex activities that build on each other and via the provision of choice within activities that provide scope for learners to adjust the requirements to their ability. In this way, learners are encouraged to develop their understanding and expertise that encourage ongoing judgements of self-efficacy which, in turn, support their need to feel capable and competent (Fig. 5.2).

5.2.3 Relatedness Support

While relatedness support is predominantly associated with the people within the learning environment (i.e. teachers and others learners), there are things designers can do to encourage relationships to develop. By incorporating mix of collaborative activities, at both small group and class levels, designers can create the context for a range of supportive relationships to develop among learners. Building in

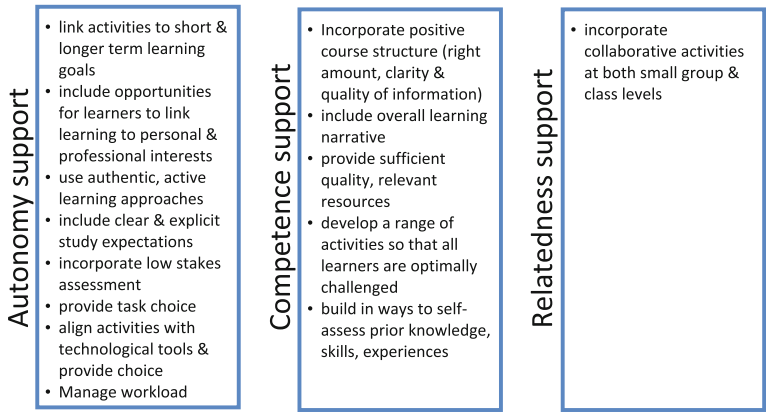

Fig. 5.2 What designers can do to support the motivation of online learners

mechanisms that allow learners to easily make choices about who they want to work with in small group activities also helps the formation of relationships. To deal with potential issues of lack of participation and engagement, online activities can be linked to assessment. From a motivation point of view, this works better if it's done indirectly. For example, asking students to reflect on their contributions to online class discussions by asking them to choose 'excerpts' that provide evidence of their learning in an e-portfolio assignment is one approach that can highlight the immediate and longer term value of engaging in online activities without the need to use grades for compliance purposes (i.e. grading online discussions).

5.3 Knowing What Helps—Motivation Guidelines When Working with Other Learners

Learners also have an important role to play in supporting (and be supported by) their fellow learners. Autonomy needs are important when learning together, particularly in small groups. Competence needs can be supported by offering and receiving help and assistance associated with the learning requirements, while learners' affective needs can be met when sociable and considerate relationships are encouraged.

5.3.1 Autonomy Support

Being aware of your own and others' autonomy needs features more often in situations where collaboration is required. That's because activities undertaken

individually tend not to require consultation with other learners before making decisions about such things as choice of topic, resources, and approach.

When learning in a group it is important that everyone feels they have a role to play in the group's decision-making processes and completion of tasks and that this ultimately influences the overall action taken by the group. Whether this takes the form of collective decision-making or individuals taking responsibility for specific roles and tasks, perceptions of making a worthwhile contribution supports the autonomy needs of all group members. It also tends to encourage the development of mutually supportive relationships within the group.

If, on the other hand, you or other members feel you have limited or no influence in the overall actions of your group, then motivation is likely to fall. This not only has a detrimental effect on autonomy needs, it also can undermine relationships within the group. This can be further aggravated by unequal workloads and lack of individual accountability as group members not doing their 'fair share' can be an intense source of frustration and resentment. To protect against this happening, don't assume that your group will function effectively without guidance. Ask for specific facilitation guidelines, from you teacher, which can then be endorsed by all group members. Ideally, these would include procedures for ensuring everyone has input into the activity and how to deal with problems if they arise including what support is available from the teacher. If these are not available then develop your own and consider making them available to other groups so they, too, can benefit from your foresight.

5.3.2 Competence Support

The value of online collaboration for motivation and learning is well-known (Anderson 2008; Hartnett et al. 2014). Learners can help each other within an online class by offering/seeking learning assistance and support in the form of clarifying understanding and expectations, sharing ideas or giving suggestions. Being able to ask for (give) assistance and feedback from (to) classmates is important because tasks that may be difficult to accomplish alone can often be achieved with the help of more competent others (in conjunction with a supportive teacher). The role of teacher is not the sole responsibility of one person and can be assumed by learners who can contribute their own knowledge and skills to build understanding among the learning community which adds to fellow students feeling capable, competent and motivated.

When working on collaborative activities (particularly those associated with assessment) the choice of group members is important because groups are most effective when each individual member believes in the group's ability to successfully complete the task (collective efficacy). This is true even when individuals have doubts about their own individual ability. Ideally, being able to choose other

learners you want to work with (if you know them) can be a useful way to create a high efficacy group. If the choice is not yours to make then once your group has been established consider doing a 'stocktake' of everyone's skills and experience to identify strengths and areas of potential weakness and seek assistance if needed.

5.3.3 *Relatedness Support*

Creating sociable, considerate relationships among learners where all involved feel respected and valued are important mechanisms that support connection and motivation. Establishing mutually supportive relationships with fellow learners, whether in small groups or the wider class, requires active online presence and interaction. Providing specific guidelines and appropriate strategies for interaction online, are important ways in which teachers can model an inclusive, respectful community, an important pre-condition for the development of supportive relationships. Seeking guidelines and clarification from the teacher about online expectations for online participation and how this is to occur is one way you can support the development of a supportive community. Interacting with other learners, via online activities, help to establish relationships as well as providing support for learning. This is important because lack of learner connections within an online class can lead to lack of communication, misunderstandings and disagreements resulting in decreased motivation and feelings of isolation. When disagreements do occur, address these privately where appropriate and seek advice and assistance from the teacher if needed (Fig. 5.3).

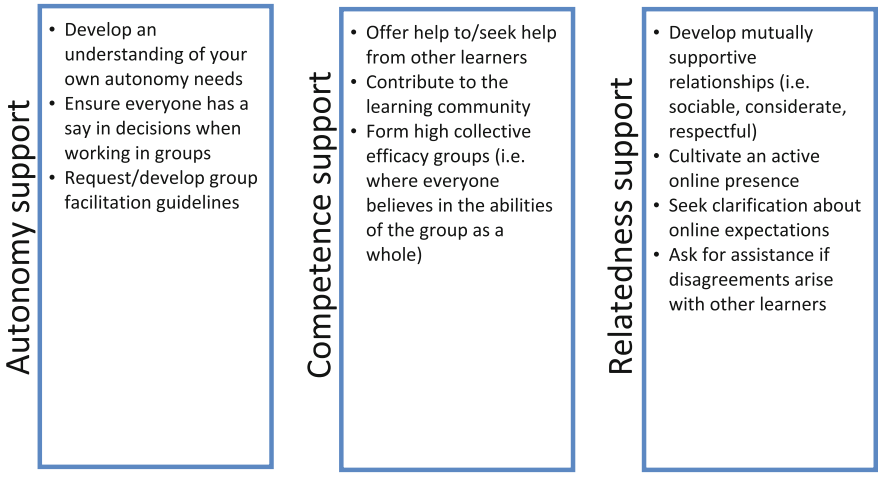

Fig. 5.3 What learners can do to support their own and other learners' motivation

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Chapter 6
Concluding Remarks

Abstract Chapter 6 concludes the book by highlighting the main contributions of the research and discussing future directions. Contributions include the need to shift focus from viewing online learners as predominantly intrinsically motivated to one that acknowledges the role of relevance and personal meaning in motivation; the complex, multidimensional and situated nature of motivation in online learning contexts; and the importance of recognising the role of various social and contextual factors in supporting or undermining *motivation to learn*. These results provide a solid foundation for understanding and investigating *motivation to learn* in new and emerging places and spaces of learning (e.g., MOOCs) as well as the impact of new technologies (e.g., open badges).

Keywords Online motivation · Conclusions · Limitations · Future directions

6.1 Conclusions

Brophy (2008) argues for the need to move away from a primary focus on intrinsic motivation, which is important but has limited applicability, to one that emphasises the meaning, relevance and importance of what is being learnt:

> I have advocated shifting the focus from intrinsic motivation to *motivation to learn*, defined as engaging purposefully in curricular activities by adopting their goals and thus trying to learn the concepts or master the skills that they were designed to develop. Students who are motivated to learn will not necessarily find learning activities pleasurable or exciting, but they will find them meaningful and worthwhile and will take them seriously by trying to get the intended benefits from them (p. 133).

Similarly, the research presented in this book has shown that a shift of focus from viewing online learners as predominantly intrinsically motivated (Xie et al. 2006), to one that acknowledges the part relevance and personal meaning has to play in motivation, is necessary. While intrinsic motivation constituted an important part of students' *motivation to learn* in the contexts described here, identified

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regulation (i.e. recognising the value and importance of the activity) was just as important. The following conclusions highlight the complexity and dynamic interplay of factors underlying and influencing *motivation to learn* in these online learning contexts.

6.1.1 Motivation to Learn Online is Complex, Multidimensional and Situation-Dependent

Using self-determination theory and the continuum of human motivation (Ryan and Deci 2000a), results showed that *motivation to learn* in these online learning contexts was complex, multidimensional and situation-dependent. By doing so, this study has shown that stakeholders may need to rethink conceptualisations of motivation that have frequently been characterised in limited terms. These include simplistic views of motivation as a dichotomy of intrinsic versus extrinsic motivation (Miltiadou and Savenye 2003), as lists of learner characteristics (Wighting et al. 2008), or notions that online learners, in general, are intrinsically motivated—a view that has been perpetuated by online studies that have exclusively focused on intrinsic motivation (Shroff and Vogel, 2009).

The complexity of motivation was demonstrated when specific environmental influences, in the same learning context, were perceived as supportive by some learners and undermining by others (e.g., perceptions of relevance, choice, support from lecturers, adequacy of resources, assignment guidelines and challenge). Motivation was also revealed to be multidimensional because learners endorsed a variety of types of motivation simultaneously within a given context. This multiplicity of motivation comprised a range of extrinsic and intrinsic types of motivation to varying degrees that differed depending on the learning environment in which they were engaged (i.e. motivation was influenced by situational factors).

The important point to note here is that external regulation, the type of extrinsic motivation that is often contrasted with intrinsic motivation (Ryan and Deci 2000b), was not the only type of extrinsic motivation reported by learners. Identified regulation (a more self-determined type of extrinsic motivation), associated with engaging in a task because of its perceived importance, relevance and utility value (Reeve et al. 2008), was found to be just as important as the interest or enjoyment of the task (i.e. intrinsic motivation) for learners. This indicates that identified regulation, a type of motivation that can be encouraged by the actions of online teachers and course designers, is much more important than previously thought and can lead to positive outcomes such as quality engagement. It also confirms what previous research studies have shown, but in an online context, that more self-determined students can experience positive learning outcomes even when extrinsically motivated, depending on the quality of the extrinsic motivation (Reeve et al. 2002).

External regulation (the type of extrinsic motivation associated with external requirements such as deadlines and grades) was also prominent even within an

environment that predominantly supported the expression of more self-determined types of motivation, as in Case Study 2, where participants were simultaneously mindful of external requirements (i.e. assessment and time constraints) that form part of the context of university study. It was not surprising therefore, that learners had to balance their need to engage in the learning activity for the sake of interest, meaning and relevance with the need to complete assessed work in a timely manner. This is because, for students in these programmes, extrinsic motivation in the sense of external regulation was embedded in the learning context and was, therefore, unavoidable. This complex and multidimensional nature of motivation would have remained hidden if a unitary scale, such as the self-determination index (SDI), was the only measure used to assess motivation. This is often the case with studies of motivation in online contexts.

6.1.2 *Social and Contextual Factors Influence the Motivation Experienced by Online Learners*

Using the underlying concepts of autonomy, competence and relatedness of self-determination theory, a wide range of social and contextual factors that enabled or constrained motivation were uncovered. When social and contextual influences predominantly supported the psychological needs of learners, as in Case Study 2, participants reported high levels of identified regulation (value and relevance of the activity), intrinsic motivation (inherent interest and enjoyment of the task), and external regulation (prominence of external rewards and constraints). Conversely in Case Study 1, when significant environmental influences were perceived to undermine the needs of at least half of the learners, external regulation emerged as the most prominent type of motivation. Identified regulation and intrinsic motivation were also important in Case Study 1, but not for all learners resulting in significantly lower levels than reported in Case Study 2. Amotivation was also shown to be an important consequence of combinations of certain social and contextual features within Case Study 1.

Teachers were able to foster more self-determined types of motivation among learners by providing support for students' competence needs. This was achieved primarily through the provision of ongoing, informative guidance and formative feedback. The timeliness and responsiveness of that support was also crucial in fostering perceptions of growing competence among learners, thereby supporting students' *motivation to learn*. Support for learners' autonomy needs through the promotion of situational interest via authentic learning approaches, providing choice and the use of informational rather than controlling language emerged as other strategies teachers used that supported student motivation. Teacher support for learners' relatedness needs was less prominent but still important. Participants identified a sociable and considerate approach by the teacher as key to feelings of belonging. In addition, the use of self-disclosure and teaching approaches that

modelled inclusivity and respect were further ways in which learners' relatedness needs were met.

Several factors associated with the teachers served to undermine motivation among learners. This was due to the competence and autonomy needs of learners not being met, primarily because of perceptions of insufficient guidance and feedback and perceptions of the use of controlling language and expectations. Together, they had a detrimental effect on the quality of motivation experienced by learners in Case Study 1. The complexity of motivation was highlighted by the fact that feedback and guidance provided by lecturers was perceived as supportive by some participants and undermining by others.

Key features of the learning activities were also found to promote more self-determined types of motivation among learners. Of primary importance were the ways in which learning activities supported learners' autonomy needs. Activities that were relevant and meaningful to learners, enabled students to actively use subject knowledge in practice, and provided opportunities to pursue personal interests were key mechanisms that supported motivation. Support for learners' competence needs was also important. This was principally achieved through the provision of clear guidelines and expectations, availability of relevant and useful resources to learners, provision of activities that were optimally challenging, and encouraging judgements of high self-efficacy by designing learning activities that built on the prior knowledge and experience of learners. Relatedness support was associated with other people in the learning context rather than with the activity itself, therefore did not feature here.

Certain features of the learning activities were also found to constrain more self-determined types of motivation among learners. Of these, the undermining of learners' autonomy needs emerged as most important across the two cases. Factors evident across both cases included: time constraints, technology constraints, and perceptions of limited or no choice. High workload, high stakes assessment, and perceptions of lack of relevance emerged as additional influences that undermined learners' autonomy needs in Case Study 1. Lack of support for the competence needs of learners was also important (particularly in Case Study 1). The most frequent theme highlighted by participants was perceptions of unclear and complicated assignment guidelines. This was exacerbated by a lack of prior knowledge and experience with PBL design, resulting in judgements of low self-efficacy. In addition, an instructional design that gradually reduced lecturer input, resources that were not seen as useful, and perceptions of being overly challenged further undermined learners' competence needs. Lack of support for relatedness needs due to limited interactions among the wider class (an unintended consequence of the learning activity design) emerged in Case Study 1 only.

The third and final area of influence was other learners. Peers within a learner's small collaborative group were most important in Case Study 1, whereas fellow students within the wider class context were most relevant in Case Study 2 due to the individual nature of the activity. The helpfulness and supportiveness of peers, either within their small group or at the class level, was most important in terms of meeting learners' competence needs. In addition, the formation of collaborative

groups with high collective efficacy emerged as a further important factor in Case Study 1. There was also considerable overlap associated with learners' relatedness needs across the cases. Peers who were perceived as sociable and considerate, valued the contributions made by each individual, and respected what they had to offer, established mutually supportive relationships with fellow learners. The establishment of an inclusive learning community was highlighted as an important requirement for supportive relationships to develop. The ways in which learners were able to support the autonomy needs of other collaborative group members was the final area of influence. This occurred in groups where learners were supported by their peers to contribute to group decisions and tasks.

Finally, certain social influences of peers were also found to undermine the psychological needs of learners in Case Study 1. Participants, who found themselves in groups where communication issues and disagreements were prevalent, also had difficulties with decision making processes and workload inequality. Together, these issues served to undermine some learners' relatedness and autonomy needs.

6.2 Future Directions

This study has clearly demonstrated the value of utilising a well-established, contemporary model of motivation—self-determination theory—to explore the nature of motivation in online learning environments. In particular, the exploration of *all three* psychological needs of autonomy, competence and relatedness uncovered a diverse range of social and contextual influences that served to enhance or constrain high quality motivation (i.e. identified regulation and intrinsic motivation) among learners. Furthermore, this study has demonstrated that the complexity and multidimensional nature of motivation can be concealed if a composite scale is the only measure used to assess motivation. Such an approach makes this study distinctive and represents a significant contribution that extends the applicability of an established motivation theory to online learning contexts. Moreover, it extends the findings of previous studies that have adopted SDT to explore a limited range of contextual factors (Shroff and Vogel 2009; Xie et al. 2006) and provides evidence for the need to shift from exclusively focusing on intrinsic motivation towards *motivation to learn*. It is one of a small (but growing) number of studies that have adopted SDT and the continuum of human motivation (Ryan and Deci 2000b) to tease out the complexities of *motivation to learn* in online environments.

As with any investigation, there are a number of limitations inherent in the study explored throughout this book. The use of case study methodology meant that these findings are associated with particular chosen contexts, namely two courses that formed part of an undergraduate teacher education programme within a single New Zealand university. This limits the transferability or usefulness of findings to other online practitioners in diverse settings. Following on from this, the small samples sizes in both case studies limit the transferability of quantitative analysis findings.

Finally, the research design did not encompass a detailed investigation of the broader context in which learners were situated, namely the broader university context in which they were studying or the influence of other areas of their lives such as family circumstances.

It is vital, therefore, to build on this work through further studies that use SDT as their foundation. Further research is also needed in a variety of contexts that encompass other models of online delivery, other uses of digital technologies, and other domain areas and institutional settings to develop our understanding of *motivation to learn* in technology-rich environments.

As Vallerand et al. (2008) note, "the issue of how motivation changes over time is a crucial one" (p. 260). Further research, therefore, is needed to explore if and how *motivation to learn* changes throughout the duration of an activity, course and programme. In this way, small changes that happen at a situational level that accumulate over time may indicate trends in motivational change. This may further add to our understanding of the high attrition rates among students undertaking e-learning courses (Park and Choi 2009) and suggest possible steps to address highlighted issues.

Research incorporating the broader perspectives of learners' social lives and importantly the wider university context, which impact on cognition, affect and behaviour at the situational level and vice versa, would be a source of fruitful future research endeavour in online learning contexts. A starting point for this could be Vallerand's hierarchical model of intrinsic and extrinsic motivation (Vallerand and Ratelle 2002) that is based on self-determination theory and proposes that motivation occurs at three levels (situational, contextual and global).

6.3 Final Thoughts

As digital technologies become ubiquitous in learning and education, there is a need for stakeholders to consider the complexities of student motivation in order to promote quality learning outcomes. Technology is viewed by some as inherently motivating because it provides a number of qualities that are recognised as important in the fostering of motivation, namely challenge, curiosity, novelty and fantasy (Lepper and Malone 1987; Malone 1981). The novelty factor does tend to wear off, however, as users become accustomed to it (Keller and Suzuki 2004). Others (Blumenfeld et al. 2006) argue that technology can trigger situational interest by providing a hook that engages learners. Alternatively, Clark (1991) claims that technologies do not influence learning and motivation. The basis for his argument is that the instructional method is separate and distinct from the delivery medium and it is pedagogy that influences learning and motivation, not the medium through which it occurs.

The findings from this study support a perspective that sits between these two extremes where situational factors, such as the teaching approach *and* the technologies used, all have a role to play in supporting or undermining motivation

among learners. This study has shown that online practitioners, designers and learners themselves all have an important role to play at the situational level in order for learners "to feel respected, connected, challenged and supported" (St. George et al. 2014, p. 133).

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