

**THE HIGHS AND LOWS OF STUDENTS' EXPERIENCES WITH
UBIQUITOUS CONNECTIVITY:
INVESTIGATING CONNECTIONS BETWEEN USE OF NEW
TECHNOLOGIES AND WELL-BEING**

by

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ABSTRACT

Higher Education has seen a dramatic increase in the use of information and communication technologies in recent years. Universities around the world have built complex infrastructures implementing local networks, wireless networks, cloud services and virtual learning environments. The term “ubiquitous connectivity” identifies the increased time- and space-independent accessibility to people, information and services allowed by the development of technological infrastructures and devices. Evidence shows that Higher Education institutions tend to focus on the benefits of ubiquitous connectivity, while underestimating the actual impact that new technologies have on learners’ experiences and well-being. The main aim of this qualitative research was to address the gap in the literature by investigating highs and lows of students’ experiences with new technologies and ubiquitous connectivity concerning university-related activities; the study was thus able to identify how these technological advances affect students’ day-to-day social and psychological life and consequent well-being.

The methodology adopted was constructivist grounded theory which enabled a theory to be built through the data collected. Eighty-eight students from a British University were involved in the research (72 on-campus and 16 online students), using a variety of methods including: a qualitative survey, semi-structured interviews and focus groups. Also, data were collected from 16 on-campus and online academic and professional support staff members from the same university using semi-structured interviews.

The data analysis suggests that new technologies and ubiquitous connectivity can help students to experience a sense of ease, freedom, engagement, and security in their daily activities. These four elements were identified as positively connected to students’ well-being and linked to the satisfaction of their psychological needs. However, students’ well-being seems negatively affected by their struggles in coping with the ubiquitous availability of resources. Three main categories were identified in relation to students’ difficulties: managing information availability, managing communication and managing expectations regarding reliability of technology, quality of materials and quality of support.

The results of the grounded theory process are discussed in the light of the literature in this field, and are compared to existing well-being and need theories. The original contribution to knowledge of this research is twofold. A methodological contribution was provided by using constructivist grounded theory as an inductive approach to investigate students’ well-being in technology-mediated learning environments. A theoretical

contribution was offered by using the results to generate a model of students' well-being in relation to the use of new technologies and ubiquitous connectivity.

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LIST OF ABBREVIATIONS AND ACRONYMS

DRM – Day Reconstruction Method

ECAR - Educause Center for Applied Research

ESM – Experience Sampling Method

FDA - Foucauldian Discourse Analysis

JISC - Joint Information Systems Committee

IPA - Interpretative Phenomenological Analysis

ICT – Information and Communication Technologies

PE – Personal Expressiveness

PWB – Psychological Well-Being

SA – Situational Analysis

SDT – Self-Determination Theory

SWB – Subjective Well-Being

TAM – Technology Acceptance Model

VLE – Virtual Learning Environment

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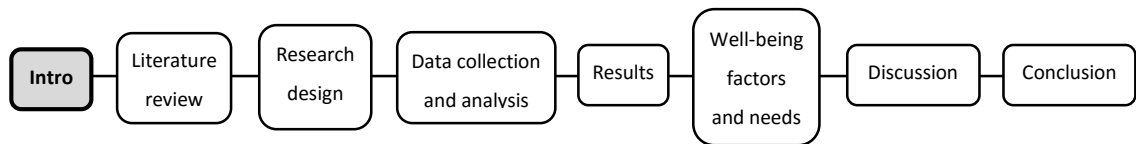
Finally, a special thanks to my wife Giulia. Thank you for keeping me sane during this crazy journey, for your love and support and for the endless hours spent listening and reading my drafts!

AUTHOR'S DECLARATION

I confirm that this thesis is my own work and that it has not been submitted in any previous application for any other degree.

During the course of this project, the following publications have been made which are based on the work presented in this thesis:

- Salvagno, M. (2013). The Highs and Lows of Ubiquitous Mobile Connectivity - Investigating Students' Well-Being. In M. Ciussi & M. Augier (Eds.), *European Conference on e-Learning*, 626-631. Sophia Antipolis, France: Academic Conferences International Limited.
- Salvagno, M., Taylor, J., Bobeva, M., & Hutchings, M. (2015). Ubiquitous Connectivity and Students' Well-being: A Situational Analysis in a UK University. *Ubiquitous Learning: An International Journal*, 8(3), 1-17.
- Salvagno, M., Taylor, J., Bobeva, M., & Hutchings, M. (2015). The Highs and Lows of Ubiquitous Mobile Connectivity: investigating students' experiences and connections with well-being. *EDULEARN15 Proceedings*, 919-927.



1. INTRODUCTION TO THE RESEARCH

1.1 Introduction

The focus of this research was to investigate the impact that the use of new technologies and ubiquitous access to resources have on university students' daily experiences and their consequent well-being. Data were collected from on-campus and online students and staff members in a UK university and analysed using constructivist grounded theory methodology.

This chapter has four main purposes: to introduce the area of investigation, provide a rationale for the research, identify the aim and the research questions and offer an overview of the sequence of the research steps.

Four themes are presented in section 1.2, which are to introduce the area of investigation, and to illustrate the basis of the rationale of the research. Firstly, a brief overview of the technological advances in Higher Education is provided to explain the large impact of technological changes on students' daily experiences. Secondly, the concept of technopositivism is introduced to clarify how the consequences of technological changes for users are often ignored or underestimated by institutions, industries and government policies. Thirdly, the popular categorisation of students as digital natives vs. immigrants (Prensky, 2001) is discussed to highlight how this classification does not represent the heterogeneity and complexity of learners' experiences with new technologies. Finally, a brief description of different research approaches that examine students' use of new technologies at university is proposed to identify the gap in the literature concerning the area of well-being.

The aim of the research and the research questions are presented in section 1.3, followed by a brief introduction of the research methodology and the study population (section 1.4), and by a description of the sequencing of the research steps (section 1.5). Finally, a brief overview of the different chapters of the thesis is provided (section 1.6).

1.2 Research background and rationale

1.2.1 Technological advances in Higher Education

The development of Information and Communication Technologies (ICTs) is moving at a fast pace increasing mobility and interactivity for users. Recent years have seen a massive evolution of Wi-Fi networks and the diffusion of mobile devices (Ofcom, 2014) that allow ubiquitous access to information in conjunction with an increased ease to communicate and share content. At the same time, the World Wide Web has started to move into the so-called Web 3.0 or semantic web era. The evolution of the World Wide Web from the perspective of human experience can be summarised in three stages of techno-social progression (Fuchs et al., 2010; Guéret, Boyera, Powell, & Murillo, 2015; Raffl, Hofkirchner, Fuchs, & Schafranek, 2009):

- Web 1.0 has been characterised by read-only content and static HTML websites. The direction of the flow of information has only been one-way and it has been impossible for users to upload their content such as pictures or videos.
- With the advent of Web 2.0, that characterises most of our experience at present time, the web has become a place for people's interactions. The introduction of user-generated web content completely changed the way users make use of technology. Millions of people around the planet use social networks, blogs, message boards, picture and video sharing web-applications daily.
- Web 3.0 that has started to make its appearance in recent years is characterised by intelligent systems that give people a more interactive and personalised experience, where the cloud plays an essential role for computing and data storage. The incoming semantic web era will be characterised by computers able to understand and make judgments about our world to provide more timely, accurate and efficient information (Guéret et al., 2015). Web 3.0 applications will open the way to human collaboration making the web "a system of human co-operation" (Raffl et al., 2009, p.1).

In this always-in-evolution scenario, Higher Education has seen a dramatic increase in the use of ICT in recent years. Universities have built complex Information System infrastructures implementing local networks, wireless networks, cloud services and Virtual Learning Environments (VLEs). The 2014 Survey of Technology Enhanced Learning for Higher Education in the UK (Walker et al., 2014) reported that all universities in the UK have implemented a VLE and are investing heavily in their technologies and services to increase the quality of their offers and to satisfy students' expectations.

Universities often use these online platforms along with other software tools to provide a wide range of services to students and staff members such as content management, online communication and collaboration, access to electronic reading resources, access to course information and timetables, online submissions, plagiarism detection, online assessment, e-portfolios, blogs and wikis. These technological changes have stretched and expanded the boundaries of traditional universities in space and time allowing easy and ubiquitous access to people, information and services.

Recent research argues that this ubiquitous access to resources puts in doubt the conventional distinction between “face-to-face” and “e-learning”. As suggested by Gourlay and Oliver (2012, p.1), “...the social, physical and temporal spaces of the material campus become saturated with digital mediation”. That is, university campuses have become technology-mediated environments where physical and virtual domains integrate and overlap. This creates complex hybrid worlds where traditional ways of communicating, accessing resources, teaching and learning are being challenged and modified by the adoption of new technologies. In relation specifically to teaching and learning, according to Garrison and Kanuka (2004), the implementation of new technologies in traditional universities can lead students to experience “enhanced learning” (when new technologies are added to a dominant face-to-face approach), or “blended learning” (when there is an effective integration between face-to-face and internet technology in students’ learning experiences).

Therefore, as anticipated by Conole (2009), the increasing diffusion and use of these technological innovations have many consequences for how students, academics and other staff members live, work and interact in everyday situations.

These changes have generated a growing need in academic research to explore the actual impact that the use of new technologies and the ubiquitous access to resources have on students’ daily practices. Although researchers have started to pay attention in the last few years to this specific aspect of learners’ experiences, there is still a compelling necessity to explore in depth the different facets of this issue. Hence, this necessity constitutes the first element of the rationale of this research.

1.2.2 On the adoption and use of technology in Higher Education

This section introduces some sociological and philosophical elements of reflection on the nature of these technological changes and on their integration in educational environments. These reflections will help to identify the second element that justifies the rationale of this research.

An important contribution to the understanding of how technological advances are implemented in modern societies is provided by the body of research on “the social shaping of technology” (Williams & Edge, 1996). Different research traditions have converged in this area of study questioning the mainstream deterministic view of technological progress and affirming that technology is essentially a social product “...patterned by the conditions of its creation and use” (Williams & Edge, 1996, p.866). The social shaping perspective criticizes the view of the so-called “technological determinism” which asserts that technological progress is driven by a sort of pre-determined and inner logic that makes development of technologies rational and unproblematic. Instead, the social shaping traditions affirm that technology does not advance according to an internal logic but its progress is shaped by social, institutional, economic and cultural factors.

The application of this perspective to Higher Education raises questions concerning the nature of the forces driving technological development in universities. As an example, regarding the impact of economic and social factors, Price and Oliver (2007) underlined the necessity for universities to remain up-to-date with the latest technology to be competitive in the marketplace and to meet students’ expectations. The authors affirmed that these necessities can lead to policy decisions about technology adoption, which are based on rhetoric or assumptions about the effectiveness of technology that tend to underestimate the effective impact of technology on learners.

Other studies (Ansell, 2013; Nnazor, 2009) highlight the importance of government policies and industries in pushing Higher Education institutions toward the implementation of new technologies. According to various authors (Guri-Rosenblit, 2006; Njenga & Fourie, 2010; Robertson, 2003) all these driving forces carry a marketed ideology called “technopositivism” that promotes the adoption of new technologies in educational settings disregarding the potential adverse effects on users and the existing research on the effective use of ICT in learning contexts. In particular, Njenga and Fourie (2010) emphasized that this “compulsory enthusiasm” surrounding new technologies does not give educators and researchers the time and opportunity to explore the impacts of the new technologies on teaching and learning.

Concerning students’ experiences in particular, the availability of technological devices in combination with the utilization of web resources and social media clearly provides a great opportunity for students by allowing them to have ubiquitous and constant access to information, people and services. However, at the same time the large development of virtual resources, services and communication oblige students to depend on new

technologies on a daily basis independently of their level of expertise, confidence or commitment in using them.

These considerations can help us to understand how the path taken on new technological developments in Higher Education is filled with ambiguities and doubts regarding both the effectiveness of these technological changes and their impact on students' daily experiences. The second element of the rationale of this research is, therefore, given by the necessity to look behind the veil of technopositivism and to explore the actual impact of new technologies and ubiquitous access to resources on students' daily activities.

1.2.3 Considerations on students' digital skills and habits

Another important element of reflection regarding the implementation of new technologies in Higher Education concerns how "digital" skills are distributed across the student population. The popular distinction formulated by Prensky (2001) between digital natives and immigrants has been heavily criticised throughout the years (i.e. McKenzie, 2007).

Digital natives, Millennials, Generation Y, Net generation are all expressions used to indicate a new generation of students entering Higher Education in recent years that are supposed to possess high technology skills and different cognitive capacities. However, various studies (Helsper & Eynon, 2010; Margaryan, Littlejohn, & Vojt, 2011; Rapetti & Pedró, 2015) indicate that this a priori categorisation of students, based on generations of belonging, is not supported by evidence. According to these contributions, the reality of students' relations with new technologies in Higher Education appears to be very heterogeneous and it eludes categorisations based on age.

As affirmed by Carrant, Carrant, Whitfield and Hartley (2008) today's students not only enter universities with different prior experiences and technological skills, but also with diverse expectations and assumptions about how technology may be used within their course. To underline this diversity, the authors propose a classification of students based on four categories:

- **'Digitally Reluctant'**: These students are not confident or experienced with technology and can find the idea of technology frightening. They have limited experience of new technologies and struggle to see how technological advances can provide educational benefits.

- **'Digitally Inexperienced'**: Digitally inexperienced students manifest the will and desire to try using technology in educational environments but do not possess the necessary skills and experiences.
- **'Digital Socialites'**: According to the authors, these students belong to the “generation Y” and represent the majority of the learners’ population. They have grown up with technology but tend to use it only for entertainment. They prefer face-to-face educational settings to e-learning.
- **'Digitally Experienced'**: This group of students is very comfortable with technology and they use it extensively in their everyday life. They can use different applications simultaneously for learning purposes and collaborations.

Visitors vs. residents (White & Le Cornu, 2011) is another classification used to replace Prensky’s dichotomy. These two terms are adopted to represent the extremes of a continuum. The word “visitors” indicate users that see the web as a set of mere tools to use to manipulate content. For this type of people, the web is only one of the main ways to obtain specific goals. They do not develop any online identity and tend to live off-line for most of the time. On the other side of the continuum, “residents” see the experience of the web as completely integrated in their life. They have online identities that they use to interact with friends and colleagues. Residents see the online world as a place valued for both relationships and knowledge.

These classifications, that are not based on users’ age or generation of belonging, can help to provide understanding on how the quality of students’ experiences with new technologies and ubiquitous access to resources depends on specific situations, and on people’s personal histories. These reflections pose the problem for Higher Education stakeholders, of how to manage this heterogeneous population that, even within the same generation, can differ highly in their technological skills or attitudes.

As suggested by Currant et al. (2008), the “one size fits all” approach to engage students in online environments does not work. Students have diverse needs and staff and institutions must be ready and flexible to address their learners’ different necessities.

Although entering in the debate regarding how to categorise students’ relationships with new technologies is outside the interest of this research, this study can provide a useful contribution to the understanding of how learners adapt to the use of new technologies in everyday situations.

The rationale of this research is also supported by the notion that an in-depth Investigation of students’ day-to-day struggles and benefits can provide valuable

suggestions to university stakeholders on how to encompass the wide variety of students' digital skills and habits.

1.2.4 **Students' experiences with new technologies and well-being**

The last element that justifies the rationale of this research is provided by the identification of a gap in the literature concerning how the daily use of new technologies and ubiquitous access to resources impact on students' well-being.

Research can take many different perspectives when investigating students' use of new technologies at university. Many studies concentrate specifically on the learning aspect of students' experiences with new technologies. Usually, academic contributions that adopt terms such as e-learning (i.e. Garrison, 2011), online learning (i.e. Anderson, 2008), blended learning (i.e. Graham, Woodfield, & Harrison, 2013), technology-enhanced learning (i.e. Kirkwood & Price, 2014), or mobile learning (i.e. Traxler, 2007) explore how new technologies are changing teaching and learning practices.

As will be further examined in the literature review (chapter 2), other approaches focus more in general on students' adoption of ICT in their everyday university life. These studies investigated for example students' use and perception of technology (Conole, 2008; Conole, De Laat, Dillon, & Darby, 2008), students' attitudes and criteria of acceptance of new technologies (Edmunds, Thorpe, & Conole, 2012; Roca, Chiu, & Martínez, 2006; Saadé & Bahli, 2005), and students' expectations and satisfaction with new technologies (Paechter, Maier, & Macher, 2010). In addition, few studies explore how the potential time- and space-independent access to online resources provided by new technologies affect learners' experiences. The most important contribution in this specific area comes from research that adopts the actor-network theory framework (Gourlay & Oliver, 2012; Habib, Johannesen, & Øgrim, 2014). However, although these studies focus on students' daily activities, they do not explore specifically the theme of well-being.

In summary, from an initial analysis of the literature, it was identified that the relationship between university students' use of new technologies and well-being was not sufficiently explored.

In addition, it was evidenced that a variety of theories, models and definitions of well-being have been applied to research. This diversity of approaches depends on multiple interpretations and definitions that experts use to define this concept (Dodge, Daly, Huyton, & Sanders, 2012; Huta & Waterman, 2014). Contingently with the approach

adopted, the term well-being has been used in relation to students' use of technology to refer to mental health related issues, physical health or in a few cases psychosocial wellness (Cotten, 2008).

Therefore, it was assumed that exploring how students' daily experiences with new technologies relate positively or negatively with their social and psychological wellness could offer an original contribution to existing research. Moreover, it was considered that a bottom-up qualitative approach focusing on the highs and lows of learners' experiences would provide insights regarding students' sense of well-being without applying pre-existing well-being models and theories that could influence the data collection.

These reflections provided the rationale for the definition of the aim of this research, and of the research questions that are described in the next section.

1.3 Aim of the research and research questions

1.3.1 Aim of the research

The main aim of this research was formulated as follows:

*“Investigating highs and lows of students' experiences with **new technologies** and **ubiquitous connectivity** concerning **university-related activities** to identify how these technological advances affect students' day-to-day social and psychological life and consequent **well-being**”*

In order to provide further details regarding the aim described above and to specify the boundaries of this research, a clarification of the terminology adopted is provided below.

New technologies

The term “new technologies” is used in this research to identify technological devices (such as smartphones, tablets, laptops and PCs) that allow students to connect to the internet, but also refers to the infrastructures and platforms implemented by universities to facilitate connectivity and access to resources (such as Wi-Fi networks and VLEs). Therefore, it is important to underline that the interest of the research was not limited to students' use of mobile technologies, but it also included all technologies that allow time- and space-independent access to online resources.

Ubiquitous connectivity

The expression “ubiquitous connectivity” is used in this research to identify the ubiquitous and constant access to resources such as information, people and services allowed by technological devices. Concerning university students, this includes the possibility for 24/7 access to information and services through the internet, to interact with people using emails, social media and other applications and to access university resources through the use of the VLE.

University-related activities

The term “university-related activities” refers to any type of activity that students perform using new technologies that could in some way be related to their degree programme. This broad definition was included to specify that the area of interest of this research was not limited to teaching- and learning-related activities, but more in general on students’ use of new technologies at university in everyday situations. This includes for example using emails, discussion boards and social media to interact with staff and peers, accessing online materials, consulting library and online databases and checking lectures timetables.

Well-being

Due to the large number of well-being definitions and models in the literature, the choice of this research was to start the investigation with the broadest possible definition of well-being to avoid the data collection phase being constrained and influenced by existing models and theories. Therefore, the expression “students’ well-being” was initially used as a synonym of “quality of university experience” to guide the data collection with reference to a popular interpretation of well-being in the literature intended as a synonym of “quality of life” (Dodge et al., 2012, p.224).

In order to allow for a large range of data to emerge, a specific paradigm of enquiry was applied to the data collection. Participants were asked to discuss the most positive (highs) and negative (lows) aspects of using new technologies and ubiquitous connectivity at university. This approach enabled the identification of many elements that students perceive as contributing to an increasing or decreasing of the quality of their university life, and to investigate social and psychological implications.

1.3.2 Research questions

Seven main research questions were formulated starting from the aim illustrated in section 1.3.1:

- Q1: What are the highs and lows of on-campus and online students' experiences with new technologies and ubiquitous connectivity and how do these experiences affect students' sense of well-being?
- Q2: What is the role of staff members in influencing the quality of students' experiences with the use of new technologies and ubiquitous connectivity?
- Q3: How do interactions and dynamics between students and staff with new technologies influence students' well-being?
- Q4: What are the main factors related to students' well-being emerging from the research?
- Q5: How do these factors relate to existing well-being theories?
- Q6: How could the findings of the research and the comparison to existing well-being theories inform a model of students' well-being in relation to their everyday use of new technologies?
- Q7: What are the guidelines and suggestions that could be provided, in light of the outcomes of the research, to increase students' well-being in relation to the use of new technologies and ubiquitous connectivity in Higher Education?

These questions will be reviewed in the final chapter (section 8.5), where it will be clarified how they were addressed and answered in this study.

1.4 Research methodology and study population

As will be extensively explained in section 3.4, the process of definition of the research questions influenced the identification of the methodology and the choice of the participants.

Constructivist grounded theory was chosen as the methodology for this study for its potential to provide a strong framework of investigation, that could allow for the collection of rich qualitative data from different type of participants and to address the research questions.

Concerning the study population, as mentioned in section 1.1, data were collected from on-campus and online students and staff members in a UK university. The expression “on-campus students” or “on-campus learners” is used in this research to indicate students attending regular classes at the university at the centre of this investigation. The interest of this research was primarily directed toward this type of students, since they make an extensive use of new technologies and ubiquitous connectivity in their daily university life. However, online students were involved in the data collection as well to compare their experience with on-campus students and to identify similarities and differences. The expression “online students” or “online learners” was used in this research to indicate students enrolled in an online degree at the same university. Moreover, academic and professional support staff members at the same university were included in this research to explore how their habits, beliefs and practices in using new technologies and in interacting with students could affect learners’ sense of well-being. The expressions “on-campus lecturers” was used in this work to refer to on-campus academic staff and the expression “online lecturers” or “tutors” was used to refer to online academic staff.

The involvement of different types of students and staff members allowed the research to gain a more extensive knowledge of the field, and to investigate how the use of new technologies and ubiquitous connectivity could vary depending on learning contexts and conditions. However, it is important to underline that staff members’ data were used in this research to offer additional elements of analysis of student’ experiences. Therefore, staff members’ data are not discussed separately as standalone results, but are opportunely mentioned during the presentation of the findings and the discussion when, they are considered useful to offer additional elements of reflection on students’ experiences.

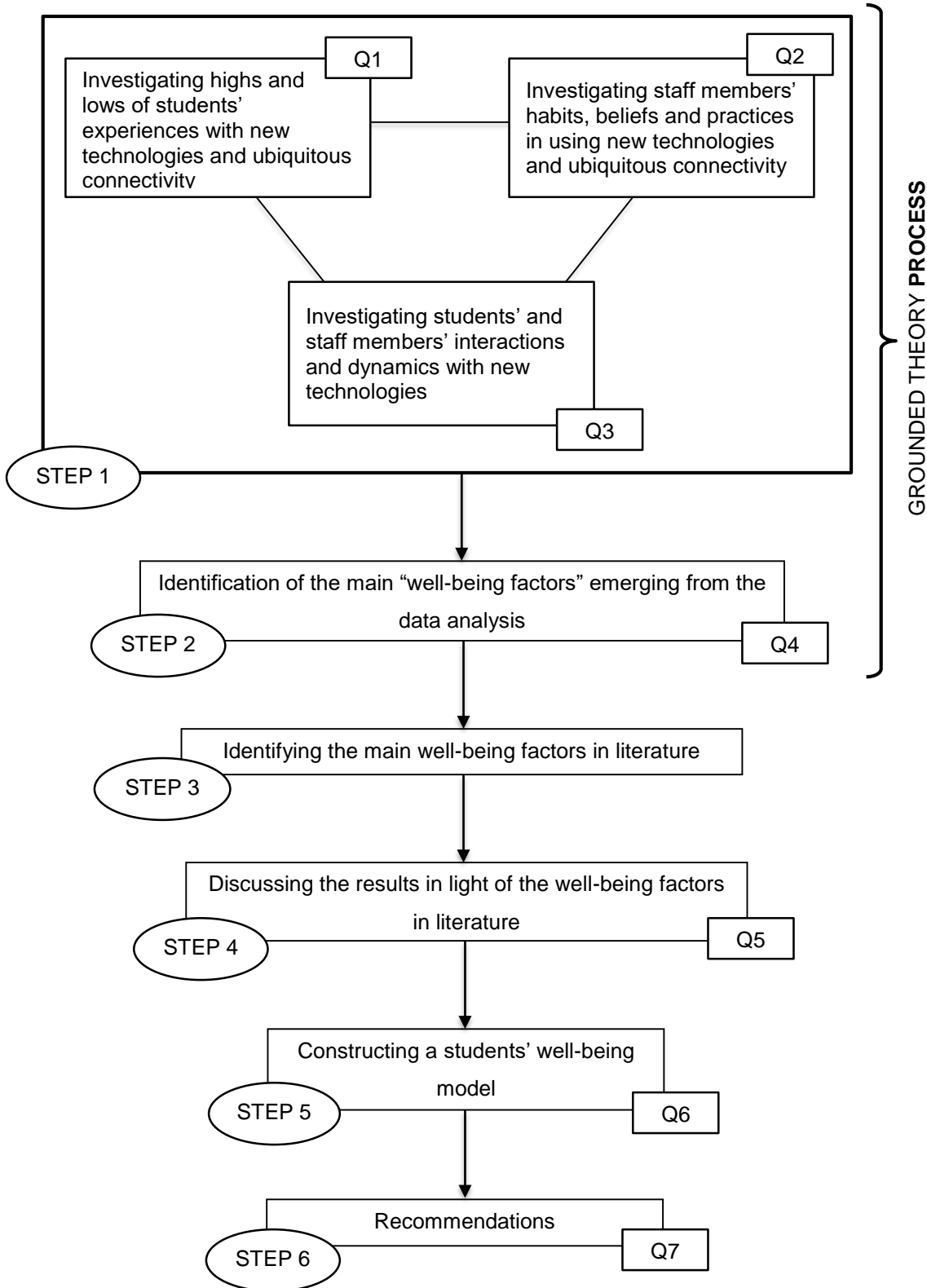
The sequencing of the research steps, described in the next section, shows the relationship between the different steps of the research and the research questions. It is worth specifying that, as often happens in grounded theory studies (Charmaz, 2014), the formulation of the research questions, and consequently the research steps, were submitted to a process of refinement during the progress of this study.

1.5 Research process

The goal of this section is to provide a general overview of the sequence of the research steps to help understand the logical progression of the study. Details regarding the grounded theory process and the different phases of data collection will be provided

respectively in section 3.7.1 and 3.11. The various steps illustrated in Figure 1 represent practical goals derived from the research questions (Q1, Q2, Q3 etc.), which were presented in the previous section.

Figure 1 – Sequencing of the research steps



Step 1 represents the core of the research. All the data collected in the research from students and staff were analysed using the constructivist grounded theory approach (see section 3.6.3). The application of this methodology allowed this research to focus on the first three research questions.

Categories of meaning, from students' and staff members' data, were identified to relate students' experiences with new technologies and ubiquitous connectivity to their sense of well-being. The data analysis process led to the building of the grounded theory where the main factors recognised by students, as being positively or negatively related to their sense of well-being are presented and described (step 2).

In order to compare the results of the research with the main well-being theories in literature, the main factors of each well-being theory were identified, compared and summarised (step 3).

This allowed for a discussion of the results of the research, in light of the factors proposed by existing well-being theories and models in the literature, in order to identify connections and stimulate reflections (step 4).

The process of analysis and discussion of the results led to the development of a model of students' well-being, in relation to the use of new technologies and ubiquitous connectivity, that could be used as a basis for future research in the field (step 5).

Finally, recommendations were provided according to the outcomes of the research (step 6) on how to improve the quality of students' experiences and consequent sense of well-being in relation to the use of new technologies and ubiquitous connectivity.

1.6 Thesis structure

This chapter has provided an overview of the research introducing the area of investigation, the rationale for the research, the aim of the research and the research questions and a description of how the research was conceived and structured.

The thesis will now continue with the presentation of the literature review (chapter 2). The first two sections of chapter 2 are dedicated to clarifying some important aspects concerning the role of the literature review in grounded theory studies and to illustrating the strategies adopted to conduct the literature review in this research given the complexity of the area of investigation. The chapter proceeds with the presentation of the main well-being theories in literature and then with the review of the literature related to students' use of new technologies and well-being.

Chapter 3 illustrates the research design and provides details regarding the choices made in terms of research paradigm and methodology. In this chapter, the different grounded theory approaches are described and the choice of constructivist grounded theory as methodology for the research is explained. The chapter also provides an illustration of the constructivist grounded theory process and an overview of the data collection methods utilised.

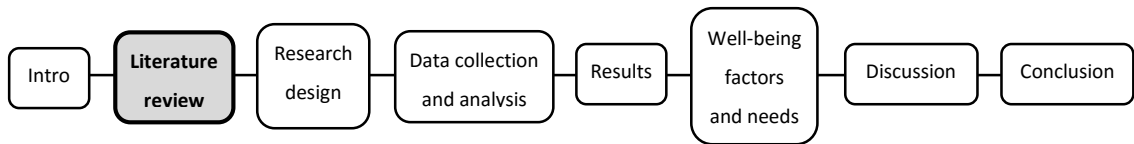
The first part of chapter 4 provides practical details regarding the data collection phases by describing the number and the characteristics of the participants, as well as the recruitment strategies and the tools and techniques used to collect the data. In the second part, the data analysis process is illustrated with an explanation of the different coding phases and of the other tools used to analyse the data.

Chapter 5 is dedicated to the presentation of the results of the research. The grounded theory emerging from the data analysis is illustrated and the different categories of meaning generated from students' and staff members' data are explained. The various categories are described using students' and staff members' quotes extracted from data analysis to clarify the connections between students' experiences with new technologies and their sense of well-being.

As the findings of the research have indicated that students tend to use new technologies to satisfy their basic psychological needs, the literature review was therefore expanded in chapter 6 to include some key theories of human needs. Moreover, this chapter describes the process of the construction of a Venn diagram and of a well-being/needs table that encompass and put in relation the well-being factors and psychological needs identified in the literature.

The results of the research are discussed in chapter 7 in light of the literature in the field, and of the well-being factors and psychological needs identified in the previous chapter. Moreover, a well-being model concerning students' use of new technologies developed from the findings of the research is presented and described.

Finally, recommendations are provided in chapter 8 based of the findings of the research on how to improve students' experiences with new technologies in university-related contexts. Moreover, the chapter illustrates how quality criteria for qualitative research identified in the literature were addressed in this study. Also, the research questions are reviewed to explain how they were addressed and answered in this research. In conclusion, indications are provided on how the results of the research could be used to design further research.



2. LITERATURE REVIEW

2.1 Introduction

Two main considerations need to be made regarding how the literature review was conducted in this research. The first consideration, introduced in section 2.1.1, concerns the role of the literature review in grounded theory studies. The second one (section 2.1.2) regards the strategy adopted to manage the analysis and evaluation of the literature in view of the complexity of the area of investigation.

2.1.1 Literature review in grounded theory studies

The reasons for conducting an early literature review in grounded theory studies has been debated for a long time (Dunne, 2011; McGhee, Marland, & Atkinson, 2007; Ramalho, Adams, Huggard, & Hoare, 2015). The “purist” approach proposed in the original work of Glaser and Strauss (1967) affirms that an initial review of the literature needs to be avoided to prevent researchers from being influenced when collecting and analysing data. This stance, supported also by later contributions (Holton, 2007; Nathaniel, 2006), sustains that frameworks, theories and hypothesis known by the researcher through an early engagement with the literature could “contaminate” the inductive research process and prevent the identification of emerging categories. A different position is taken by Strauss and Corbin (1990) in their revision of the grounded theory methodology. The authors recognise that researchers cannot be separated from their personal experiences and knowledge of the field of investigation. According to this view, the literature used throughout the entire research process does not hinder the development of the theory but it fosters the process by providing important elements of reflection.

Concerning the constructivist grounded theory approach adopted in this research, Charmaz (2014, p.306) remarks on the impossibility that a researcher could have a lack of familiarity with the literature in the field. Moreover, the author emphasises that the literature review can be an important source to facilitate comparisons during the data analysis process. Consistently with the methodology adopted, this study recognises the importance of an early literature analysis for the above reasons. In addition, the analysis

of the literature was essential to avoid conceptual and methodological flaws and to provide justification for the research.

2.1.2 **Strategies adopted to explore the area of investigation**

The literature review conducted in this research started by focusing on two main objectives:

- Identifying the main existing well-being theories and models in literature (section 2.2).
- Exploring how the construct of well-being has been applied to investigate students' use of new technologies (section 2.3).

The first objective led to the identification of six main theories/models referring to two main well-being paradigms: hedonic (section 2.2.1) and eudaimonic (section 2.2.2). Conducting an initial analysis of the literature on well-being was important for two main reasons. Firstly, it provided a good background knowledge on the topic. This allowed for a better understanding of the studies that have applied the construct of well-being in relation to students' use of new technologies. Secondly, it offered a theoretical framework that facilitated the interpretation of the findings of this research and the comparison between the well-being factors identified in the literature and the ones emerging in the present study from the analysis of students' experiences with new technologies.

Concerning the second objective, the literature review helped to identify four main areas related to students' use of new technologies and well-being: students' internet use (section 2.3.1), students' smartphones use (section 2.3.2), students' use of social media (section 2.3.3) and students' needs satisfaction (section 2.3.4). However, the studies identified in these areas presented two main limitations in relation to the aim of this research. Firstly, they did not specifically refer to university-related activities but regarded the use of new technologies in students' life in general. Secondly, all these studies applied quantitative methodologies to test hypotheses concerning students' use of new technologies and well-being and no research could be found adopting qualitative approaches to collect in-depth data from learners.

In the light of these results, the literature review proceeded to identify other areas of study (section 2.4) that, although they were not directly investigating students' well-being, they could provide relevant contributions to help understand students' positive and negative experiences with new technologies in university-related activities. In this search, a specific attention was given to qualitative studies.

Four main relevant areas were identified during this process:

- studies investigating students' emotions in online and blended learning settings (section 2.4.1)
- studies exploring students' satisfaction in relation to the use of new technologies (section 2.4.2)
- studies concerning students' technology acceptance (section 2.4.3)
- studies adopting qualitative methodologies to investigate students' experiences with the use of new technologies (section 2.4.4)

Considering the breadth of the analysis of the literature, the review of each area presented cannot be considered exhaustive. The choice made in this work was to provide an overview of relevant studies in relation to each area of investigation by focusing on important and widely known research as well as on significant recent contributions. In order to reach this goal, EBSCOhost research databases were used and a number of keywords were selected for each area of investigation. Two searches were conducted in the databases for each combination of keywords. The first search was conducted on peer reviewed publications without setting any limits on publication dates. This search allowed this study to identify the most relevant publications for each area of investigation. As a general rule, the first 100 publications were considered for each combination of keywords. A second search was then conducted for each combination of keywords by setting a time frame limit (2008-2015) to identify the most relevant recent contributions for each area of investigation. Also in this case, as a general rule, the first 100 publications were considered in each search.

2.2 Overview of existing well-being theories and models

The well-being theories and models described in this section concern the so-called area of positive psychology. This term became popular around the beginning of the new millennium (Seligman & Csikszentmihalyi, 2000; Seligman, Steen, Park, & Peterson, 2005) to indicate studies whose purpose is to understand and foster the factors that allow individuals, communities, and societies to flourish. In relation to human life this view is therefore focused on how to promote people's mental health and well-being. This area of research builds on a solid tradition of studies on human development that stemmed from the works of Rogers (1951) on self-affirmation and self-realisation and the works of Maslow (1943, 1954) on the satisfaction of human needs. The objectives of positive psychology have been already applied to the study of ICTs (Riva, Banos, Botella, Wiederhold, & Gaggioli, 2012; Zhang & Umemuro, 2012). These studies indicate that

ICTs can be used to induce pleasant experiences (hedonic level), to support individuals in reaching engaging and self-actualising experiences (eudaimonic level) and to improve social integration and sense of connectedness (social and interpersonal level).

According to Deci and Ryan (2008) the hedonic and the eudaimonic traditions encompass the majority of studies on well-being. The modern hedonic well-being perspective (or hedonia) focuses on the concepts of happiness, pleasure and pain avoidance. In a few words, well-being coincides with the presence of positive feelings and the absence of negative moods. Hedonia investigates the states, situations or activities associated with pleasure and enjoyment and with the absence of discomfort. Instead, the eudaimonic view affirms that well-being consists in more than just happiness. According to this approach, well-being is related to the exploration of the human potential. This perspective starts with the assumption that in order to experience well-being, people should follow their inner "daimon" or true self (Waterman, 1990).

2.2.1 Hedonic well-being

In psychology, the reference point of the hedonic perspective is the body of work of Diener (Diener, Oishi, & Lucas, 2009; Diener, Sapyta, & Suh, 1998; Diener, Suh, Lucas, & Smith, 1999), who developed the construct of Subjective Well-Being (SWB). The term well-being is used in this view as a synonym of human happiness and it is considered as depending upon both emotional and cognitive elements:

"...subjective well-being is a broad category of phenomena that includes people's emotional responses, domain satisfactions, and global judgments of life satisfaction" (Diener et. al., 1999, p.277).

Subjective well-being is, therefore, a result of a combination of positive and negative emotions experienced by people, and the cognitive activity of judging one's satisfaction related to specific domains and to life in general.

Figure 2 provides examples of the different components of SWB. The first two columns present examples of positive and negative emotions, the third column lists examples of cognitive judgments concerning life satisfaction and the last column gives examples of specific domains of people's satisfaction.

As can be noticed, all the specific dichotomies used by the authors to identify people's emotions (such as elation/sadness or happiness/depression) can be considered as referring to the main construct pleasant/unpleasant that represents the basis of the hedonic view of well-being.

Figure 2 – Components of Subjective Well-Being – From Diener et al., 1999

Pleasant affect	Unpleasant affect	Life satisfaction	Domain satisfaction
Joy	Guilt and shame	Desire to change life	Work
Elation	Sadness	Satisfaction with current life	Family
Contentment	Anxiety and worry		Leisure
Pride	Anger	Satisfaction with past	Health
Affection	Stress	Satisfaction with future	Finances
Happiness	Depression	Significant others' views of one's life	Self
Ecstasy	Envy		One's group

According to this perspective, well-being is considered subjective because the idea is that people evaluate for themselves the degree of well-being they are experiencing.

2.2.2 Eudaimonic well-being

Concerning the area of eudaimonia, many different theories and approaches have been developed during the last forty years. In order to present the main positions, an historic time-line will be followed (see also Huta, 2013)

2.2.2.1 Self-determination theory

The Self-Determination Theory (SDT) (Deci & Ryan, 2002; Ryan & Deci, 2000) took its first steps in early 1970s. This approach adopted empirical methods to specify the conditions that foster human psychological development and the flourishing of human activity and constructiveness.

The authors defined three main conditions that can facilitate human motivation, self-regulation and well-being: autonomy, competence, and relatedness. According to this perspective, these conditions can be considered as basic psychological needs, which, when satisfied, help to enhance self-motivation and mental health, and when these are frustrated lead to diminished motivation and well-being (Ryan & Deci 2000, p.68).

During the years, SDT has been refined (Ryan, Huta, & Deci, 2008; Deci & Ryan, 2008; Deci & Ryan, 2012) and an eudaimonic theory based on four elements has been

developed. These elements are: (1) intrinsic motivation, (2) autonomy, (3) awareness, (4) needs satisfaction:

“...(1) pursuing intrinsic goals and values for their own sake, including personal growth, relationships, community, and health, rather than extrinsic goals and values, such as wealth, fame, image, and power; (2) behaving in autonomous, volitional, or consensual ways, rather than heteronomous or controlled ways; (3) being mindful and acting with a sense of awareness; and (4) behaving in ways that satisfy basic psychological needs for competence, relatedness, and autonomy (Ryan et al. 2008, p.1)”.

Ryan et al. (2008, p.147) propose also a connection between SDT and subjective well-being by affirming that the satisfaction of the basic psychological needs described in SDT typically fosters SWB as well as eudaimonic well-being. Consequently, SWB has been used in SDT research as one of several indicators of well-being, although maintaining the view that not all the human experiences that foster SWB promote eudaimonic well-being.

2.2.2.2 Theory of flow

Similarly, to SDT, also the first studies on the concept of flow (Csikszentmihalyi, 1990; Csikszentmihalyi, 1997; Csikszentmihalyi & Csikszentmihalyi, 1988; Nakamura & Csikszentmihalyi, 2002) can be dated back to the 1970s. In these studies, flow is described as a state of complete absorption or engagement in an activity. A necessary condition to the experience of flow is that the level of the challenge of a task needs to be combined with the perception to have the necessary skills to face it. However, the experience of flow happens when the task performed combines a high level of challenge with the high skills perceived.

In addition to these two components (high skills and high level of challenge), flow is fostered by another element defined by Csikszentmihalyi as autotelic personality. This concept was adopted to indicate a person who “...generally does things for their own sake, rather than in order to achieve some later external goal” (Csikszentmihalyi, 1997). Consequently, according to this concept an autotelic activity “... is a ‘self-contained activity, one that is done not with the expectation of some future benefit, but simply because the doing itself is the reward” (Csikszentmihalyi, 1990). As can be noticed, autotelic personality shares many similarities with the concept of intrinsic motivation mentioned by the SDT theory.

Interestingly, the theory of flow is cited from both the hedonic and eudaimonic perspective as a component of well-being. For example, Diener et al. (1999) considered flow as one of the ways to experience subjective well-being and Ryan and Deci (2001) related flow to the concepts of competence and self-efficacy and considered it as a component of intrinsic motivation. Therefore, the flow theory appears containing elements belonging to both the hedonic and eudaimonic tradition. In fact, when a person experiences flow, he or she is in a positive mood and this can be related to the concept of SWB. However, experiencing flow means also putting effort in a specific activity and this aspect can be associated with setting goals and motivation.

2.2.2.3 Psychological well-being theory

Psychological Well-Being (PWB) (Ryff, 1989) is another approach that explicitly refers to the eudaimonic tradition and it is based on the concepts of "positive functioning" and personal growth (Ryff & Keyes, 1995).

PWB encompasses six different dimensions of well-being: self-acceptance, personal growth, purpose in life, positive relations with others, environmental mastery and autonomy:

"In combination, these dimensions encompass a breadth of wellness that includes positive evaluations of oneself and one's past life (Self-Acceptance), a sense of continued growth and development as a person (Personal Growth), the belief that one's life is purposeful and meaningful (Purpose in Life), the possession of quality relations with others (Positive Relations With Others), the capacity to manage effectively one's life and surrounding world (Environmental Mastery), and a sense of self-determination (Autonomy)" (Ryff, 1989, p.720).

Ryan and Deci (2001) in comparing PWB and SDT affirmed that although both approaches refer to the eudaimonic tradition, SDT considers well-being as a natural consequence of the fulfilment of people's psychological needs, whereas PWB uses these factors to define the concept of well-being.

In relation to SWB, Ryff and Singer (1998) challenged the hedonic perspective by considering this approach as being often a fallible indicator of healthy living. However, Diener et al. (1998) affirmed that Ryff and Singer's eudaimonic criteria let experts define well-being, whereas SWB research allows people to tell researchers what makes their life good.

2.2.2.4 Personal expressiveness

In early 1990s, Waterman proposed a further eudaimonic perspective called Personal Expressiveness (PE). According to this view, a person can experience feelings of personal expressiveness when he or she is involved in activities that reflect one's core sense of being (Waterman, 1990; Waterman et al., 2003)

Engaging in these activities brings individuals to experience:

“(1) an unusually intense involvement, (2) a special fit or meshing with the activities, (3) a feeling of intensely being alive, (4) a feeling of completeness and fulfillment, (5) an impression that this is what the person was meant to do, (6) a feeling that this is who one really is” (Waterman et al. 2003, p.1449).

As can be noticed, some of the elements described above share similarities with the concept of flow: the sense of full involvement in a specific activity, the perception that the activity is adequate to the characteristics of the person involved and the autotelic reference. However, in the experience of flow the accent is placed on immediate task-related feelings, while for PE the emphasis is on the personal realization and self-definition.

Waterman also makes a comparison between PE and hedonic well-being affirming that both experiences bring positive affective states (Waterman et al., 2003). However, the two views disagree on which activities contribute to the realization of one's best potential.

2.2.2.5 Authentic happiness theory and PERMA model

The central concept of the theory of authentic happiness (Seligman, 2002) is that true happiness can be reached through the pursuit of a meaningful life. In this work, Seligman considered authentic happiness as composed of three factors: positive emotions (pleasure), engagement (following desires) and meaning (living a meaningful life).

Recently, two other factors were added to the theory: relationships/social connections and achievement (Seligman, 2011). This addition resulted in proper well-being model generally known as the PERMA model and composed by five elements: **P**ositive emotions, **E**ngagement, **R**elationships/social connections, **M**eaning, **A**chievement.

As can be noticed, the PERMA model shares many elements with other well-being theories. The element “positive emotions” has much in common with the SWB approach, “engagement” presents many similarities with the concept of flow, “relationships” can be found also in the SDT and in PWB and the concept of “meaning” represents a central

element of the theory of personal expressiveness. In addition, there are similarities between the SDT component of competence and the construct of achievement. The latter is defined by Seligman as “a sense of accomplishment and success” (Seligman, 2011), while competence has been defined as the sense of efficacy that individuals have regarding their internal and external environments (Deci & Ryan, 2012).

2.2.3 Well-being factors synthesis table

As illustrated in section 2.2.2, each of the well-being theories/models that refer to the area of positive psychology proposes different factors considered essential to promote human well-being. A table summarising and describing all the well-being factors mentioned by the theories introduced in this chapter is presented in appendix A. As can be noticed, these factors present many differences (especially between the hedonic and eudaimonic perspective) but also many similarities and overlaps. These similarities were used as a base to generate a synthesis table (Table 1) where similar factors were included under the same label.

SYNTHESIS TABLE OF WELL-BEING FACTORS	
WELL-BEING FACTORS	THEORIES
Positive emotions	Positive affect (SWB), Positive emotions (PERMA)
Engagement	Flow (Theory of flow), Engagement (PERMA)
Intrinsic motivation	Autotelic personality (Theory of flow), Intrinsic motivation (SDT), Intrinsic motivation (PE)
Self-realisation	Personal growth (PWB), Self-realisation (PE)
Relatedness	Positive relations (PWB) Relationships (PERMA)
Meaning	Purpose in life (PWB), Meaning (PERMA)
Competence	Competence (SDT), Environmental mastery (PWB)
Autonomy	Autonomy (SDT), Autonomy (PWB)
Satisfaction	Satisfaction (SWB)
Awareness	Awareness (SDT)
Self-acceptance	Self-acceptance (PWB)
Achievement	Achievement (PERMA)

Table 1 - Synthesis table of well-being factors proposed by well-being theories

It is important to specify that the concepts expressed in the personal expressiveness theory could not be translated into clear well-being factors. Therefore, the notions proposed by this theory were associated in the table with the well-being factors (intrinsic

motivation, engagement, self-realisation) recognised by the author as constructs strictly related to his theory (Waterman, 1990).

As will be explained in detail in chapter 6, this synthesis table was used in the research to facilitate the comparison between the well-being factors mentioned in the literature and the ones emerging from the data analysis of students' narratives in relation to the use of new technologies and ubiquitous connectivity.

2.3 Students' use of new technologies and well-being

As mentioned in section 2.1.2, the analysis of the literature in relation to students' use of new technologies and well-being has identified four main areas of study that are described in the following sections.

2.3.1 Students' internet use and well-being

A first area of investigation explored by researchers in relation to students' use of new technologies and well-being concerns students' internet use. A study among Taiwanese college students (Chen, 2012) investigated the relationship between problematic internet use and psychological well-being. The results suggest that students with problematic internet use show an increased likelihood to have disadvantageous psychological well-being and a decreased probability of good psychological well-being. Moreover, the study indicates that students' great use of online resources for social purposes was positively associated with psychological well-being.

Problematic internet use among students was also investigated in relation to learners' gender, attachment styles and subjective well-being (Odacı & Çıkrıkçı, 2014). In relation to well-being, the research identified a negative correlation between subjective well-being and problematic internet use. Subjective well-being tends to decline when the level of problematic internet use rises.

A different well-being construct was adopted in another study (Çardak, 2013) where the relationship between Internet addiction among university students and psychological well-being was explored. The research outcomes indicated that internet addiction is negatively related to psychological well-being suggesting that high levels of pathological internet use are associated with low levels of well-being.

2.3.2 **Students' smartphones use and well-being**

Another area of investigation identified in the literature concerns the use of smartphones among students in Higher Education contexts. Park and Lee (2012) analysed Korean college students' reasons for using smartphones and how different needs are connected to the maintenance of social relations and psychological well-being. Six main reasons were identified in relation to students' use of smartphones: caring for others, following popular trends, communication, information, accessibility, and passing time. Moreover, the study indicates that when students are using their smartphones to care for others they are likely to show lower levels of loneliness and depression and to maintain greater self-esteem.

In another recent study, Murdock (2013) examined links between students' text messaging behaviour, interpersonal stress and three factors associated with students' health: burnout, sleep quality and emotional well-being. The findings indicate that texting moderated the association between interpersonal stress and both burnout and emotional well-being. That is, students tend to engage in texting using smartphones when stressed and this behaviour contributes to lower their emotional well-being. The role of stress in relation to students' smartphone use was also explored in another research conducted among Chinese college students (Wang, Wang, Gaskin, & Wang, 2015). Stress was considered in this study as an essential factor in influencing psychosocial well-being. The results indicate that learners use smartphones for entertainment or escapism purposes to cope with low psychosocial well-being, and that this behaviour tends to generate even more problematic outcomes for students. Another study investigating the relationships between students' cell phones use, their academic performance, their anxiety and their satisfaction with life (Lepp, Barkley, & Karpinski, 2014) indicate that students' cell phone use and texting is positively related to anxiety and negatively related to academic performance.

More recently, Li, Lepp and Barkley (2015) investigated the relationship between students' use of cell phones and their locus of control. The concept of locus of control was first introduced by Rotter (1966). As well explained by Zimbardo and Gerrig (1999) people with an internal locus of control tend to think that the results of their actions are contingent to what they do. An external locus of control is instead attributed to people that interpret the outcomes of their actions as depending upon events out of their control. The results of this research indicate that an internal locus of control tends to mitigate some of the typical negative outcomes associated with an excessive use of cell phones: poor sleep quality, reduced academic performance, and reduced subjective well-being.

Some important reflections can be made regarding the studies described in section 2.3.1 and 2.3.2. Firstly, all of them applied quantitative methodologies to investigate well-being, and no research could be found exploring the topics using qualitative approaches. Secondly, although all these studies adopted students as participants, none of them explored the use of the internet or smartphones concerning academic-related activities. Thirdly, most of the expressions including the term well-being (psychological well-being, psychosocial well-being and emotional well-being) were used in these studies without providing specific definitions or referring to specific well-being theories, revealing, therefore, weaknesses from a theoretical perspective. Finally, with the exception of one research study (Park & Lee, 2012), all the mentioned research studies so far have mostly focused on the negative impact of students' use of the internet and smartphones on their well-being. However, it is also important to underline that both areas of study suggest possible positive influences for students' well-being when students' use of new technologies is associated with social or caring purposes.

These reflections can help to evidence a clear gap in the literature given both the lack of qualitative studies exploring students' use of new technologies and well-being and the lack of studies focusing on the positive impact of new technologies.

2.3.3 Students' use of social media and well-being

In relation to the use of new technologies for social purposes, an important field of investigation, that has emerged in recent years, concerns students' use of social media and their well-being. Kalpidou, Costin and Morris (2011) investigated the relationship between undergraduate college students' use of Facebook and their well-being. In particular, the researchers focused on students' self-esteem and college adjustment. The results indicate a positive relationship between students' Facebook use and social adjustment to college and a negative relationship between Facebook use, self-esteem and emotional adjustment. In particular, students spending a lot of time on Facebook seem to show a lower self-esteem than other students. The use of Facebook and social and emotional adjustment to college appear to be negatively related for first year students when Facebook is used as a coping strategy to relieve stress. However, this relationship becomes positively related among upper-class students when this social media is effectively used to maintain social connections and to participate in university life.

Another study on college students (Manago, Taylor, & Greenfield, 2012) confirms that Facebook facilitates the construction and maintenance of large although impersonal

social networks. In relation to well-being, the research suggests that students with large networks show higher levels of life satisfaction and perceived support. In contrast with the previous study, the research indicates a positive relationship between the perceived size of an audience on Facebook and students' self-esteem. Similar results were reported by Kim and Lee (2011) who found that the number of Facebook friends had a positive association with subjective well-being among college students using Facebook. In addition, the results show that Facebook is seen as a source of support only when users can dedicate time and energy to maintain close connections with a reasonable number of friends. When the number of friends is too high, dedicating effort to maintain social connections becomes an impossible task and the perception of social support decreases.

Although not specifically related to well-being, two additional studies that investigated the relationships between the use of social media and students' engagement are worth mentioning. Junco (2012) found a negative relationship between time spent on Facebook by college students and their academic engagement. Moreover, the study identified a negative relationship between the frequency of engaging in Facebook chat and time spent preparing for classes. However, the time and frequency of Facebook use was positively related with the amount of time spent in co-curricular activities. Another study concerning students' engagement (Junco, Heiberger, & Loken, 2011) explored if the use of Twitter for educational purposes can have an impact on college students' engagements and grades. In this context, Twitter was used by students for different purposes such as: continuity for class discussions, book discussion, giving students a low-stress way to ask questions, class reminders and helping students connect with each other and with instructors. The results confirmed the hypothesis that the use of Twitter for educationally relevant activities can have a positive impact on both students' engagement and grades.

In summary, the studies cited in this section indicate that a univocal relationship between students' use of social media and their well-being cannot be established. Research seems to indicate that social media can play a positive role in terms of fostering and maintaining social connections and enhancing perceived social support for students. However, an intensive use of social media could conflict with students' academic engagement and subtract time from their learning activities. Oppositely, other studies indicate that the use of social media integrated into students' curricular activities can have a positive impact on their engagement. However, as indicated also by a recent study on the use of Facebook (Dyson, Vickers, Turtle, Cowan, & Tassone, 2015), the successful integration of social media in educational activities does not automatically

increase students' engagement. This integration seems to depend on complex interactions between various factors such as how the content is delivered and how students perceive the use of social media for academic purposes.

2.3.4 Students' needs satisfaction through new technologies and well-being

Another important area that connects students' use of new technologies and well-being concerns the satisfaction of students' needs. In relation to this topic, a quantitative study (Li, Shi, & Dang, 2014) examined the relationship between students' use of new technologies for online communication among Chinese students and their subjective well-being. In particular, the study tested the hypothesis that online communication could enhance subjective well-being when used by students to satisfy psychological needs. The study utilised the Psychological Need for Online Communication Scale that tested students' use of online communication in relation to six main needs: self-promotion, interpersonal communication, achievement, entertainment, role playing and autonomy. The results confirm the hypothesis suggesting a positive effect of online communication on subjective well-being due to psychological needs satisfaction. Another recent study (Liu, Fang, Wan, & Zhou, 2016) investigated the connection between students' pathological internet use and needs satisfaction. This research utilised the Adolescent Pathological Internet Use Scale on Chinese high school students to test eight basic needs: autonomy, entertainment, achievement, influence, identification, expression and information. The research indicates that when online activities are perceived by students as a possible way to satisfy these needs, learners show a higher internet use and a higher risk of pathological use.

The relationship between people's use of new technologies and well-being, due to the satisfaction of their psychological needs has already been investigated in the past although not necessarily in relation to students. For example, Katz (1997) identified several positive impacts of mobile devices on well-being due to needs satisfaction: uncertainty reduction, security, efficiency, information access, contactability, social interaction, and social control. Another study (Suler, 1999) claimed that people's use of the internet in relation to their well-being lays on a continuum that goes from a healthy to a pathological use depending on how this is used to satisfy some basic needs such as achievement and mastery, belonging, relationships and self-actualisation.

As it was reported in section 2.3.3 concerning students' use of social media, the literature does not seem to indicate a straightforward positive or negative connection between students' needs satisfaction through new technologies and their well-being. Research

seems to indicate that the positive or negative relationship to students' well-being could depend on how technology is used, on what needs are trying to be satisfied and if the use of technologies is an attempt to replace the pursuit of needs satisfaction in real life.

2.4 Students' use of new technologies in academic-related activities

The previous sections have illustrated that most of the studies explicitly referring to well-being theories and models in relation to students' use of new technologies did not investigate academic-related activities but tended to focus on the general impact of new technologies in students' life. Therefore, as explained in section 2.1.2, the literature review proceeded to explore other studies that, although they are not directly investigating students' well-being, are focused on the positive and negative experiences with new technologies in university-related contexts. The main relevant areas of study identified during this process are described in the next four sections.

2.4.1 Students' emotions in blended and online learning contexts

An important area of investigation showing connections between students' well-being and an academic-related use of new technologies was identified in studies exploring students' emotions in online and blended learning settings.

O'Regan (2003) conducted a significant study that adopted a qualitative methodology to explore students' emotions in an online learning programme in an Australian university. Five types of emotions were identified in relation to students' experiences: 1. frustration, 2. fear/anxiety/apprehension, 3. shame/embarrassment, 4. enthusiasm/excitement, 5. pride. Frustration was identified as the most pervasive emotion experienced by students. Frustration was associated with a multitude of issues such as: difficulties of fitting study around life, unreliability of internet connections, lack of clear instructions, poor navigation systems, structure of materials, quality of online discussions and feelings of isolation. Anxiety was associated with delays in the system, lack of instructions, electronic delivery of assignments, feeling publicly exposed and lack of confidence in using the internet. Embarrassment was instead mostly associated with the sense of feeling exposed and incompetent. The positive emotion of enthusiasm was associated with experiencing a new way of learning, with good quality of content and with good interactions with tutors. Finally, pride was mainly associated with students' accomplishments and good grades. The results of the study were used to identify some key aspects that can contribute to minimizing students' negative emotions: reliability of technology, clarity of accessing

instructions, quality of content design, guidance in group discussion and integrating online communication with face-to-face meetings.

Anxiety and frustration were also identified as main indicators of students' distress in another study that investigated students' experiences of online learning using a case study methodology (Hara & Kling, 2001). The researchers recognised two sources of students' distress. The first source was linked to technological problems that were identified as generating frustration among students. The second source of distress concerned course content and instructor-student communication. Lack of prompt feedback from instructors and ambiguous instructions were reported as generating confusion, anxiety and frustration.

The role of emotions in online learning contexts was also investigated in other qualitative studies. For example, in a series of studies in an open university in Cyprus (Zembylas, 2008; Zembylas, Theodorou, & Pavlakis, 2008) data were collected from students using diaries and semi-structured interviews to identify positive and negative emotions experienced by students. The positive emotions identified were excitement for the flexibility of distance learning methodology and for the emotional nature of online communication and satisfaction for fulfilling the course requirements. The negative emotions identified were anxiety for the unknown methodology of distance learning and the demands of the programme, loneliness and isolation and stress for the difficulties to combine academic and professional life.

Another study among Hellenic students (Angelaki & Mavroidis, 2013) investigated distance learning students' emotional well-being. In particular, the research explored students' emotions in distance learning settings and identified how these emotions changed depending on interactions with instructors and peers. The results indicate that students' communication with tutors helps greatly to decrease feelings of anxiety and stress and to increase relief and satisfaction. A sense of relief resulted also as a consequence of interactions between fellow students, due to the possibility that they could share their concerns for their studies, cooperate, and realise that as students they all face common difficulties. In addition, communication with other students was reported as important to overcome feelings of isolation.

Sense of relief was identified as one of the most frequent emotions experienced also by blended learning students in a study among Spanish learners (Rebollo Catalán, García Pérez, Barragán Sánchez, Buzón García, & Vega Caro, 2008) In addition to relief, the results indicate guidance, optimism, enthusiasm and satisfaction as the main positive emotions experienced by students. In contrast, tension, worry and disorientation were

the main negative emotions identified. In addition, an analysis of students' discourses in online discussion boards revealed that emotional discourses were associated with three main functions: enquiry, follow-up and assessment. The researchers identified as discourses containing enquiries were associated with emotions of insecurity and worry. Discourses concerning follow-up were linked to guidance and calm while discourses on assessment were connected to positive emotions such as satisfaction and enthusiasm.

In a recent study, (Butz, Stupnisky, & Pekrun, 2015) have investigated the achievement emotions (that is, emotions that are directly linked to achievement activities) of online and on-campus students enrolled in a synchronous hybrid learning programme. The results of the study indicated that online students reported higher levels of technology-related anger, anxiety and helplessness than on-campus learners.

In summary, these studies suggest potential connections between students' positive and negative emotions in online and blended learning settings and their well-being. In particular, peer-to-peer and peer-to-instructor interactions seem to play an essential role in decreasing frequent negative emotions such as anxiety, frustration, stress and sense of loneliness. In addition, also improvements on quality of connectivity, usability of systems and quality of materials appear to be important to lower students' negative emotions.

2.4.2 Students' satisfaction in blended and online learning contexts

According to the subjective well-being theory (section 2.2.1), satisfaction is considered an essential component along with happiness in order to experience well-being. Therefore, although learners' satisfaction is a different construct compared to learners' well-being, this subject can reveal some key elements that can make a difference in learners' quality of experiences. This section describes some key studies in the literature that will help to identify significant elements connected to students' satisfaction in online and blended learning programmes.

Eom, Wen and Ashill (2006) utilised a quantitative approach to examine the determinants of students' satisfaction in an online learning university programme. The results indicate that all of the six elements they analysed have an impact on students' satisfaction in university online education: students' self-motivation, students' learning styles, instructor knowledge and facilitation, instructor feedback, levels of students' interaction with instructors and peers and flexibility of the course structure.

Six dimensions of students' satisfaction in e-learning environments were identified by Sun, Tsai, Finger, Chen, and Yeh (2008) from the analysis of the literature: learners, instructors, courses, technology, design, and environment. The model generated using these six dimensions was firstly validated through students' semi-structured interviews, and was then used as a base to construct a survey to identify the key factors of students' satisfaction. The analysis of the results indicates that learner computer anxiety, instructor attitude toward e-learning, e-learning course flexibility, e-learning course quality, perceived usefulness, perceived ease of use, and diversity in assessments are the critical factors affecting learners' perceived satisfaction.

Some of these factors were identified also by Ozkan and Koesler (2009) in a study that proposed and tested a multi-dimensional assessment model for e-learning. The model was tested by examining students' satisfaction in blended learning university contexts using both qualitative and quantitative methodologies. Forty-seven criteria that can have an impact on the quality of e-learning programmes were divided in six dimensions: system quality, service quality, content quality, learner perspective, instructor attitudes, and supportive issues. Among these criteria, some important elements emerged common to other studies in this area. Attitudes toward e-learning, computer anxiety and computer self-efficacy were identified as key elements in relation to students' perspectives. Other key elements concerning instructors regarded their level of responsiveness, their communication ability and their ability in encouraging interaction among students. From a technological viewpoint, usability, ease of use, security, interactivity and reliability of systems were considered essential elements for student satisfaction. Finally, other important criteria identified were course flexibility and clarity and organisation of materials.

Blended learning university programmes were also used to identify the determinants of students' satisfaction by testing a model based on the social cognitive theory (Wu, Tennyson, & Hsia, 2010). Performance expectations, computer self-efficacy, system functionality, content features and interactions among participants were identified as the key elements linked to students' satisfaction.

In another study conducted in various Austrian universities (Paechter et al., 2010) students' expectations and experiences in e-learning were investigated through the use of a survey. The researchers reported that students' assessments of the instructor's expertise in e-learning, and her/his counselling and support were the best predictors for learning achievement and course satisfaction.

Finally, in a recent research Kuo, Walker, Belland and Schroder (2013) found that learner-instructor interaction, learner-content interaction, and Internet self-efficacy were good predictors of student satisfaction in online learning settings.

In synthesis, some recurrent elements seem to emerge concerning students' satisfaction in online and blended learning settings: 1. students' attitudes toward technology (such as computer anxiety and self-efficacy), 2. quality of interactions among students and between students and instructors, 3. quality of technology (quality of connectivity and of learning management systems), and 4. quality of contents and materials. It is also important to underline the good overlap between these elements and those identified in section 2.4.1 that facilitate the decreasing of students' negative emotions in blended and online learning environments. These reflections suggest that when specific quality criteria in online and blended learning settings are met, students could increase their sense of well-being by experiencing a low level of negative emotions and by feeling satisfied with their learning experience.

2.4.3 Students' technology acceptance

Perceived usefulness and perceived ease of use of technology are among the factors identified in the previous section that contribute to increase students' satisfaction in blended and online learning programmes. These two factors represent the main elements of the Technology Acceptance Model (TAM) developed by Davis (1986), and are widely used in the literature to explore students' acceptance of new technologies and attitudes toward e-learning.

For example, Drennan, Keenedy and Pisarsky (2005) applied TAM to test students' satisfaction in a blended learning programme. The analysis of quantitative data, gathered from a survey and supported by the analysis of students' narratives, identified some key elements linked to students' satisfaction. These elements were positive perceptions of technology in terms of ease of access and ease of use of online flexible learning material, and autonomous and innovative learning styles.

Saadé and Bahli (2005) extended TAM adding positive absorption as one of the main elements linked to students' acceptance of technology and satisfaction. Cognitive absorption is a construct very similar to the concept of flow (see section 2.2.2.2) that indicates people's level of engagement and involvement in an activity. The research describes cognitive absorption as the result of the combination of three different components: temporal dissociation (that is, losing the perception of the passing of time), focused immersion in the activity, and enjoyment. Similar results were found in another

study on Korean university students (Lee, Yoon, & Lee, 2009). The study identified perceived usefulness, perceived ease of use and perceived playfulness (representing the construct of flow) as the main factors predicting students' acceptance of e-learning. In addition, the results evidenced as perceived usefulness of the e-learning experience was linked to instructors' characteristics and quality of teaching materials. Perceived ease of use was instead associated with the quality of design of learning contents. More recently (Edmunds et al., 2012) TAM was used to explore students' attitudes towards ICT and its use in different areas: course study, work and social activity. The results of a survey submitted to students of the Open University in the UK indicate that perceived usefulness and perceived ease of use are still key elements that influence students' attitudes and use of ICT in all the areas explored.

TAM was also successfully employed to test students' acceptance of specific aspects of students' use of new technologies such as VLEs (Goh, Hong, & Gunawan, 2013), mobile learning (Abu-Al-Aish & Love, 2013; Iqbal & Bhatti, 2015), cloud file hosting services (Stantchev, Colomo-Palacios, Soto-Acosta, & Misra, 2014) and social media (Lowe, D'Alessandro, Winzar, Laffey, & Collier, 2013). Among these studies, two contributions are worth describing more extensively. Stantchev et al. (2014) reported that cloud services (such as Dropbox) are in general preferred by students for information sharing and collaborations over VLEs. The results indicate that cloud services receive a better consideration from students compared to VLEs in terms of attitude toward their use, as well as perceived ease of use and perceived usefulness. The study of Lowe et al. (2013) examined students' acceptance of the use of Twitter in a marketing university programme adopting an augmented version of TAM that includes hedonic and utilitarian attitudes in addition to perceived usefulness and perceived ease of use. Hedonic attitudes concern students' search of fun and enjoyment in the use of new technologies. Instead, utilitarian attitude is explained by the authors as the tendency to look for "what's in it for me" by students. The results indicate that the utilitarian attitude plays a major role in influencing students' acceptance and intention to use Twitter, while the hedonic component was not revealed to be particularly important. Moreover, affective elements such as students' affinity with computers and risk tolerance showed connections with perceived usefulness and perceived ease of use.

The hedonic component along with utilitarian usefulness was already evidenced in literature as playing an important role in students' acceptance and adoption of new technologies such as use of smartphones (Chun, Lee, & Kim, 2012) and use of instant messaging applications (Gu, Fan, Suh, & Lee, 2010).

In summary, the analysis of the literature indicates that students' acceptance and intention to adopt new technologies appear strongly linked to perceived usefulness and ease of use of such technologies. Recent studies also indicate that perceived usefulness seems to have a utilitarian productivity-oriented component and a hedonic component although the latter could have a minor impact in learning contexts. In addition, other elements such as cognitive absorption and playfulness could also play a role. All these elements seem to combine with students' and instructors' individual attitudes toward the use of technology.

The studies described in this section can help to identify the essential role of the technological component in increasing or decreasing the quality of students' experiences and consequent well-being. Quality of connectivity, quality of VLEs and quality of software applications and materials can simplify students' life making them more satisfied and facilitating the experience of positive emotions or making learners' life harder and stimulating the emergence of negative emotions.

2.4.4 Students' experiences with new technologies in qualitative studies

This last section presents some relevant studies in literature that investigated students' positive and negative experiences with the use of technology in Higher Education settings utilising qualitative or mixed methods approaches.

JISC (Joint Information Systems Committee) conducted between 2004 and 2009 a wide programme where qualitative data were extensively collected in different projects to examine the nature of learners' experiences with ICT (Conole, 2008; Edmunds et al., 2012; Lessner, & DeCicco, 2005; Sharpe, Benfield, Sharpe, Beetham, Benfield, DeCicco, & Lessner, 2009).

Some important aspects that emerged from the above studies concern students' information seeking and handling. The research indicates that learners use primarily internet search engines to look for relevant information in relation to learning activities and appreciate the ease of retrieving information from the web. However, students also indicated difficulties in finding relevant information and in evaluating the creditability of sources. Moreover, few students indicated having received formal training on how to find and use digital information. In relation to lecture materials accessible thorough VLEs, the results revealed students' high expectations concerning standards and interactivity of materials to keep them engaged. However, data analysis indicated also a discrepancy between students' expectations and the perceived quality of materials provided by their institutions.

In relation to communication, these studies indicated that students use new technologies extensively to communicate with instructors and peers and appreciate in general the potential of new technologies in facilitating communication. However, in some cases the use of instant messaging applications was negatively considered by students as causing interruptions and therefore disruptive for their study. In relation to communication with instructors, the findings suggest that learners have high expectations concerning responses to their emails. Regarding instead peer-to-peer communication, students did not show in general much appreciation for discussion forums. These platforms were reported as not being engaging for students, as online discussions were often dominated by only a few people. The findings also indicate a tendency for students to create private social networks to support their learning outside the VLE. Finally, in relation to the use of VLEs, most of students appeared to dislike these platforms criticising their structure and design and the relevancy of information posted.

In general, as reported by Sharpe et. al (2009) the picture emerged from this body of research contains some important points:

- the use of technology is pervasive and highly integrated in students' lives
- students appreciate the flexible time- and space- independent access to online information and resources, social connections and support networks
- students try to personalise their experiences with technology in learning to meet their specific needs
- learners' experiences with new technologies show many individual differences

A further contribution to the topic was also provided by a qualitative case study (El Mansour & Mupinga, 2007), where positive and negative students' experiences in blended and online courses in a US college were investigated. In relation to the use of new technologies, the results indicate that blended learning students appreciated the possibility to catch up with their study, as in the case of missed lectures, but complained of connectivity issues. Online learners appreciated the flexibility and convenience given by new technologies, instructors' availability and online interactions with peers and the use of audio recordings that made online lecturers more similar to a face-to-face experience. Also in this case, connectivity issues were one of the technological problems reported by students along with technical issues with the VLE. In addition, online students complained about the slowness of feedback provided by their instructors, lack of teacher-student and student-student relationships, lack of personalisation of the online environment and slowness of communication in general.

In relation specifically to online learning contexts, a review of the literature in the field (Blackmon & Major, 2012) evidenced four main factors impacting on students' experiences: ability to find a balance between educational access and family life, ability to manage time and workload, instructor accessibility and opportunities to connect with peers. The first two elements highlight the critical importance and the difficulties for online students to find a balance between study, work and family. The last two elements remark how the quality of communication with instructors and peers makes the difference in online learners' experiences. The research also indicates that instructors' availability, quickness to reply to queries and relations with peers help students to overcome negative emotions such as feelings of isolation, preoccupation and frustration.

Another large-scale study involving more than 10.000 students in Australia utilised a mixed method methodology to enquire relevant information from students about their experiences with digital technologies in relation to learning. The analysis of the qualitative data (Russell, Malfroy, Gosper, & McKenzie, 2014) indicates that students recognise the central role played by VLEs in providing access to materials, information and communication. In particular, students appreciated the flexibility in accessing lecture notes, recordings and assessment information anytime and anywhere. Moreover, students valued the possibility of communicating with lecturers and other students through discussion boards. Concerning the areas of improvement identified by learners, these regarded facilities and infrastructures such as Wi-Fi and support of use of mobile technologies. In addition, students requested that teachers make more use of the available technologies. For example, they asked them to be more interactive through the VLE, to provide more and up to date information and to upload recorded lectures.

As can be seen, these contributions highlight the main role of VLEs in students' daily university activities but also the controversial experiences and opinions that learners have concerning the functionality of these platforms. In relation to this, a qualitative study conducted to analyse students' discourses concerning their experiences with VLEs (Burnett, 2011), confirms the complexity of the relationship between students and digital technologies. The study indicates that in some cases the VLE can help students by making them feel more in control of what happens in their learning environment and to feel connected with the learning community. This confirms the findings of previous studies such as Habib and Johannesen (2007). However, in other cases students can be reluctant in using discussion boards implemented in the VLE due to their difficulty in managing their online identities, and being able to position themselves in the online community. This difficulty emerges as one of the reasons linked to students' tendency to develop informal unofficial networks outside VLEs. Finally, the main picture that emerged

from the analysis of students' discourses is that VLEs are connected to students' sense of control over their learning, but do not contribute to students' empowerment as envisaged by educational developers.

In relation specifically to the use of ubiquitous and mobile technologies in Higher Education contexts, Brett (2011) investigated students' experiences and engagement with SMS for both learning activities and administrative communications in a UK university using a mixed methods approach. The results showed diverse opinions among students. Learners appeared to highly appreciate SMS communications from universities when these matched their needs. In particular, students favoured receiving timely administrative information on their mobile phones. Instead, the use of SMS for learning purposes had mixed success. Most of students interpreted the text messages received by tutors as an intrusion into their private life, showing that they did not appreciate the mixing of the educational with the private context. Moreover, also the timing and appropriateness of these texts messages were highlighted as a problem. In another research, Benson and Morgan (2013) reported the results of a case study where the impact of the implementation of a mobile VLE in a UK university on students' experiences was evaluated. The results show that the availability of the VLE on wireless devices such as smartphones and tablets can improve students' experiences by enhancing engagement and facilitating formal and informal collaboration with peers. Students showed appreciation for the immediacy of communication compared to desktop computers and laptops. Moreover, the mobile VLE linked to a cloud repository system assured an easier accessibility to its contents. Finally, key elements of the successful implementation of the mobile VLE appeared to be speed and continuity of service.

The qualitative and mixed methods studies reported in this section seem to confirm some key elements highlighted in the chapter that can make the difference in students' experiences with new technologies such as ease of access to information, peer to peer and peer to instructor communication, quality of connectivity and quality of technology. In relation to accessing information, two main points seem to emerge as particularly relevant from the literature. Access to information appears to be an essential element of students' appreciation of ubiquitous connectivity. However, as reported in the studies conducted by JISC, the abundance of information available online can bring relevancy and credibility issues of sources. Concerning instead information provided by universities and sent directly to students' devices, learners seem to appreciate the possibility to remain up-to-date on administrative information. Moreover, information accessible through VLEs can help students gain a sense of control over their learning environment.

However, the delivery of information by instructors seemed to pose concerns regarding boundaries between educational and private settings.

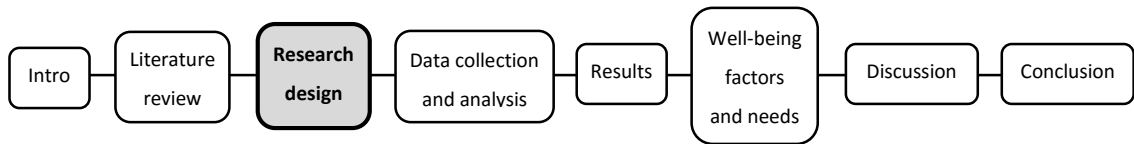
The central role played by VLEs in influencing students' experiences is also highlighted by a set of qualitative studies that adopt actor-network theory as the main framework for the data analysis. According to this model both humans and non-humans are considered as actants, that is, actors interacting, negotiating and creating alliances within complex networks. One of these studies (Habib, Joannesen, & Øgrim, 2014) remarks that students' appreciation and use of VLEs can change depending on learners' attitudes, needs and digital literacies. Other contributions (Habib & Johannesen, 2014; Johannesen, Erstad, & Habib, 2012) underline the importance of instructors' attitudes toward VLEs and their practices of the use of educational technologies in affecting students' experiences. These studies indicate that the introduction and implementation of VLEs in universities is often the result of a managerial decision. The lack of involvement in this process due to the top-down implementation of new technologies can become a source of resistance among academics. This can reflect in discrepancies between the apparent large diffusion of educational technologies among instructors, and how much these are actually part of their daily pedagogical practices. Therefore, although the use of new technologies has the potential to enrich the quality of teaching practices by providing additional flexibility and tools at the instructors' disposal, the literature indicates a lack of uniformity concerning academics' attitudes and involvement that can reflect in the quality of students' experiences.

2.5 Conclusion

The literature review suggests that the investigation of students' well-being in relation to the use of new technologies presents some important gaps. Firstly, studies explicitly applying the construct of well-being on students' adoption of new technologies tend to use exclusively quantitative methodologies and to focus on learners' general use of technology disregarding university-related activities. Secondly, a consistent number of elements positively or negatively affecting students' daily experiences in university-related activities emerged in areas of study not explicitly investigating well-being. Therefore, a clear connection between these elements and students' sense of well-being is yet to be established. Finally, the analysis of the literature suggested the presence of a gap concerning how students' positive and negative experiences with new technologies could be contextualised in relation to the existing well-being theories and models.

In relation to these reflections, the contribution of this research can be synthesised in three points:

- Firstly, a qualitative investigation of the highs and lows of students' use of new technologies helped to explore this topic in depth, and to identify if the various elements emerging from the literature are still relevant at the present time, while also considering the pace of the technological development.
- Secondly, the collection and analysis of qualitative data and the specific work conducted with students allowed this research to identify the connections between students' positive and negative experiences in using new technologies and their well-being.
- Thirdly, the comparison between the well-being factors emerging from the data analysis and the factors proposed by existing well-being theories allowed this research to place the findings in the context of the existing literature in the field and to provide suggestions to stakeholders on how to promote students' well-being in relation to the use new technologies.



3. RESEARCH DESIGN

3.1 Introduction

The main objective of this chapter is to give a comprehensive presentation of the research design, illustrating the choices that have been made in terms of the research paradigm, methodology and methods. In addition, an overview of the sampling criteria and of the data collection phases is presented. Section 3.2 introduces the criteria to define a research paradigm and section 3.3 presents the main research paradigms found in the literature. The choice of adopting constructivism and grounded theory respectively, as the paradigm and the methodology for this research, are explained in section 3.4 and 3.5. Afterwards, the different grounded theory traditions are described and related to the research paradigm adopted (section 3.6). The rationale behind the selection of the constructivist version of grounded theory for this study is explained in section 3.7 and an overview of the constructivist grounded theory process is presented. Section 3.8 describes all the data collection methods considered in the research and the reasons for their adoption or exclusion are explained. Section 3.9 provides a brief summary of all the choices made in this research in terms of ontology, epistemology, methodology and methods. In section 3.10 the criteria used for the sampling of the participants are discussed. Finally, the different phases of the data collection are illustrated in section 3.11.

3.2 Defining a research paradigm: ontology, epistemology and methodology

In the last century, the rise of the philosophical debate about the nature of reality and the development of qualitative research have helped researchers to gain new consciousness about the importance of identifying the ontological and epistemological premises of their work (Holloway & Wheeler, 2009). This new awareness had a huge impact primarily in social science research, but also sectors identified as hard sciences (natural sciences) have experienced the repercussions of this debate. In relation to the use of technology, since the mid-1980s, Information System studies have started to conduct qualitative

research and to embrace interpretivist approaches as an accepted and utilised inquiry paradigm (Klein & Myers, 1999; Myers & Avison, 2002).

The choice of the research paradigm influences ultimately the way researchers think about their study. In fact, the paradigm chosen reflects researchers' beliefs about the nature of reality, and the relationship between the researcher and the object of the research. Moreover, it defines the criteria for data collection, data analysis and discussion of the results.

Rossmann and Rallis (2003) define the term paradigm as "...products of shared understandings of reality, that is, worldviews, complete, complex ways of seeing and sets of assumptions about the world and actions within it" (p.37). Similarly, Guba and Lincoln (1994) affirmed that a research paradigm may be viewed as:

"...a set of basic beliefs that deals with ultimate or first principles (...) a worldview that defines, for its holder, the nature of the 'world', the individual's place in it and the range of possible relationships to that world and its parts" (p.197).

A research paradigm can therefore be considered as a set of assumptions about the nature of the world that guides the work of researchers shaping the essence of their study and of their actions.

According to Guba and Lincoln (1994), three main elements can help to identify and categorise different research paradigms: ontology, epistemology and methodology. *Ontology* is the starting point of all research, after which the epistemological and methodological positions logically follow. As described by Guba and Lincoln (1994), defining the ontology of a research means making assumptions about the form and nature of reality and about what can be known about it. Therefore, delineating the ontology of a research means making a statement about the nature of the world and about the nature of the subject of the study. Instead, *epistemology* investigates the relationship between the researcher and the object of the research. In other words, if the question that lies behind ontology is "what can we know?", the question driving epistemology is "how can we know?" (Willig, 2001).

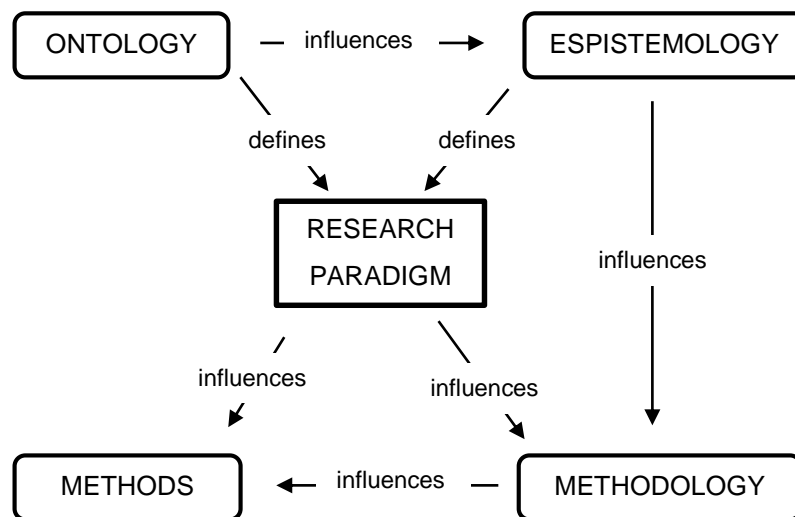
As an example, if a researcher believes that there is a unique and objective reality "out there" that can be completely known and measured using the appropriate tools, this assumption implies that reality is entirely independent from the person who observes and studies it. In this case, the researcher will use every precaution not to interfere with data collection and analysis to avoid any bias and to maintain objectivity in the study.

The choice of a specific research paradigm, that carries a distinctive ontology and epistemology, restricts and defines the number of methodologies available to the researcher. In this regard, it is important to specify the difference between methodology and method.

As affirmed by Kinash (2006), the relationship between method and methodology is like the relationship between the words psyche and psychology, or between derma and dermatology. *Methodology* is the discipline, or body of knowledge that guides the work of a researcher, while methods are the techniques or processes used to collect data. If, as stated before, ontology and epistemology answer respectively the questions “what can we know?” and “how can we know?”, it is possible to say that methodology can answer the question “how is it possible to proceed to find out what can be known?”. In this regard, it is important to highlight that the choice of the methodology influences the selection of the methods adopted by the researcher. For example, studies adopting qualitative methodologies (such as grounded theory or phenomenological analysis) would mainly use methods that allow them to collect people’s narratives and avoid methods that provide quantitative data.

Figure 3 provides a summary of the concepts described in this section by proposing a graphical representation of a research paradigm framework.

Figure 3 – Research paradigm framework



As it can be noticed, the diagram suggests that there is a cascade effect that starts with the definition of the ontology of a research. In fact, the identification of the ontology of a research influences its epistemology that in turn impacts on the choice of the methodology, and that finally influences the methods chosen to collect data. In relation

to the research paradigm, ontology and epistemology define the paradigm of a research which, in turn, influences the choices made in terms of research methodology and methods.

In the next section, the main paradigms existing in research are introduced and described.

3.3 Research paradigms in scientific research

It is possible to find many different classifications of research paradigms in the literature. Although the categorisation provided by Guba and Lincoln (1994) has been widely used during the last twenty years, there is still no agreement in the research community on a specific and shared classification. This is due to different uses of the terms paradigm, methodology and method, in addition to legitimate different perspectives and considerations among researchers. In some cases, what is considered as a methodology for a researcher can be classified as a paradigm by another. As an example, five different research paradigms classifications are presented here below:

- Guba and Lincoln (1994) based their research paradigms classification on four pillars: positivism, post-positivism, critical theory, and constructivism.
- Willig (2001) categorised research paradigms using five different labels: positivism, empiricism, hypothetic-deductivism, feminism and social constructionism.
- Creswell (2003) adopted a different classification: positivism, constructivism, advocacy/participatory, pragmatism.
- Mertens (2009) describes in her book four paradigms: positivist/post-positivist, interpretivist/constructivist and emancipatory
- Hammersley (2012) makes a distinction between positivism/post-positivism, interpretivism/hermeneutics, “critical” research and constructionism.

The classification described in the following sections can be considered as an integration of the works of the authors mentioned above. However, it is not intended to be an exhaustive description of the main research paradigms existing in literature. The intent is to describe some important paradigmatic approaches and place them in association with the ontological and epistemological reflections presented in section 3.2. Moreover, the choice made here to distinguish interpretivism from constructivism will help later in the chapter to make distinctions between the different grounded theory approaches.

The classification proposed contains five main research paradigms: positivism, post-positivism, interpretivism, constructivism and critical research.

3.3.1 **Positivism**

The origins of positivism, can be dated back to August Comte's body of work (Comte, 1851). Positivism has been the dominant research paradigm until the latter half of Nineteenth century and it is sometimes also referred to as 'scientific method' or 'science research' (Mackenzie & Knipe, 2006). This approach is based on the ontological perspective that reality is external to the observer and that researchers share the responsibility to discover and understand the principles and laws that govern it.

The goal of research is to produce objective and unbiased knowledge formulating and testing hypotheses. Due to the nature of this approach, the relationships between elements of reality are evaluated in terms of cause-effect. The main approach for investigation is deductivism, where the assessment of the validity of a conclusion is based on the set of premises which have been allotted a truth value (Harvey, 2016).

The main aspect to underline regarding this approach is the dualist and objectivistic nature of the relationship between the investigator and the investigated "object" (Guba & Lincoln, 1994). Reality is considered as completely independent from the observer, and therefore neutrality and objectivity are two fundamental aspects to pursue in research.

3.3.2 **Post-positivism**

Post-positivism can be considered as an evolution of positivism because like the latter, it holds a deterministic philosophy where causes determine effects but unlike the positivistic approach, it challenges the existence of an absolute truth (Creswell, 2003).

The critics moved to positivism and in particular the works of Popper and Kuhn, helped to reform this paradigm to meet these critiques. Popper (1965) introduced the concept of falsification of hypotheses stating that a hypothesis can never be completely verified but only falsified or rejected by researchers. Another important contribution was provided by the concept of 'paradigm shift' described by Kuhn (1962). This concept states that theories are always formulated within bigger worldviews (or paradigms) and that accumulating evidences bring, at some point in history, changes of paradigms not only of specific theories.

In this new scenario, the aim of researchers is still to formulate and test hypotheses that for their own nature will always be imperfect and fallible. The ultimate nature of reality is therefore considered impossible to know, and the goal of the researcher is to arrive as close as possible to defining it. Quantitative research in psychology usually embraces this approach. The main objective of research is to formulate and validate hypothesis about the human mind and people's behaviours.

3.3.3 Interpretivism

The interpretivist approach claims that people's actions cannot be understood only through using observable and measurable behaviours. Interpretivism discriminates between social and natural sciences and focuses on understanding the meaning of social phenomena (Andrews, 2012).

The focus of research moves from the external and measurable world to the internal world of people made of perceptions, beliefs, and attitudes. According to Schwandt (2003), interpretivists focus on the process by which meanings are created, negotiated, sustained and modified. Under this paradigm, people are believed to take actions not because they are simply responding to external stimuli, but because they give meaning to the surrounding environment; they interpret the situations they are involved in and they act consequently.

Unlike the positivist perspective based on deductivism, inductivism is considered the main approach of investigation. This view argues that scientific knowledge is derived inductively from observation (Harvey, 2016). Interpretivism is often identified with qualitative research because it is normally through qualitative methods of enquiry that researchers can collect data about people's feelings, ideas, beliefs and worldviews.

From an epistemological point of view, Andrews (2012) identifies a tension in the interpretivist approach due to the attempt to provide an objective interpretation of subjective experiences. In fact, "...while interpretivists value the human subjective experience, they seek to develop an objective science to study and describe it". As explained in the next section, this reflection is a very important element to understand the difference between interpretivism and constructivism.

3.3.4 Constructivism

Although interpretivism and constructivism are terms often used as synonyms in literature, they present important differences (Andrews, 2012; Hammersley, 2012).

An important milestone in the tradition of constructivism common also to interpretivism can be identified in the works of Hebert Mead on symbolic interactionism (Mead, 1934). This theoretical perspective assumes that language and symbols play an essential role in forming and shaping individuals' meaning and actions (Charmaz, 2014, p. 262). According to this view, human worlds consist of meaningful objects, and people's actions and experiences can be seen as a consequence of their subjective meanings. In this sense, constructivism can be considered as a radicalisation of interpretivism (Hammersley, 2012). While interpretivism assumes the existence of a reality behind the different interpretations of it, in constructivism the emphasis is given on how reality is socially constructed (Berger & Luckmann, 1991). That is, different persons, communities and cultures formulate the world symbolically in different ways and generate multiple, constructed, realities (Hammersley, 2012).

According to constructivism, people construct reality through their social interactions. Therefore, they do not just give an interpretation of an underlying common reality but they generate realities through the use of ordinary language (Watzlawick, 1984).

From an epistemological perspective, since interpretivism preserves the idea of a unique underlying reality, the role of the researcher is to collect people's different interpretations and worldviews trying to maintain distance and objectivity. Instead, in constructivism, researchers consider themselves actively involved in the construction of reality while interacting with their participants. Therefore, the role of researchers is not to try avoiding any bias and to maintain objectivity but to acknowledge that the research process is also a process of construction of reality. Consequently, researchers are aware that they are not providing an objective description of participants' worldviews in their studies, but their own construction of participants' views.

3.3.5 Critical-Emancipatory research

Critical research was born to raise the attention on social class differences, and inequalities in terms of gender, ethnicity and race, sexual orientation, and disability (Hammersley, 2012).

Mertens (2009) puts under this paradigm all the approaches that address the politics in research by confronting social oppression at all levels. This group includes: critical theory, Neo Marxist research, feminism, participatory and transformative among others.

It is worth saying that not all authors agree with this categorisation. As an example Lincoln, Lynham and Guba (2011) have included the participatory approach in their classification as a new research paradigm as suggested by Heron and Reason (1997).

From an ontological perspective, this paradigm has a lot in common with constructivism as it recognises the existence of multiple realities. However, it stresses specifically "...the influence of social, political, cultural, economic, ethnic, gender and disability values in the construction of reality" (Mertens, 2009, p.20). Its ontology coincides with the historical realism approach described by Guba and Lincoln (1994).

In the next section the process of definition of the research paradigm in this research will be explained.

3.4 Choosing the research paradigm

As described in section 1.3.1, the main aim of this research was to investigate the highs and lows of university students' experiences with ubiquitous connectivity, and to understand the impact of these technological advances on learners' day-to-day life and consequent well-being. The literature review indicated that, although many studies investigated students' experiences with new technologies, few of them focused on how ubiquitous connectivity can affect students' well-being. For this reason, this research was approached as an exploratory study. The main goal in terms of data collection was to obtain rich data from participants and to investigate different perspectives to understand the impact of new technologies and ubiquitous connectivity on students' day-to-day experiences and sense of well-being. Based on these reflections, conducting a research project anchored on qualitative data appeared as the best solution to adopt. In relation to the descriptions provided in section 3.3, three research paradigms can be considered particularly suitable to be adopted in research that explore people's feelings, ideas, beliefs, worldviews and social interactions: interpretivism, constructivism and critical-empiricist research. The critical-empiricist paradigm was immediately excluded, as focusing on social class, gender, or ethnicity differences was not a goal in this research. Consequently, interpretivism and constructivism were considered as possible options for this study.

As will be extensively explained in section 3.5, various methodologies embracing the constructivist and interpretivist paradigms were considered during the research planning. Once grounded theory was identified as the most appropriate methodology to adopt for this research, the different grounded theory traditions were analysed to identify the most

suitable for this study (section 3.6). Finally, (as illustrated in section 3.7), constructivist grounded theory, an approach based on the constructivist paradigm, was identified as the best solution for this research. In particular, this approach was appreciated for its position concerning the role of the researcher and the balance between rigour and flexibility proposed in the data analysis.

In synthesis, the choice of constructivism as the paradigm for this research was influenced on the one side by the aim and objectives of the research and on the other by the analysis and identification of the most suitable methodology to adopt.

3.5 Choosing the methodology of the research

Initially, the reflections regarding the methodology to adopt were focused on approaches that could provide a strong framework to investigate people's experiences through the analysis of their accounts and narratives. It was assumed that analysing students' narratives would have provided insights on learners' relationship with new technologies, and on the consequences of the use of such technologies on their well-being. According to this initial premise, the methodologies considered were Interpretative Phenomenological Analysis (IPA), narrative analysis, personal construct analysis, Foucauldian Discourse Analysis (FDA) and grounded theory.

A brief description of the first four approaches is provided in appendix B. Grounded theory will be extensively described in section 3.5.

With the progression of the research planning, some considerations restricted the choice of the methodology to adopt. In fact, further reflections on the research project led to consider the potential role that academic and professional support staff have in influencing students' experiences with new technologies and ubiquitous connectivity. It was supposed that the way staff members conceive their relationships with new technologies could reflect in how they perform their daily activities. Consequently, it was then thought that this could have an impact on their interactions with students, and in turn on learners' day-to-day experiences. Moreover, it was considered that an important role in shaping students' experiences could also be played out by how university institutions implement and manage the technological resources provided to learners.

Therefore, the progression of the research planning raised considerations on how students' well-being could be influenced by multiple elements in relation to the use of new technologies and ubiquitous connectivity: students' and staff members' habits,

behaviours and beliefs, interactions between students and staff and institutional policies regarding the implementation and management of new technologies.

In order to manage this complexity, a specific methodology was needed that could:

- support an in-depth analysis of qualitative data
- ensuring rigour during the data analysis process
- keeping the researcher's conceptual reflections grounded in the data
- incorporate the analysis of different perspectives and contextual elements
- provide the possibility to investigate interactions and psychosocial dynamics among participants

While IPA, narrative analysis and personal construct analysis carry ontological, epistemological and procedural differences, all these methodologies aim to emphasise people's individualities and personal perspectives trying to understand how individuals make sense of their own personal experiences. However, these methodologies are not specifically focused on exploring social interactions and dynamics and the role of contextual elements in shaping people's experiences, so after consideration, they were rejected.

Concerning FDA, this approach has the potential to provide insights on how people's worldviews are revealed using discourses and on how discourses contribute to shape psychosocial dynamics among people. Therefore, FDA was initially considered for this project for the reason that the analysis of students' discourses could have helped to reveal their relationship with new technologies and ubiquitous connectivity, and how these contribute to shape their daily university experiences. However, in terms of social dynamics, FDA is particularly suitable to investigate how people's discourses contribute to determine positions of power within communities and groups and this was not a specific objective of the research.

By contrast, the analysis of the features of grounded theory, led to a consideration on how this approach was more appropriate to satisfy all the main necessities of the research project. In fact, as explained in section 3.6 and 3.7, grounded theory facilitates and encourages an in-depth analysis of data offering procedures that ensure the rigour of the analysis process. Moreover, it provides tools to manage complex situations of investigation and to analyse contextual elements and social dynamics.

However, as mentioned in section 3.1, different grounded theory traditions have been developed throughout the years and still currently coexist. These different versions of grounded theory refer to diverse research paradigms and consequent ontological

positions that move from post-positivism to constructivism. Therefore, the next step of the analysis consisted in examining the different grounded theory approaches to identify the most suitable for this research.

In the next section, the historic evolution of the grounded theory methodology is presented and different positions are compared in relation to their underlining research paradigms.

3.6 Grounded theory approaches

Grounded theory is a methodology developed originally by Glaser and Strauss (1967) in response to two main factors. Firstly, it represented an attempt to contrast the dominant quantitative ideology that was pervading social science in the 1960s. Secondly, it had the objective to give clear guidelines to qualitative researchers in order to improve the quality of their studies (Dunne, 2011).

Grounded theory is nowadays widely used in psychology, nursing and education research, and its main goal is to build theories about issues of importance in people's lives (Mills, Bonner, & Francis, 2006).

As indicated by Charmaz and Bryant (2010), from a terminological standpoint grounded theory has two related meanings:

“... (1) a set of systematic methodological strategies that constitute a distinct method for conducting research and analysing inductive data and (2) the product of this process, the completed theoretical analysis of these data...” (p. 406).

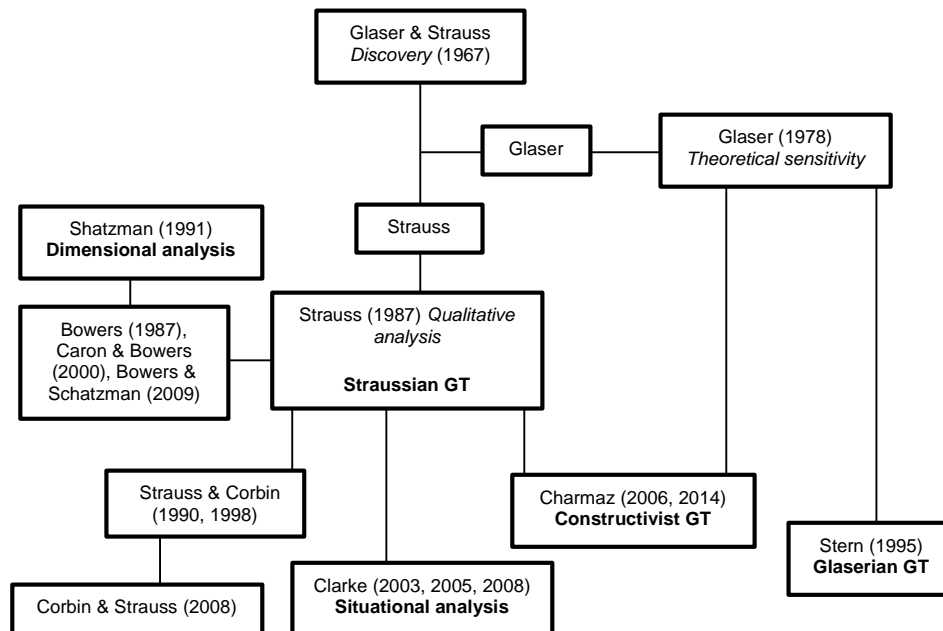
Also in this research, this term is both used to refer to the specific methodology adopted and to the theoretical analysis of the data presented in chapter 5.

Many different grounded theory traditions stemmed from the original approach introduced by Glaser and Strauss. Figure 4 provides an overview of how the different interpretations of grounded theory have been developed over the years (Morse et al., 2009).

While different grounded theory approaches can be distinguished by important methodological and epistemological differences, they all share some common basic characteristics. Each grounded theory methodology starts from a first phase of data collection where researchers step in without preconceived ideas to prove or disprove in relation to their specific field of study. In the next stage they pass through an iterative

inductive and deductive cycle that brings, at its final stage, the creation of a theory deeply grounded into the data (Warburton, 2005).

Figure 4 - Genealogy of grounded theory major milestones - from Morse et al. (2009)



In grounded theory, the data collection phase is not separate from data analysis. All grounded theory traditions share a recursive approach to data collection and analysis where each round of data collection is influenced by the findings of the previous round of data analysis. This recursive cycle called “constant comparison” (Charmaz, 2006, p.54; Strauss & Corbin, 1998, p.67) continues until the theory is refined and a saturation point is reached (Warbuton, 2005). The saturation point is reached when data do not bring any more contribution to the theory because all the main categories of meaning have been already explored.

There are three main different grounded theory positions (Birks & Mills, 2011; Mills et al., 2006) that can be identified in literature: the traditional “Glaserian” grounded theory developed by Glaser and Strauss (1967), an evolved version (also called “Straussian”) developed by Strauss and Corbin (Corbin & Strauss, 2015; Strauss & Corbin, 1990; Strauss & Corbin, 1994; Strauss & Corbin, 1998) and the constructivist approach developed by Charmaz (Charmaz, 2000, 2006, 2009, 2014). According to Mills et al. (2006), these approaches differ for many methodological aspects such as the treatment of the existing literature in the field (see section 2.1.1) and the way data are coded (see section 4.2.2). However, for the purposes of this chapter, it is important to highlight the fact that they differ mainly for their ontological and epistemological premises.

3.6.1 **Glaserian grounded theory**

Glaserian grounded theory (Glaser, 1978; Glaser & Strauss, 1967) is considered by the authors as a method of discovery (Charmaz, 2006) where categories are literally emerging from the data, and where the final theory is representative of a “real reality” (Mills et al., 2006). Therefore, although the first intent of traditional grounded theory was to move away from the hegemonic quantitative research in the 1960s (Mills et al., 2006), it seemed to share with it the same positivistic assumptions in terms of an underlying paradigm. In fact, as Van Maanen (1988) suggested, the authors wanted to offer a methodology that emulated the natural sciences, and that could stand against all the complaints of a lack of objectivity in qualitative research.

3.6.2 **Straussian grounded theory**

Positioning the “Straussian” grounded theory is a more difficult task because the background paradigm adopted by the authors has changed during the years. From an analysis of their early works (Strauss & Corbin, 1994, 1998), it is possible to identify an oscillation between a post-positivistic and an interpretivist paradigm. In these writings, they acknowledge the existence of multiple perspectives and truths, rejecting the idea of a pre-existing reality; however, they never affirm that reality is socially constructed and they stress that researchers should pay attention to recognising bias and “...maintain a balance between objectivity and sensitivity” (Strauss & Corbin, 1998, p.42). Instead, in the last revision of their grounded theory manual (Corbin & Strauss, 2015), the authors appeared to move more explicitly towards a constructivist approach.

3.6.3 **Constructivist grounded theory**

Clearer in terms of ontology and epistemology is the position of Charmaz that, in developing constructivist grounded theory, made a limpid statement about the ontological and epistemological positions of this approach. According to Mills et al., (2006) constructivist grounded theory can be considered ontologically relativist and epistemologically subjectivist.

Two important aspects distinguish Charmaz’s approach from the other positions mentioned above.

Firstly, the emerging theory is not considered a representation of an external reality but it tries to account how reality is constructed by people. “... data don’t provide a window on reality...” (Charmaz, 2000, p.524).

Secondly, in constructivist grounded theory, the role of the researcher is of a co-producer (Mills et al., 2006). The final theory is a construction of researchers emerging from their attempt to learn and understand their subject of study. Charmaz affirms:

“...neither data nor theories are discovered... we construct our grounded theories through our past and present involvements and interactions with people, perspectives and research practices” (Charmaz, 2006, p.10).

Finally, a specific mention needs to be made of Situational Analysis (SA) (Clarke, 2005) as some tools suggested by this approach have been used in this research along with constructivist grounded theory.

3.6.4 **Situational Analysis**

As illustrated in Figure 4, SA belongs to the collection of methodologies derived from the grounded theory tradition. Situational analysis can be considered as an extension of grounded theory that offers a postmodern reinterpretation of the classic grounded theory methodology (Clarke, 2003). The tools proposed by SA for data analysis can be effectively integrated in constructivist grounded theory as the two approaches share the same ontological and epistemological premises. The integration of elements of SA in constructivist grounded theory allow researchers to focus their attention on specific elements in the studied situation such as the material environment, non-human actors, discourses and structural elements (Charmaz, 2014, p. 220). However, unlike the grounded theory traditions, with SA the final goal is not to generate a theory to explain a “basic social process” (Clarke, 2005, p.16) but to reveal the complexity embedded in the specific situation of enquiry:

“...I propose that we complicate our stories, represent not only differences but even contradictions and incoherencies in the data...” (Clarke, 2005, p.15).

Situational analysis utilises and expands the “social worlds” framework (Strauss, 1978), which is common also to the “Straussian” grounded theory tradition. Social worlds have been defined as “universes of discourses” (Mead, 1934) or as discursive spaces that are profoundly relational (Strauss, 1978). In this context a discourse, according to the Foucauldian view (Foucault, 1980) is intended as a specific pattern of language that expresses people’s symbolic construction of reality. Social worlds (like a specific group or occupation), therefore, generate shared perspectives that contribute to generate collective identities (Clarke & Star, 2003).

Another important feature of SA is its capability to incorporate the role of non-human elements in the analysis, that is, how "...human actors (individually and/or collectively as social worlds) discursively construct the non-human actants" (Clarke & Star 2003, p.119) from their perspectives. Situational analysis incorporates, therefore, some principles of the actor-network theory (Callon, 1986; Latour, 2005). As mentioned in section 2.4.4, according to this view, both humans and non-humans are considered as actants, that is, actors interacting, negotiating and creating alliances within complex networks.

3.7 The choice of the constructivist grounded theory

The decision to select constructivist grounded theory as the main methodology for the research was reached by contemplating multiple aspects. Firstly, some important considerations were made regarding the role of the researcher. The personal reflections of the author of this research on this topic are reported here below to introduce some elements of reflexivity that can help to enhance the rigour of the grounded theory (Hall & Callery, 2001):

"I am 42 years old, I have a personal background as clinical and educational psychologist and a degree in cognitive-interactive psychotherapy. My professional experience and my training put me in contact with different approaches and research paradigms. In 10 years of work with people, I developed the belief that reaching objectivity in understanding peoples' perspectives and worldviews is a myth. I have learned with the practice that what I can observe and elaborate as expert is always filtered by my experiences and by the specific setting of the situation where I am involved. Similarly, I have learned that people's behaviours and narratives change depending on their social position within specific contexts.

Therefore, when I read about the different grounded theory approaches I had difficulties to understand how it is possible for a researcher to interact with participants in specific settings maintaining at the same time distance and objectivity. Objectivity implies that the researcher believes in the existence of an ultimate external reality and in the possibility to really grasp people's personalities and worldviews.

In relation to these considerations, I decided to adopt Charmaz's approach as it represents in my opinion, a more fluid and modern way to approach qualitative research. Her clarity in considering the theory developed as a construction of the researcher and not as an impartial representation of peoples' perspectives, matches with my beliefs and worldview.

I think that the position taken by constructivist grounded theory clarifies the role of the researcher and eliminates important ontological and epistemological ambiguities of other grounded theory approaches.”

Michele Salvagno – 23rd March 2016

Another important element that contributed to the decision to adopt constructivist grounded theory, is the balance between rigour and flexibility proposed in the data analysis. In fact, this approach maintains the rigour of the coding procedure of the other grounded theory traditions, but at the same time it suggests avoiding applying preconceived analytical frames to the coding process. Conversely, constructivist grounded theory encourages the use of creativity with diagramming to help the researcher to develop original ways to look at the data. As indicated by Charmaz (2014) in constructivist grounded theory “analytic strategies are emergent rather than procedural applications” (p.148).

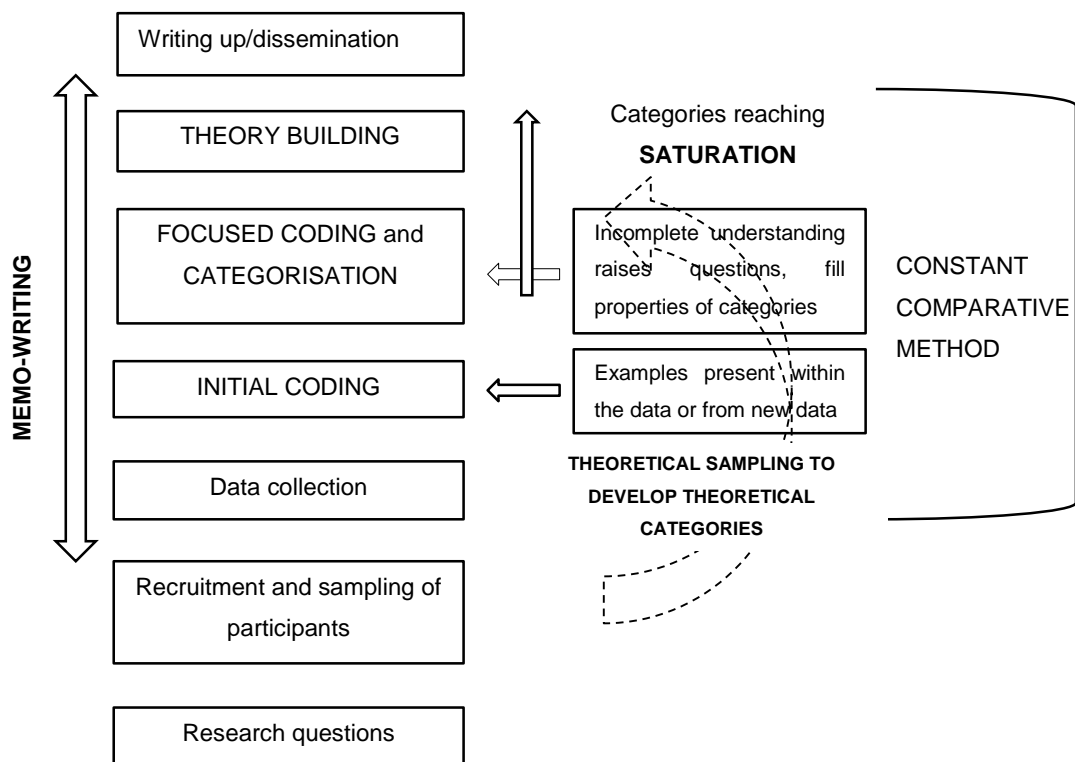
Finally, constructivist grounded theory was selected for the possibility to include some elements of SA during data analysis. As explained in section 3.6.4, SA shares the same ontological premises with constructivist grounded theory and the tools proposed by SA can be integrated with the ones proposed by constructivist grounded theory (Charmaz, 2014, p. 220). The introduction of some elements of SA in the research was important to understand how non-human elements as new technologies, online services and infrastructures, participants’ discourses and other structural elements contribute to shape the situation of investigation.

3.7.1 Constructivist grounded theory process overview

As mentioned in section 3.6 independently from the approach adopted, grounded theory research cannot be considered as a linear process. Figure 5 shows the constructivist grounded theory progression as depicted by Charmaz (2014). This diagram was used as a reference point for the implementation of the grounded theory methodology in this study.

As it can be seen, this procedure includes some clear phases that start from the formulation of the research questions and end with the writing up and dissemination of the contents. The research questions identified by the researcher provide guidelines regarding the recruitment and sampling of the participants. After these aspects are clarified, the data collection process starts and it is followed by data analysis that is performed through two main coding phases (initial and focused coding) that contribute to the construction of the final theory.

Figure 5 - A visual representation of a grounded theory – from Charmaz (2014, p.18)



However, as already indicated in section 3.6, grounded theory is based on a recursive approach to data collection and analysis, where each round of data collection is influenced by the findings of the previous round of data analysis. Moreover, a recursive approach can be found within the data analysis process itself. In this case, there is a continuous movement of the researcher between the different phases of data analysis through the use of the constant comparative method. As it is described in detail in section 4.2.3.1, data are compared with data to identify similarities and differences and to make analytic distinctions. For example, statements and incidents can be compared within the same interview or between different interviews (Charmaz, 2014, p. 132). When abstract categories of meaning start to emerge during the data analysis, the researcher compares these categories with other data to verify the adherence of the emerging concepts to the data. The researcher uses, therefore, both inductive and deductive reasoning. Categories are generated from data (inductive reasoning) and considerations are made on how these categories fit with other data (deductive reasoning).

The theory building process is accompanied by the use of memo-writing (see section 4.2.3.2). Memos are used by the researcher to annotate observations, ideas and concepts. They are used to help reflexivity and to keep track of the reasoning that leads to the development of the final theory.

Another element that characterises grounded theory, as indicated in Figure 5, is the use of theoretical sampling. As specified by Charmaz (2014, p.200) theoretical sampling involves the adoption of a particular type of reasoning that adds to induction and deduction called “abduction”. The researcher uses abductive reasoning when it makes an “inferential leap” to evaluate the possible theoretical interpretation of the observed data (Charmaz, 2014, p.200). In this case, theoretical sampling can help researchers to collect strategically new empirical data to verify their interpretations. Theoretical sampling can help the researcher to complete the identification of categories bringing them to saturation, but also at a later stage to demonstrate links among categories (Charmaz, 2014, p.201).

The chapter will now describe the different data collection methods that were considered and implemented in the research under the umbrella of constructivist grounded theory.

3.8 Data collection methods

Selecting the appropriate methods of data collection in relation to the area of investigation and to the objectives of the research was deemed an essential part of the research planning. According to Charmaz (2014), the choice of the methods has important consequences for the construction of the final theory:

“How you collect data affects which phenomena you will see, how, where and when you will view them and what sense you will make of them” (p. 26).

Therefore, four different aspects were taken into account to select the data collection methods:

- **Using different methods for different groups:** this research involved two different groups of participants that presented different characteristics: students and staff members. During the planning of the data collection, the possibility of using different data collection strategies to best engage the two groups was considered.
- **Collecting retrospective or live narratives:** different types of narratives can be identified in relation to how people position themselves in their accounts when they talk about their own experience (Polya, Laszlo, & Forgas, 2005). Retrospective narratives can generate different constructions of reality compared to collecting live data from participants while they are involved in a specific experience. Therefore, the possibility to collect live data from students while they are performing specific activities in addition to the use of retrospective methods was evaluated.

- **Collecting in-depth or wide range of data:** qualitative research usually requests in-depth data that provide rich information about how participants construct or interpret events and in general what happens in their lives. However, in some cases, collecting data from a variety of sources could be as important as collecting in-depth data. During the research planning, the possibility to use a qualitative survey in addition to in-depth interviews to reach a wide range of students was considered.
- **Collecting data in groups or in one-to-one situations:** one-to-one data collection methods such as semi-structured interviews present different types of pros and cons compared to collecting data from a group of participants using for example focus groups. Consequently, these aspects were taken into account when choosing the data collection methods.

Five different data collection methods were considered for this research in relation to the criteria described above: qualitative survey, semi-structured interviews, experience sampling method, focus groups, day reconstruction method, and social networks monitoring. Each of these methods is described below and the reasons for inclusion or exclusion explained.

3.8.1 Qualitative survey

Surveys have been used in grounded theory although not extensively (Currie, 2009). Using qualitative surveys can be a good way to reach a large number of people maintaining at the same time the possibility to obtain qualitative data. Surveys are sent usually by post or by email using online survey services. One of the weaknesses of this method is that in many cases the response rate could be low (Baruch & Holtom, 2008; Hamilton, 2005), especially if participants are contacted without having an existing relationship with the researcher or a specific knowledge of the research itself. Moreover, the amount of text written by participants for every question is usually limited compared to interviews.

However, given that this research was intended as an exploratory study and that diverse types of students were involved in the research (on-campus and online), the use of an online qualitative survey was considered as a good method to use in the first phase of data collection (section 3.11.1). The ease of responding to an online survey facilitated the involvement of a higher number of students compared to using only one-to-one

interviews. This allowed the research to develop a general idea of learners' positive and negative experiences with new technologies and ubiquitous connectivity.

3.8.2 Semi-structured interviews

Semi-structured interviews are the most popular data collection method in qualitative research in psychology (Willig, 2001, p.23) as they facilitate an in-depth investigation of participants' views. This method allows close contact with participants and a careful management of the questions in order to receive proper answers about specific topics. At the same time, this technique facilitates participants' expression of their thoughts without being constrained or influenced by the researcher.

This method was adopted in the research (phases 2A and 2B – sections 3.11.2 and 3.11.3) as it was considered suitable for both students and staff members and appropriate to collect in-depth data. Semi-structured interviews allowed collecting a consistent amount of rich data providing a major contribution in the development of the final theory.

3.8.3 Experience sampling method

The Experience Sampling Method (ESM) (Csikszentmihalyi & Larson, 1992; Csikszentmihalyi & Hunter, 2003; Hektner, Schmidt, & Csikszentmihalyi, 2007) is a powerful method used to collect data in real time situations. It consists in collecting information about people's everyday life in the precise moment when experiences are happening. The classic version of this method consists in using a pager to contact people, and to ask them to fill a questionnaire or a form about what they are doing in that precise moment and which feelings they are experiencing. The classic model considers contacting people randomly five or six times a day during a period of one or two weeks. New technologies have opened new possibilities in using ESM. For example, the method can now be implemented using applications for smartphones. This makes this procedure easier and more cost-effective.

According to Scollon, Prieto and Diener (2003), ESM presents indubitable advantages compared to other more traditional methods as, for example, interviews. Firstly, it has ecological validity because individuals are questioned while they are involved in real-life situations. Secondly, it offers a different perspective to the researcher compared to retrospective methods. Thirdly, the method is more precise in recording people's fluctuations in emotions.

A variation of the ESM was adopted in this research (phase 3 – section 3.11.4) as it was considered as a good complementary method to combine with semi-structured interviews. This method was used to monitor some on-campus students' activities for a short period of time during their assignment preparation period in order to gain direct knowledge concerning how they construct their experiences with ubiquitous technologies in stressful times.

3.8.4 Focus groups

The use of focus groups is a method extensively adopted in qualitative research (Stewart & Shamdasani, 2014) and in education and psychology studies (Vaughn, Schumm, & Sinagub, 1996). The basic goal of a typical focus group session is to invite a group of participants (usually between 6 and 8) to discuss around a specific topic under the guidance of an expert. However, focus group sessions can also involve specific activities and exercises (as it was done in this research) to facilitate the involvement of the participants (Colucci, 2007).

In respect to one-to-one interviews, focus groups present some advantages. Firstly, they allow involving a higher number of people in the data collection in the same time-length of an individual interview. Secondly, they facilitate the exchange of ideas among participants and the collection of different perspectives. Finally, the researcher can observe and record group dynamics during the discussion session. However, this method presents also some important shortcomings. One is represented by the reciprocal influence of participants. The discussion can be dominated by a few people which could establish the direction and the tone of the conversation. Moreover, some people could have difficulties in sharing their thoughts in front of others, especially if the discussion focuses on a sensitive topic.

For these reasons, the use of focus groups was not considered appropriate for the first phases of data collection, where the necessity was to collect uninfluenced narratives from different students. However, this method was judged as suitable for the last phase of data collection (phase 5 – section 3.11.6). In this case, focus groups helped to verify the saturation of the data and to improve the transferability of the findings by increasing the size of the sample and by involving in the research students enrolled in different courses.

The methods described in the next two sections, were initially considered for the research but then discarded at a later stage for the reasons explained below.

3.8.5 **Day reconstruction method**

The Day Reconstruction Method (DRM) asks respondents to evaluate the frequency and intensity of a variety of positive and negative emotions over time (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). Individuals are asked to fill out a questionnaire every day for a number of days that are established by the researcher. Participants have to list all the activities they engaged in during the previous 24 hours, and then to rate them according to positive and negative emotions experienced. The structure of DRM allows people to be precise about specific situations experienced during the day and to link easily every activity with their emotions. In this research DRM was considered an alternative to ESM as an experience sampling technique. It was considered that DRM could have helped students reflecting day-by-day regarding their experiences with new technologies and ubiquitous connectivity and connected emotions.

However, two main reasons contributed to a preference for ESM rather than DRM. Firstly, despite the fact that participants' are asked to complete their questionnaires every day, DRM still collects retrospective narratives and does not offer the immediacy of ESM in capturing peoples' experiences and emotions. Secondly, DRM questionnaires contain usually fixed lists of emotions that participants are asked to rate. This procedure contrasts with the ontological premises of constructivist grounded theory where it is preferred to avoid any pre-determined categorisations of participants' narratives.

3.8.6 **Monitoring Facebook groups and discussion boards**

As will be explained in section 5.2, the students of the on-campus degree programme involved in the research use Facebook groups to discuss issues related to their daily university experiences. In addition, discussion boards are available on the VLE for both the on-campus and the online students involved. Monitoring students' activities on these online platforms was considered as a possibility to investigate the role of social media and of discussion forums in shaping students' experiences with new technologies and ubiquitous connectivity. This would have allowed for the collecting of data in natural settings informing how students use these tools in their everyday university life.

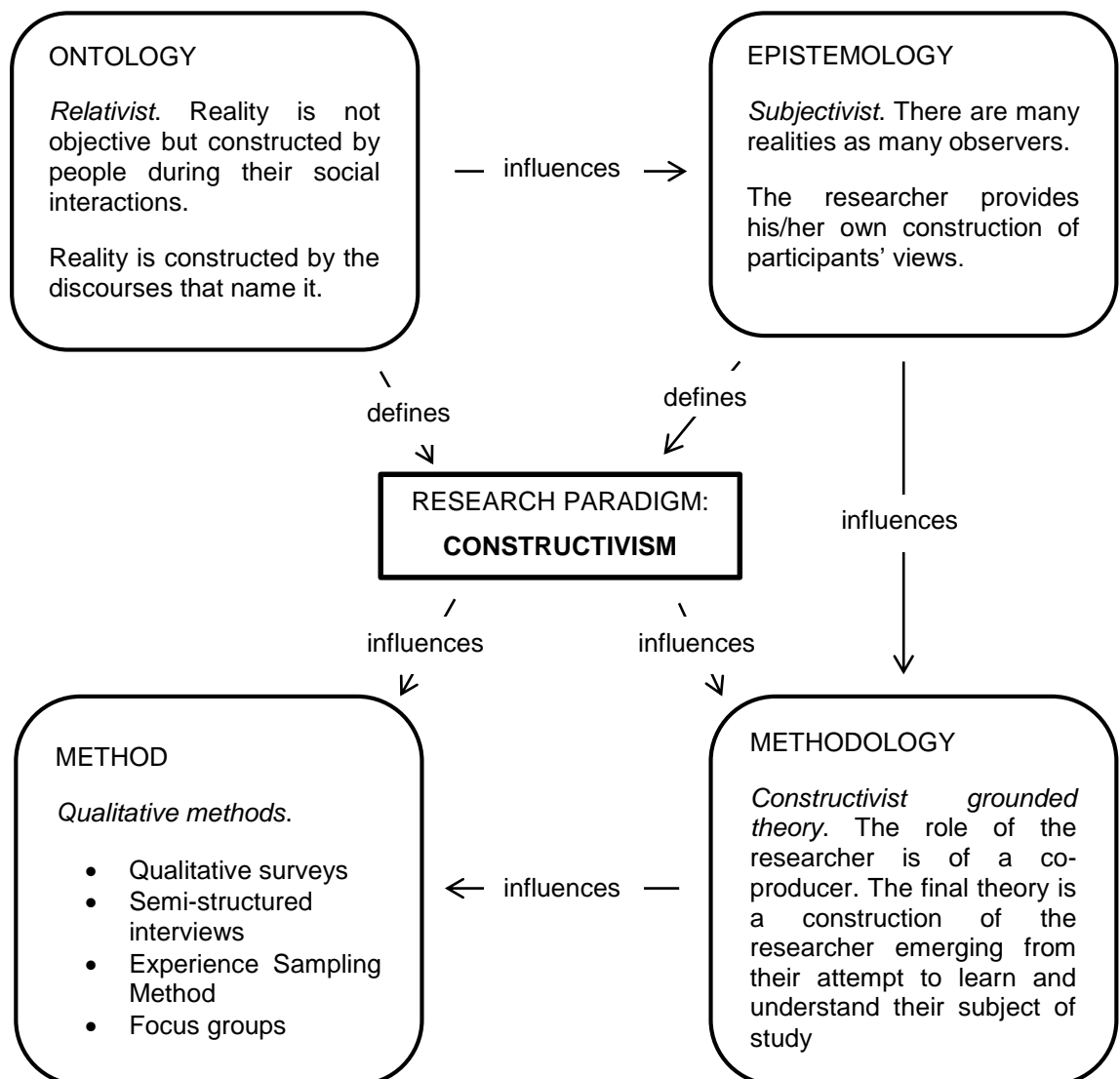
However, this method was discarded for two main reasons. Firstly, as students use these platforms to discuss about any topic of their interest, the implementation of the method would have requested the collection and analysis of a huge amount of non-relevant data. Secondly, it was supposed that students could modify their behaviour by knowing that their conversations were observed and analysed. Students confirmed this issue during

some of the semi-structured interviews. As an example, they affirmed that their behaviour tends to change when they know that their lecturer is monitoring the discussion board.

3.9 Research paradigm framework summary

Section 3.8 completed the description of the choices made in this research in terms of ontology, epistemology, methodology and methods. In order to summarise these choices, Figure 6 proposes again the research paradigm framework introduced in Figure 3 (section 3.2) to specify how it applies to this specific research.

Figure 6 – Application of the research paradigm framework to this study



The chapter will conclude by providing a description of the details regarding the sampling of the participants and an overview of the different phases of data collection.

3.10 Sampling of participants

As mentioned in section 1.4, two types of students were involved in this research: on-campus and online students. Although the research was focusing primarily on on-campus students, the involvement of online learners allowed the research to investigate how the use of new technologies and ubiquitous connectivity could vary depending on the learning context and conditions. Moreover, the comparison of the data between the two types of students and the identification of similarities and differences facilitated the constant comparison process and the building of the final theory.

In addition, as cited in section 3.5, during the planning of the research it was decided to collect data also from staff members to identify how their attitudes, beliefs and habits concerning the use of new technologies could influence students' daily experiences and consequent well-being. Finally, the involvement of both students and staff in the research allowed for an investigation of how the use of new technologies and ubiquitous connectivity could influence and be influenced by psychosocial dynamics in the university context.

In order to maintain coherence in the data collection students and staff members from the same degree programs were engaged in the first phases. This choice facilitated the analysis of the role of specific contextual elements and internal dynamics between students and staff in influencing learners' quality of daily experiences.

Therefore, staff and students from two specific university degree programs were involved: an on-campus bachelor degree programme in psychology and an online bachelor degree in international business at the same university. Only in the final phase of data collection (section 3.9.6), students from other degree programmes were involved.

Concerning the selection of the key staff members to be involved in this study, an initial stakeholder mapping and analysis was conducted (table 2). The main university stakeholders identified in the literature (Jafari, McGee, & Carmean, 2006; Khan & Badii, 2012; McPherson & Nunes, 2006; Wagner, Hassanein, & Head, 2008) were categorised and identified in relation to their importance and influence in affecting students' well-being using a modified version of the power/interest grid (Ackermann & Eden, 2001).

The original version of this grid was developed to identify and categorise stakeholders in a workplace on the basis of two elements: the power they have to influence other peoples' work and the interest they have in other peoples' work. In this research, the key elements adopted to identify the staff members that can have a direct influence on students' well-being are the level of impact that they have on students in technology-enhanced contexts and the level of daily interaction they have with students.

According to the analysis, the staff members chosen for this study are those that have a medium or high impact on the students' experience, and have medium or high daily interactions with them: on-campus and online lecturers, programme administrators, learning technologists, librarians and technical support.

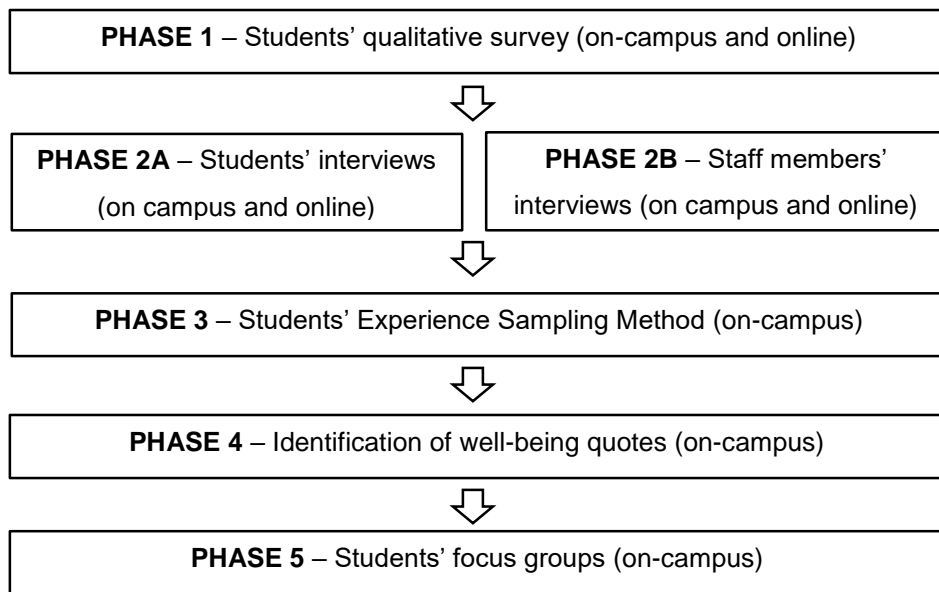
STAKEHOLDERS ANALYSIS	Low impact	Medium impact	High Impact
High interactions			On-campus lecturers Online lecturers (tutors)
Medium interactions		Administrators Learning technologists Librarians Technical support	
Low interactions	Employers Researchers Accreditation bodies		Technology providers University institutions

Table 2: Stakeholders impact/interaction grid - modified from Ackermann and Eden (2001)

3.11 Data collection overview

In conclusion of this chapter, this section provides an overview of the data collection phases implemented (Figure 7). All the practical aspects concerning the implementation of the different phases are illustrated in the next chapter (section 4.1).

Figure 7 – Data collection phases of the research



In relation to the sequence of the research steps described in Figure 1 (section 1.5), these phases contributed to collect all the necessary data that were used to develop the grounded theory presented in chapter 5. Therefore, these phases can be considered as referring to step 1 indicated in the diagram.

3.11.1 Phase 1 – Students' qualitative survey

The goal of the first phase of data collection was to develop a general knowledge of the main themes of students' interest and of the main issues and positive aspects regarding ubiquitous connectivity and new technologies in learners' daily life.

A qualitative survey was used as the method for this phase. Other qualitative one-to-one methods such as semi-structured interviews (see section 3.8.2) have the potential to collect larger and more in-depth amounts of data compared to qualitative surveys. However, this method was selected as it was deemed important in this first phase to involve a consistent number of learners from both the degree programmes investigated to gather a variety of qualitative data from different sources.

In the survey, students were asked to provide examples of positive and negative experiences of using new technologies in learning and of studying in a ubiquitous and fully connected environment.

3.11.2 Phase 2A – Students’ interviews

The positive and negative elements identified during the analysis of the qualitative survey regarding the use of new technologies in day-to-day life at university were utilised to formulate some of the questions used in the second phase of data collection. This consisted of in-depth semi-structured interviews with undergraduate students of both degree programmes. This phase allowed the exploration and expansion of the themes identified in the first phase, and has provided better understanding of the connection between students’ use of new technologies and ubiquitous connectivity in their day-to-day university life and their sense of well-being.

3.11.3 Phase 2B – Staff members’ interviews

Simultaneously with phase 2A, one-to-one semi-structured interviews were used as the method for staff members as well. As the key staff members selected were a small proportion compared to the student population of the two programmes, using a qualitative survey was not considered essential. Therefore, interviewing some representative members of each job profile selected for this research (on-campus and online lecturers, technical support, learning technologists, programme administrators and librarians - see section 3.10) was identified as the best way to collect data in this phase. The objective was to interview at least one representative of all the identified stakeholders for both degree programmes. However, specific attention was given to on-campus and online lecturers given the importance of these staff members in students’ day-to-day life.

In relation to the first two phases of data collection, it is significant to stress that, as reported in section 3.6. and 3.7.1, a constant comparison of data is an essential requisite to build the final theory. As already mentioned in section 3.11.2, the data analysis of the first phase helped to formulate some of the students’ questions used in phase 2A. In addition, some questions asked to staff members have been formulated in relation to specific issues or themes raised by students and vice versa.

3.11.4 Phase 3 - Students’ Experience Sampling Method

Students’ and staff members’ interviews data analysis indicated that the days before assignment deadlines are critical especially for on-campus students’ well-being as learners tend to feel stressed and under pressure (sections 5.5.2, 5.5.5, 5.6.1, 5.6.5).

According to the theoretical sampling principle (section 3.7.1) it was decided to explore this issue by involving some on-campus students using a variation of the experience

sampling method (described in section 3.8.3). This allowed a further investigation of this specific aspect of students' experiences, and facilitated the saturation of the emergent categories.

As will be explained in detail in section 4.1.4, a phone application was installed on students' smartphones and they were asked to use it for 5-7 days near an assignment deadline to record their thoughts (via audio or text) every time they had an experience connected in some way to the use of new technologies in relation to learning.

3.11.5 Phase 4 - Identification of well-being quotes

During the analysis of the data collected in the first three phases, the researcher identified a number of students' quotes believed to show specific connections between learners' experiences and their well-being in relation to the use of new technologies and ubiquitous connectivity. In the fourth phase, the quotes were submitted to a group of on-campus psychology students that were asked to select which of them were best characterising typical connections between students' daily experiences with new technologies and ubiquitous connectivity and their well-being.

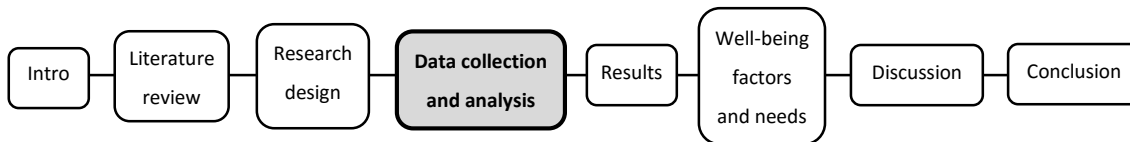
This phase of data collection was important as it allowed the research to identify a selected number of quotes that were considered both by students and the researcher as indicating positive or negative connections between the use of new technologies and learners' well-being. This helped to satisfy the quality criteria of credibility (see section 8.3) of the research by ensuring that the categories developed during the data analysis process are reflecting students' daily experiences.

3.11.6 Phase 5 – Students' focus groups

In the fifth phase, three focus groups were organised involving additional on-campus undergraduate students enrolled in different degree programs at the same university.

As explained in section 3.10, in order to maintain coherence in the data and to investigate dynamics and interactions between students and staff, the data collection was focused initially only on two courses. However, after the data analysis of the first four phases was completed, it was decided to expand the sample by involving students enrolled in different courses within the same university in the research. This allowed for a saturation of the categories identified during data analysis and it confirmed the applicability of the emerging categories to different types of students. This contributed to improving the transferability of the findings according to the quality criteria described in section 8.3.

In chapter 4, all the details regarding the implementation of the data collection phases will be presented followed by an accurate description of the data analysis process.



4. DATA COLLECTION AND ANALYSIS

4.1 Data collection details

The aim of this section is to describe in details the practical implementation of the data collection phases presented in the previous chapter. In particular, details will be provided regarding: number and characteristics of the participants, recruitment strategies, and the tools and techniques used to collect the data.

Before starting with the description of the data collection phases, some ethical considerations are introduced in the next section.

4.1.1 Ethics considerations

Some actions were taken in this study to avoid any potential ethical issues:

- The research was conducted according to the Bournemouth University Code of Practice (Bournemouth University, 2015). A research ethics checklist was submitted before starting each phase of data collection and ethical approval was granted for all the phases. Consent and debrief forms were given to all the participants (see appendixes C and D).
- Participants' responses were treated with full confidentiality. Online questionnaires were completely anonymous and the interviews' audio records and transcriptions were stored securely. All audio records will be destroyed after the end of the research.
- Participants were reassured about the confidentiality of their responses. Participants were also assured that no specific mention of single individuals will be made in the research and that no student, lecturer or professional support staff member will be informed about their individual responses.
- All participants were invited to contact the researcher in case of further questions or doubts about their involvement in the study.

4.1.2 Phase 1 – Qualitative survey

The qualitative survey was created using the popular online software SurveyMonkey. As mentioned in section 3.10, students from two degree programmes were involved in this phase of the research: an on-campus bachelor degree programme in psychology and an online bachelor degree in international business at the same university. The students were recruited by email using a mailing list of the two degree programmes made available by the university.

Fifty students' responses were collected in total (table 3) with a response rate of around 10%. Thirty-four responses were submitted by students enrolled in the on-campus programme (27 females and 7 males), and 16 by students from the online learning programme (6 females and 10 males) at different levels of study (C = certificate, I = intermediate, H = honours, M = master). The average age was 25.1 for on-campus students and 35.6 for online students.

	On-campus students				Online students		
Number of students	34				16		
Number of students per level of study	C = 6	I = 13	H = 6	M = 9	C = 5	I = 3	H = 8
Gender	27 Females		7 Males		6 Females		10 Males
Average Age	25.1				35.6		

Table 3 - Details of students taking part into the qualitative survey

The survey was initially piloted with eight on-campus students and then utilised in the study without major amendments. For this reason, the data collected in the pilot study were included in the research. After a first round of data collection, the order of questions was slightly modified for online students and the survey was presented in a more concise layout trying to increase the response rate without compromising the comparability with the original version.

Students answered a series of questions asking them to provide practical examples of positive and negative experiences with new technologies and ubiquitous connectivity. This questioning technique facilitated the collection of data regarding important aspects of students' daily university life in relation to the use of new technologies without applying pre-determined categorisations to the data. The complete set of questions of the survey is available in appendix E.

The survey had three main parts. In the first one, students were asked to provide some personal data such as gender, age, level of study and to rate their perceived confidence in using technology. This last question did not have the purpose to collect quantitative data from students but it was strategically included to introduce them to the topic of the survey and to facilitate their engagement with the following open-ended questions.

In the second part, learners were asked to provide examples of their positive and negative experience of using technology in relation to university activities, and of studying in a ubiquitous and fully connected environment. Moreover, an additional question was included (“In general how did this experience of using technology in learning make you feel?”) to invite learners to express their feelings concerning the use of new technologies in relation to their learning activities.

In the third part, students were asked to rate the importance of the staff members identified in section 3.10 (on-campus and online lecturers, programme administrators, technical support, learning technologists, librarians) and to add some suggestions in relation to each stakeholder on how to improve the quality of students’ experiences and consequent well-being. The quantitative question concerning the importance of the various staff members was introduced to facilitate the following qualitative data collection. No quantitative data were analysed.

A final last question was included at the end of the survey where students were invited to express their agreement to take part in a one-to-one interview. This allowed for the recruiting of participants for the next phase of data collection.

4.1.3 Phase 2A and 2B – Semi-structured interviews

4.1.3.1 Students’ interviews

Eight on-campus and six online students (table 4) agreed to participate in the second phase of the research by expressing their consent in the online survey. As in the survey the data were collected anonymously, the interviews were conducted without taking into consideration the responses given by the same participants in the survey.

All the interviews with the on-campus students were performed face-to-face in one of the university rooms. All the online students were interviewed using a video-calling online platform (Skype). All the interviews lasted between 30 and 60 minutes.

On-campus students	Gender	Age	Level of study
Participant 1	F	19	Level I - Second year
Participant 2	F	44	Level I - Second year
Participant 3	F	20	Level H - Third year
Participant 4	M	40	Level I - Second year
Participant 5	F	19	Level I - Second year
Participant 6	F	20	Level I - Second year
Participant 7	F	19	Level H - Third year
Participant 8	F	20	Level I - Second year
Online students¹			
Participant 1	F	38	level I - second year
Participant 2	F	45	level C - first year
Participant 3	M	26	level H - second year
Participant 4	M	29	level I - first year
Participant 5	M	33	level H - second year
Participant 6	M	33	level C - first year

Table 4 - Details of students taking part into the semi-structured interviews

According to a definition of “mature students” commonly in use in British institutions (students admitted to undergraduate courses aged 21 or over or students admitted to postgraduate courses aged 25) (Richardson, 1994) two mature students were interviewed among the on-campus group. By contrast, all the online students interviewed can be considered as mature.

All the students were interviewed using a semi-structure interviewing technique. Semi-structured interviews are a form of interviewing where a number of open questions are prepared in advance. However, the open nature of these enquiries can suggest the researcher to ask additional questions that cannot be planned in advance (Wengraf, 2001). In the first part of the interview, students were asked general questions about their relationships with new technologies and about their habits in using university online services (such as the VLE) and technological devices (PCs, laptops, tablets, and smartphones) in relation to their university activities. This first part allowed the researcher to develop some general knowledge about students’ practises in relation to the use of new technologies and ubiquitous connectivity that helped to formulate adequate

¹ while on-campus students’ level of study corresponds to their year of study (level C = first year, level I = second year, level H = third year) online students’ previous working experience can be used to gain university credits, allowing them to access levels I or H directly in their first year. Therefore, there is not a necessary correspondence between year and level of study for online students.

questions in the rest of the interview. In the second part, a set of questions were prepared to facilitate the elicitation of students' experiences with new technologies and ubiquitous connectivity that could be put in relation to their well-being. In the third part, some specific questions were asked in relation to relevant topics which emerged during the data analysis of the responses to the qualitative survey. These questions concerned some positive and negative aspects regarding the use of new technologies and ubiquitous connectivity such as students' use of the VLE, online interactions with academics and peers, preparation and submission of assignments and use of social media. In addition, specific questions were asked to on-campus students regarding the use of new technologies on- and off-campus and to online students regarding how ubiquitous connectivity influenced their work-life balance. Finally, according to the interviewing technique, additional questions were asked throughout the interviews depending on the responses of the participants.

A typical set of questions formulated by the researcher during the interviews is available in appendix F.

4.1.3.2 Staff members' interviews

Sixteen staff members were interviewed in total (table 5). Six of them were part of the on-campus psychology degree programme and seven were from the online degree in international business. In addition, three staff members of the technical support staff (common to both degree programmes) were involved. All the interviews lasted between 40 and 75 minutes.

	Lecturers and tutors	Learning technologists	Programme administrators	Librarians	Technical support	Total
On-campus staff	3	1	1	1		6
Online staff	4	1	1	1		7
Staff in common					3	3
TOTAL	7	2	2	2	3	16

Table 5 - Details of staff members taking part into the semi-structured interviews

The structure of the interviews was very similar to the one adopted with the students and described in the previous section. In the first part of the interview, staff members were

asked questions regarding their personal relationships with new technologies and their habits and practices in using new technologies and ubiquitous connectivity during their learning duties. In particular, lecturers and tutors were asked to provide details regarding how they use new technologies in their teaching practices and interactions with students.

In the second part of the interview, a set of questions were asked to explore staff members' practices and perspectives regarding how to help students having positive experiences and to avoid negative experiences during their interactions with them.

Finally, similarly to students' interviews specific questions were asked in the third part regarding topics emerged during the data analysis of students' surveys. In particular, the attention was focused on staff members' interactions with students and on students' behaviours close to assignment submissions. Also in this case, additional questions were asked depending on participants' responses.

A typical set of questions of staff members' interviews is reported in appendix G.

4.1.4 Phase 3 – Experience Sampling Method

As mentioned in section 3.11.4, with the completion of the first two phases of data analysis, it emerged that the period immediately preceding the submission of assignments can become a source of stress and anxiety especially for on-campus students. Moreover, from the data analysis it appeared that new technologies could play an important role in influencing on-campus students' emotional status in that specific period.

For these reasons, according to the principle of theoretical sampling described in section 3.7.1 it was decided to explore this area of interest by using a variation of the experience sampling method (section 3.8.3). This method was considered particularly suitable as it allowed for a monitoring of a group of students during the week immediately preceding their assignment deadline by recording their thoughts and reflections during the day. Six second-year on-campus psychology students were involved in this phase (5 females and 1 male, all between 19 and 21 years old).

The students were recruited through an online system implemented by the university where learners can sign-up to take part in studies as participants in order to earn university credits. This study was advertised only to second-year students. It was considered that second year students were particularly appropriate to investigate the influence of new technologies on students' experiences close to submission deadlines. In fact, they were believed to be more expert on the use of new technologies and

university technological platforms than the first-year students, but not as confident as third-year students.

A smartphone application called MovisenseXS (available at <http://www.movisens.com/en/products/movisensxs/>) was installed on students' smartphones. Learners were asked to record their thought and reflections via audio or text during the day every time they used new technologies in relation to any university-related activity. When for example, students used their smartphone to check articles or books in the online university database, they had to record their reflections immediately after the activity was completed.

Students were instructed to describe:

- what activity they were performing
- if it was considered positive or negative
- the reasons why it was considered positive or negative
- how that particular experience made them feel

The objective was to collect small pieces of narratives containing students' live reflections, regarding positive or negative experiences with new technologies and ubiquitous connectivity that could have an impact on their sense of well-being. Seventy-five entries were recorded in total from the six students.

At the end of this study, three of the students involved agreed to take part in a semi-structured interview. The goals of these interviews were to explore more in depth the reflections recorded by students using the application and to collect additional qualitative data to be added to the interviews collected in phase 2A (section. 4.1.3). The structure of the interview was similar to the one used in phase 2A with the addition that participants were also asked to provide details of the reflections described in their entries.

4.1.5 Phase 4 – Identification of well-being quotes

From the data analysis of the first three phases of data collection a complex picture of students' positive and negative experiences with new technologies and ubiquitous connectivity started to emerge. Moreover, some important elements of interaction between students and staff members with the use of new technologies were identified.

In order to highlight all the possible connections between students' experiences and their sense of well-being, a number of students' quotes were selected during data analysis.

These quotes were believed to express the clear links between students' use of new technologies and ubiquitous connectivity and their well-being.

The analysis led to the identification of 70 quotes divided by the researcher into nine main areas considered to be positively or negatively related to students' well-being:

- experiencing sense of ease and freedom
- experiencing flexibility
- feeling supported or unsupported
- feeling reassured
- feeling connected
- feeling stressed due to technical failures and lack of access
- experiencing issues and stress in managing information
- feeling stressed due to difficult approach to technology
- experiencing motivational issues

The identification of the quotes, and of these provisional critical areas related to well-being, was an important step in the elaboration of the data that contributed at the end to the identification of the main categories and to the building of the grounded theory.

Following the principle embraced by constructivist grounded theory that sees reality as co-constructed by both the researcher and the participants, it was considered important to share these quotes with the students to understand which of them were judged by learners as more representative of their daily experiences.

In the fourth phase, these quotes were submitted to a group of eight on-campus second-year students recruited using the same online system described in phase 3 (section 4.1.4).

The length of the group session was about two hours. During the session all the 70 quotes were presented to the students' area by area. After the presentation of the quotes belonging to each area, learners were given a few minutes to select 2-3 extracts considered by them as best representing connections with students' well-being. Thirty-four quotes were identified during this process. A list of the quotes is available in the appendix H.

4.1.6 Phase 5 – Students' focus groups

Three focus groups were organised in this last phase of data collection. A total of 24 students enrolled in different degree programmes were involved (table 6). All the

participants were between 19 and 22 years old. The students were recruited by promoting the study during some of their lectures and they received a reimbursement of £8 for their participation. The duration of each focus group was about 1.5 hours.

GROUPS	NUMBER OF PARTICIPANTS	GENDER	COURSES
Focus group 1	8	4 M, 4 F	Biological science, Archaeology
Focus group 2	10	4 M, 6 F	Media production, Tourism
Focus group 3	6	3 M, 3 F	Anthropology, Forensic science

Table 6 - Details of students taking part into the focus groups

Each focus group was divided into two sessions. During the first session, students were asked to share their positive and negative experiences with new technologies and ubiquitous connectivity and to discuss, guided by the researcher, the emotional impact of these experiences in their university day-to-day life.

This first session had two main goals. The first goal was to generate additional reflections on the connection between students' experiences with new technologies and their well-being. This allowed for the collecting of further data that helped to provide saturation of the categories identified during the data analysis. The second goal was to improve the transferability of the findings (see section 8.3) by including a higher and diverse number of students in the research.

In the second session of each focus group, the 34 quotes identified in the fourth phase (section 4.1.5) were presented to the students to add further credibility to the data analysis. A set of 34 cards, each one containing one of the quotes, were presented to the students. Learners were asked to read each card and to discuss if all of them were representing connections between students' experiences with new technologies and ubiquitous connectivity and their well-being. No cards were excluded during this evaluation process.

The reflections emerging from this last phase of data analysis allowed the completing of the definition of the categories and the build of the grounded theory.

4.1.7 Data collection summary

Table 7 summarises the details of all the students that took part to the research for each phase of data collection. Eighty-eight students were involved in total plus 16 staff members as described in table 5 (section 4.1.3.2).

Phases	On-campus students	1 st year	2 nd year	3 rd Year	Postgr.	Total	Cumulative Total
Phase 1	Survey pilot		4	2	1	7	7
	Survey	6	10	3	8	27	34
Phase 2	Interviews from survey		6	2		8	-
Phase 3	ESM		6			6	40
	Interviews from ESM		3			3	-
Phase 4	Well-being quotes identification		8				48
Phase 5	Focus groups		24				72
	Online students						+
Phase 1	Survey	5	8	3		16	16
Phase 2	Interviews from survey	3	3			6	-
							=
	TOTAL STUDENTS						88

Table 7 - Details of students taking part into the research

All the data collected were analysed following the constructivist grounded theory guidelines. The details of the data analysis process are presented in the next section.

4.2 Data analysis

4.2.1 Introduction

As described in section 3.6, grounded theory cannot be considered as a unique and well-identified methodology. A constellation of different approaches has been developed through the years showing ontological, epistemological and methodological differences. As affirmed by Charmaz (2009), grounded theory can be considered like an umbrella that contains many variants, examples and ways to think about data.

Concerning specifically data analysis, the practice of coding is the pillar around which data analysis is performed in all grounded theory traditions. Nevertheless, different coding phases and techniques have been used by the various grounded theory approaches throughout the years. This chapter will proceed by describing the principles of coding and the main phases of coding that can be identified in the different grounded

theory traditions clarifying how the different phases were implemented in this research. Moreover, additional resources and tools utilised during the data analysis process will be presented and discussed.

4.2.2 Coding as the core of data analysis

The process of coding consists in giving segments of data a short label that summarises them and captures the essence of their meaning. The logic of coding consists in moving beyond participants' concrete statements to make an analytic sense of the data (Charmaz, 2014, p.111). From this point of view, grounded theory differentiates itself from other qualitative approaches such as, for example, thematic analysis. In fact, one of the peculiarities of grounded theory consists in using coding to portray meanings and actions, to describe feelings and to reveal underlying processes. To facilitate this task, Charmaz suggests, where it is possible, to code with gerunds instead of coding for topics and themes. Coding for gerunds helps the researcher to focus on processes or actions rather than focusing on identifying themes.

An example is provided using the quotes below taken from one of the students' interviews:

"...there are also a lot of distractions...so it is like...if you are reading a book every page is like what you meant to read but if you read online...you read a page and then your phone does something (...) so often it takes longer because you can't concentrate fully..." (Focus group 1, on-campus, participant 1, year 2).

This excerpt was coded using the expression "feeling distracted by constant contactability" to highlight the underlying process instead of using more static expressions such as "study distraction" or "lack of concentration" that could be used when coding for topics or themes.

Concerning the process of coding, an important epistemological element differentiates constructivist grounded theory from other grounded theory approaches. In constructivist grounded theory, codes are considered as constructed by the researcher (Charmaz, 2014, p. 114). According to its philosophical principles, as mentioned in section 3.6.3, constructivist grounded theory denies the neutrality of the researcher. Through the act of coding, researchers give sense to observed realities expressing their own view by interpreting participants' meanings. Therefore, researchers use coding to identify how participants construct their own reality but at the same time experts are aware that the final emerging theory is in turn their own construction of participants' views.

Various coding phases can be identified in different grounded theory traditions: initial (or open) coding, focused coding, axial coding and theoretical coding. Open coding and focused coding are common to all grounded theory traditions and are also recommended in constructivist grounded theory data analysis (Charmaz 2014, p.113). In this research, the open and focused coding phases were implemented following the constructivist grounded theory guidelines. Concerning axial and theoretical coding, as will be explained in the next sections, these two phases were not implemented in their conventional way, although some of their principles were followed.

Concerning the sequence of the different phases, although they show a certain progression order in the data analysis, as illustrated in section 3.7.1 grounded theory methodology is based on recursive processes. As there is a reciprocal influence between data collection and analysis, similarly the different phases of data analysis influence each other. The researcher moves continuously back and forth between the coding phases to understand for example how the identification of processes and categories on a high conceptual level could match the initial codes identified in the data. This procedure is considered essential to maintain the development of the final theory grounded in the data and to avoid theoretical concepts losing connections with participants' narratives.

In order to manage the complexity of the coding phases, all the data of this research were analysed using Nvivo, an organisational software that allows the researcher to manage all the coding phases electronically, and to keep track of the researcher's reflections using memos and notes linked to the data. The use of Nvivo facilitated the organisation, comparison and analysis of the various codes. Moreover, it allowed adding rigour to the data analysis process by keeping track of the entire coding progression.

In the next four sections, the principles of the various coding phases are described and it is explained how they were implemented in the research.

4.2.2.1 Initial coding

In this first phase of coding, data are broken apart and disconnected from the flow of the conversation. Depending on the type of data available and on the type of research conducted, data can be coded, word by word, line by line or compared incident with incident. In this study, data were analysed sentence by sentence in order to identify initial elements and concepts raised by participants. As evidenced by Charmaz, these first initial codes can be considered the "bones" of the analysis that will be assembled during the different phases of the analytical process into a "working skeleton" (Charmaz, 2014, p.113). Although in this phase the labels chosen by the researcher can already contain

some form of conceptualisation, the main goal is to identify key elements remaining adherent to the data using also “in vivo” codes where it is possible. In vivo codes utilise the same words used by participants to define concepts to preserve the original meaning. Table 8 provides some examples of initial coding taken from the data analysis of this research.

Examples of initial coding
<p>(Interview, on-campus, librarian) <i>“It is like a process of empowerment... so as a library we have a support service but I would also view at us as a... as an educational service (code: educating students) so... if the students... independent learning things like that is about... empowering students to understand the process and take control of their own learning...”</i> (in vivo code: empowering students)</p>
<p>(Interview, online, lecturer 3) <i>“I think I want to make sure that they don’t slip on their study, sort of, pattern, so that they don’t let the work build up. (code: engaging with students to keep them on track) I want them to be reassured that I’m there and that, you know, that I’m actively... that I am a human being, you know, in (the university), who is actively working with them”</i> (code: engaging with students to provide reassurance).</p>
<p>(Interview, on-campus, student 6, year 2) <i>“The library tab on (the VLE) is very helpful. Including past papers to look at during exams (code: appreciating resources availability) and even a chat to the librarian option which is very helpful when you can’t manage to access certain articles. Helpful in times of need!”</i> (code: finding timely support)</p>
<p>(Interview, on-campus, student 4, year 2) <i>“(the VLE) is a mindfield to negotiate (code: struggling with complicate navigation systems) and find learning material it also doesn’t allow you to source previous years learning material (code: experiencing lack of accessibility). We also use Mahara as an online submission tool, another tool that is illogical and added complications to the student experience.”</i> (code: struggling with complicate navigation systems)</p>
<p>(Focus group 1, on-campus, student 3) <i>“you are constantly connected to people... like lecturers...friends, if you are somewhere, if you don’t know an information you can always message someone asking “hey where is it?” or “what do I have to do? I there any work that we had?” It is like a safety net again; you can find your information.”</i> (code: support availability providing sense of security)</p>
<p>(Interview, online, student 2, year 1) <i>“It’s about reassurance, just to know that you’re on the right track, very often you’re asking questions that you probably know the answers to but you’re never quite sure if you really do, and by the time you come to do the assignments, you are kind of a bit “am I really doing the right thing?” (code: feeling reassured by tutors’ online support) so and it’s about again it’s about the lack of interaction in the lesson you would probably go up to your teacher at the end and say “look can I just double check something” or clarify the lesson or and you just don’t have that (code: missing in-class face-to-face interactions) so you’re completely reliant on somebody answering the mundane questions that maybe somebody else in the class would have asked (code: feeling reliant on tutors’ online support)</i></p>

Table 8 - Examples of initial coding

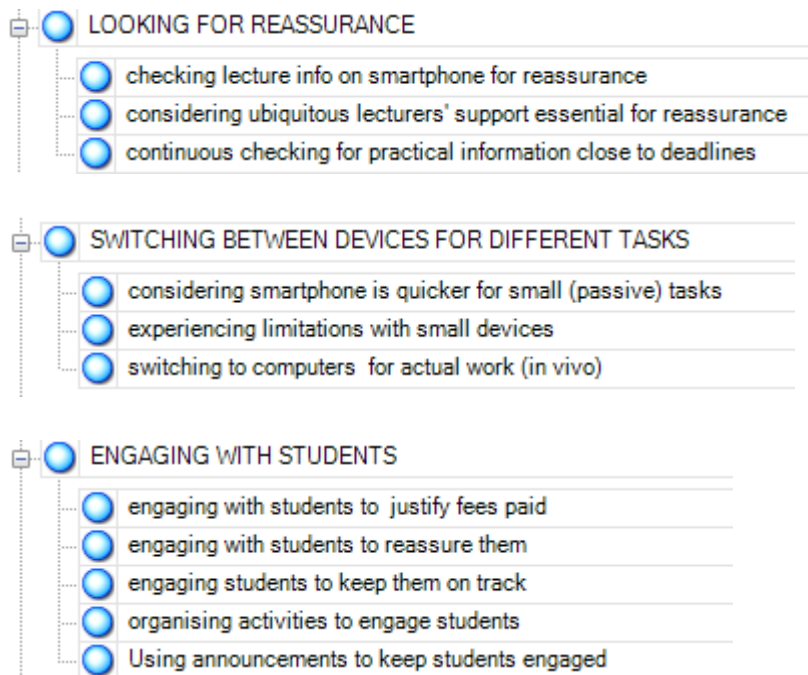
4.2.2.2 Focused coding

In this second phase, some of the initial codes that appear more frequently or have more significance than others can be used to sort, synthesise, integrate and organise the large amount of initial codes identified in the first phase (Charmaz, 2014, p.138). At this stage of analysis, comparing codes with codes becomes particularly important to understand which codes can become tentative categories. Categories represent classifications at an abstract level that account for groups basic codes.

It is important to underline that in grounded theory the role of the researcher becomes more prominent in this stage because the analysis moves toward a more abstract level showing theoretical direction. Therefore, the way the researcher chooses to gather and conceptualise some codes in more abstract categories becomes more relevant.

Figure 8 shows three snapshots from Nvivo that can help to explain how focused coding was performed in this research.

Figure 8 – Examples of focused coding



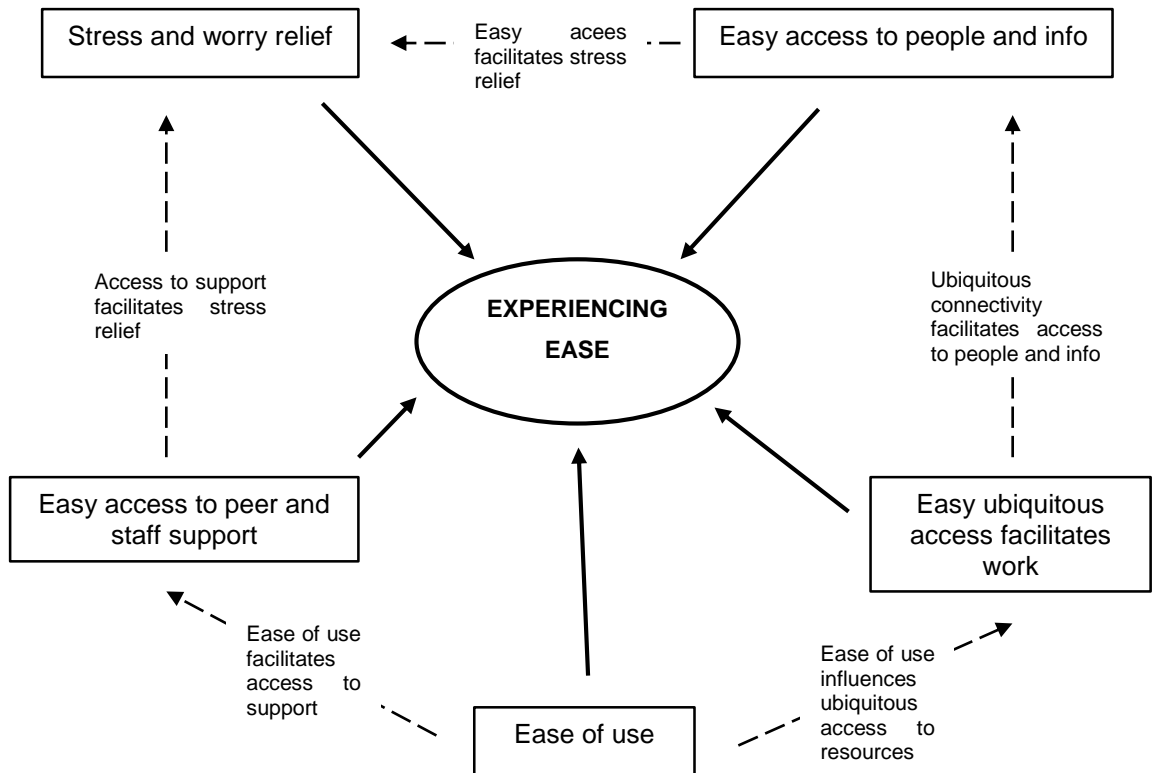
The first example refers to the data analysis of the transcription of one of the on-campus students' interviews. In this case, three initial codes were grouped under the focused code "looking for reassurance". With the progression of the data analysis similar codes (concerning feelings of reassurance and security provided by the use of new technologies) emerged also from other students' data. Therefore, this concept was included in the grounded theory under the category "feeling secure" (section 5.5.5). The

second example concerns another interview with one of the on-campus students. Here a new label denominated “switching between devices for different tasks” was introduced as a focused code to include some initial codes generated during the first phase. Finally, the third example illustrates the focused code “engaging with students”, and the relative initial codes emerging during the analysis of an interview with one of the online lecturers.

4.2.2.3 Axial coding

The axial coding phase presents very strict guidelines in some versions of grounded theory (Strauss and Corbin, 1994, 1998). Axial coding consists in specifying properties and dimensions of categories and to clarify how sub-categories are related to a major category. Nonetheless, it has been debated (Charmaz, 2006; Kendall, 1999) that since axial coding encourages researchers to apply an analytic frame to the data using a pre-determined number of dimensions (e.g. conditions, actions/interactions, consequences), this could limit the work of the researcher and restrict the construction of the codes (Charmaz, 2014, p. 147). Moreover, although axial coding is still adopted by a number of researchers, it is not considered essential in post-modernist revisions of grounded theory. Constructivist grounded theory suggests the use of diagramming to identify properties and relations between categories, since they provide a more creative and less strict method of working with data compared to axial coding. As illustrated in section 4.2.3.3 diagramming was used extensively in this research to help the building of the final theory. As an example, Figure 9 shows a diagram that was created during the construction of the main category “experiencing ease”, to reflect on the properties of this category and on the relations between tentative sub-categories.

Figure 9 – Diagram representing properties and relations in the construction of the category “experiencing ease”



4.2.2.4 Theoretical coding

Theoretical coding is the more abstract level of conceptualisation where the researcher tries to identify the relations between the categories generated during data analysis, and to understand how they can relate each other in order to be integrated into a theory. However, theoretical coding presents similar issues to axial coding, causing controversies among grounded theory experts. As affirmed by Charmaz, there is a tension in theoretical coding between the emergence and application of codes that it is still matter of debate (Charmaz, 2014, p. 151). In fact, for example the application of pre-existing theoretical coding families to the data (such as causes, contexts, contingencies, consequences, covariances, conditions) is deemed as essential in Glaser’s grounded theory approach (Glaser, 1978, 2005). Instead, post-modernist approaches such as constructivist grounded theory prefer to consider theoretical concepts as emerging from the data analysis rather than applying pre-constituted codes to the data. As will be described in section 5.3, two theoretical concepts were identified in this research to connect the main categories identified during data analysis: “satisfying basic psychological needs” and “coping with ubiquitous resources availability”.

4.2.3 Additional methods and tools

This section will illustrate additional methods and tools used in the research to support the process of coding and to help the analysis of the data in general. These methods and tools were particularly useful to connect concepts and to stimulate reflections. This helped to elaborate the codes at an abstract level facilitating the construction of categories and of the final grounded theory.

4.2.3.1 *Constant comparison*

As mentioned in section 3.6, constant comparison plays an essential role in the data analysis process (Charmaz, 2014, p.132; Strauss & Corbin, 1998, p.67). Constant comparison is an important method to use in all phases of coding. In this research, comparison of data was very important during the initial and open coding phases and used further during the data analysis process. Concerning the first two phases of coding, this requirement has been addressed in different ways:

- During the initial coding phase, sentences were compared with sentences within single transcripts to identify similarities and differences and to facilitate the labelling process.
- During the focused coding phase, initial codes were compared with each other within the same transcript to identify potential focused codes. Moreover, the focused codes generated in different transcripts were compared with each other to recognise potential candidates that could become tentative categories, and that could account for a large amount of data. For example, during this comparison process the focused code “switching between devices for different task” was identified in various interviews as representing a common action performed by on-campus students and it was therefore considered as a potential category. After further reflections and comparisons this code was integrated at a later stage in the sub-category “looking for ease of use” that became in turn part of the main category “experiencing ease” (see section 5.5.1).
- Constant comparison was initially adopted to compare codes within transcripts or between different transcripts within the same group of participants (i.e. on-campus students). After the identification of the main focused codes, these were compared between different groups. On-campus and online students’ codes were compared with each other and then with on-campus and online staff members’ codes to proceed with the identification of the categories to be included in the grounded theory.

4.2.3.2 Memo-writing

An important tool available in grounded theory during the data analysis process is the use of memos. The act of memo-writing consists in writing reflective notes to record ideas and to keep track of the data analysis process. Memos are very important to engage critically with the materials and to think about new ways to interpret the data. They can contain hypotheses about categories and properties and reflections about relationships between concepts and categories (Charmaz, 2014, p.162). The principle of memo-writing is to facilitate reflexivity. For this reason, memo-writing is suggested to be a free and flowing process instead of a mechanical and formal task. Memos accompany the researcher along all the data analysis phases, from initial coding to the final steps of the construction of the theory. Table 9 reports an example of memo-writing in this research. Another example of a memo can be found in appendix I.

MEMO-WRITING 23-7-2015
<p>Independence vs. dependency?</p> <p>The tension between independence and dependency in relation to students' use of new technologies and ubiquitous connectivity is at the moment one of the main emerging concepts from this data analysis.</p> <p>This dichotomy can be read in different ways. Firstly, ubiquitous connectivity has transformed learning in a very flexible activity (see category "fitting study around lifestyle") making them more independent from time and space constrains. However, at the same time the implementation of VLEs and technological infrastructures by the university force students to use it and to highly depend on it to perform daily activities. Another element of dependency is related to communication. Being part of social network groups, using emails, and social apps such as WhatsApp and Messenger opens up socialisation and collaboration opportunities for students but at the same time forces them to use these services to take part in university life and being included in the students' community.</p> <p>Finally, the tension between independence and dependency can be seen from an educational perspective. Staff members' goal of helping students to become independent learners clashes with some behaviours in using technology that tend to favour students' dependency (e.g. extended availability of support, meeting expectations).</p> <p>The core point of this tension lies in the fact that the use of technology cannot be chosen. Technologies and ubiquitous connectivity are imposed on students through social and cultural pressures and by university decisions. As a consequence, students embrace technology as it simplifies their university life in many ways, and because they don't have any other way to perform their activities. Nevertheless, embracing technology raises the risk to become highly reliant and dependent on it.</p>

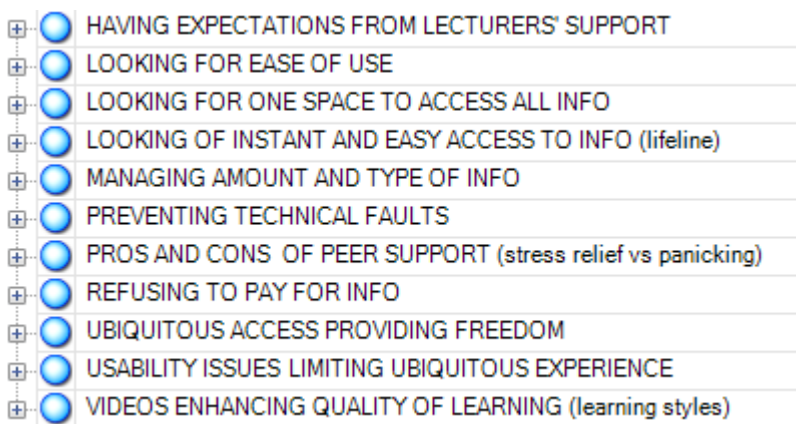
Table 9 – Example of memo-writing

4.2.3.3 Diagramming

As mentioned in section 4.2.2.3 an extensive use of diagramming was made in this research during the data analysis process. Diagrams can stimulate creativity and help to visually connect concepts and categories. Diagramming is a common procedure used in grounded theory and particularly recommended in constructivist grounded theory (Charmaz, 2014, p.184) and situational analysis (Clarke, 2005, p. 86).

In this research, diagramming was adopted as a systematic way to reflect on the data and about relationships between concepts. Figure 10 shows a snapshot from Nvivo illustrating the focused codes identified during the data analysis of one of the students' interviews (on-campus student 7).

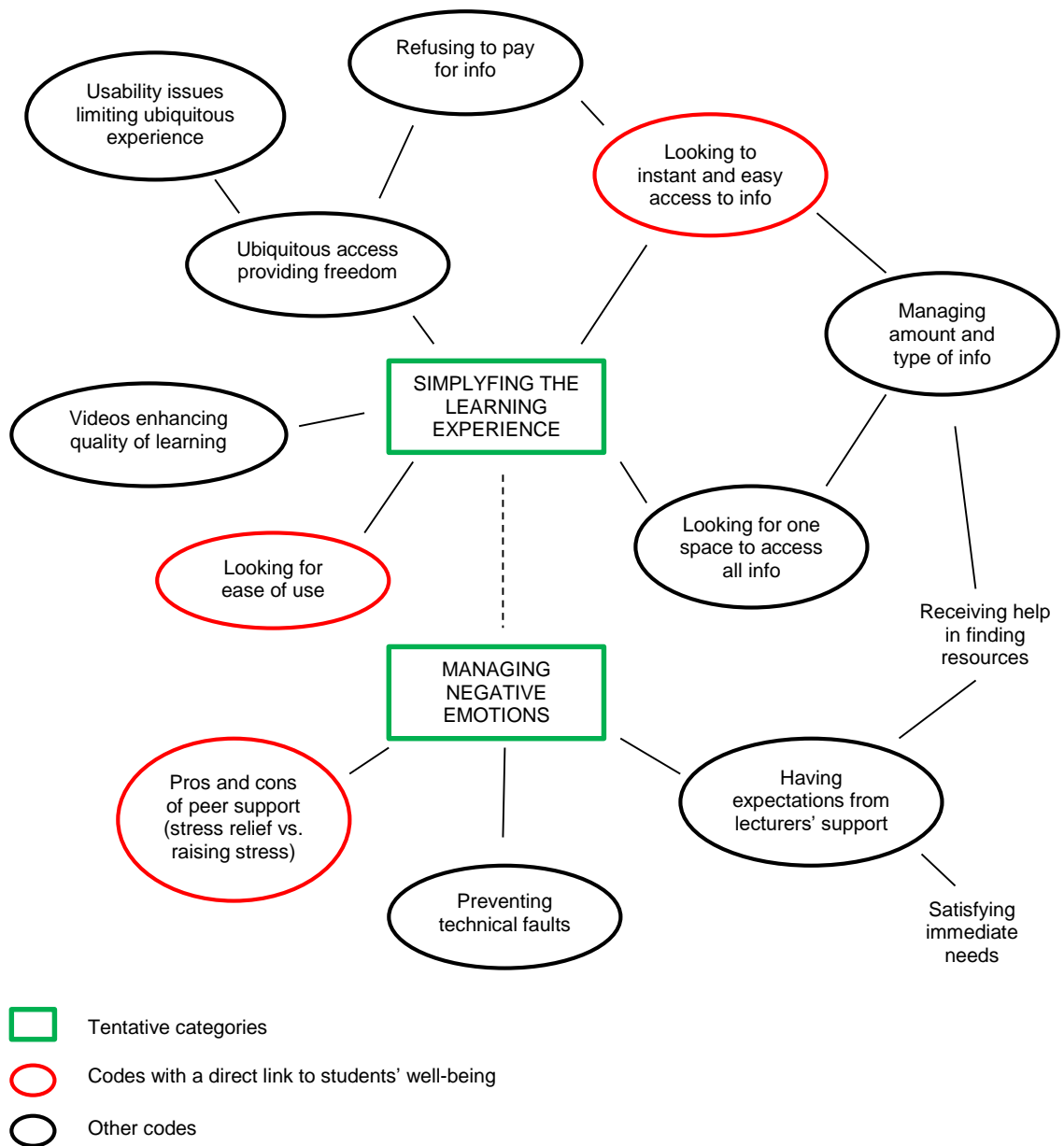
Figure 10 – List of focused codes (Interview, on-campus, student 7, year 3)



Once the focused coding phase was completed for each single transcript, these codes were represented in a diagram to facilitate the identification of connections between concepts. Figure 11 shows the diagram drawn starting from the list of focused codes relative to on-campus student 7 illustrated in Figure 10.

Two different colours were used to draw the ovals containing the focused codes. The red ovals contain codes considered by the researcher as having a direct link with students' well-being. All the other codes were included in black ovals. Moreover, two green rectangles were added by the researcher as tentative categories that could comprehend and connect different focused codes. The tentative category "simplifying learning experience" became with the progression of data analysis the main category "experiencing ease" whereas "managing negative emotions" did not become a main category. These diagrams were drawn for each of the students and staff members interviewed and for each focus group.

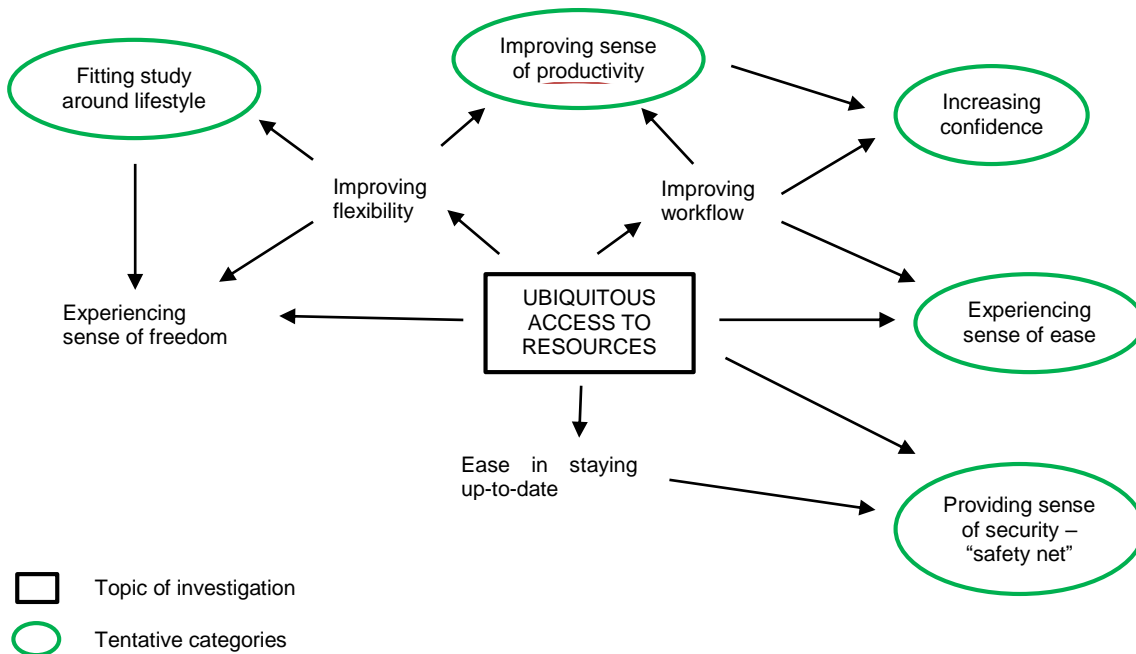
Figure 11 – Focused codes diagram (Interview, on-campus, student 7, year 3)



After all the diagrams for each participant and for each focus group were drawn, the diagrams were compared to identify the most common and similar focused codes emerging from the participants. The codes identified became tentative categories or were aggregated under larger categories that could include different focus codes. When this process was completed, new diagrams were drawn to identify possible connections between the various categories, in order to elaborate concepts on a more abstract level to facilitate the construction of the final theory. For example, the diagram shown in Figure 12 was drawn to help the researcher reflecting about the positive consequences of students' ubiquitous access to resources, in relation to their sense of well-being. In this

case, the ovals represent tentative categories. Most of them (with some slight rephrasing) became main or sub-categories included in the grounded theory described in chapter 5.

Figure 12 – Diagram representing positive consequences of students’ ubiquitous access to resources



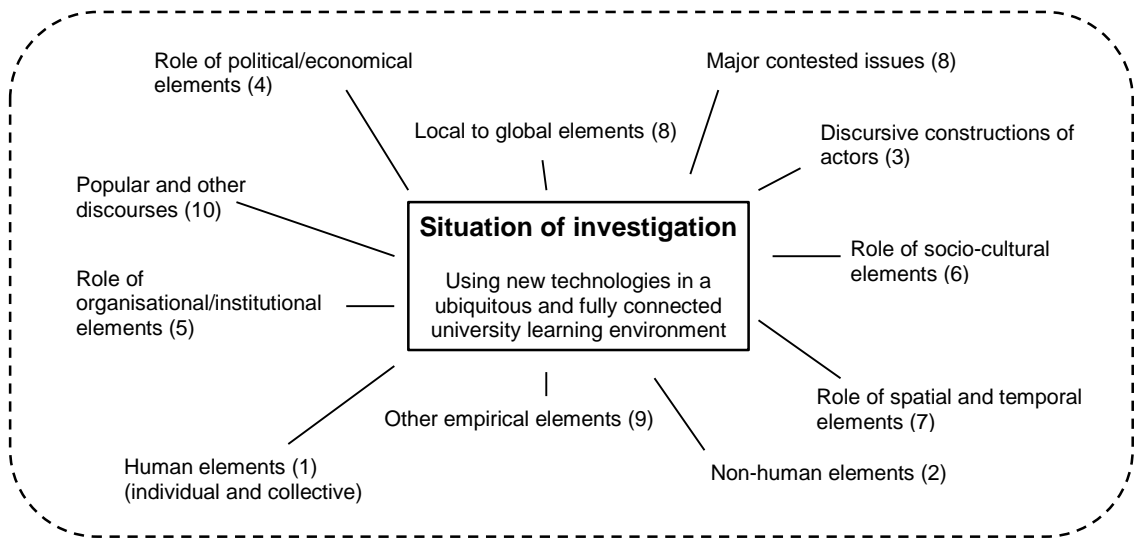
A similar diagram representing the negative consequences of students’ ubiquitous access to resources can be found in appendix K.

4.2.3.4 Situational analysis tools

Two additional tools were used in this research taken from situational analysis (Clarke, 2005) to stimulate the data analysis process: situational map and social worlds/arenas map.

Situational maps are based on the “situational matrix” proposed by Clarke (2005, p. 73) that utilises and expands the “social worlds” framework (Strauss, 1978), which is common also to the grounded theory tradition. The situational matrix helps to identify the elements that co-constitute the situation of action (Figure 13).

Figure 13 – Situational matrix: the elements of investigation of a situation – developed using Clarke (2005)



Situational maps can be utilised in two different forms. The “ordered” version of a situational map uses the topics proposed in Figure 13 as a base to identify key elements in the specific situation of investigation. This tool is particularly useful during data analysis to reflect on the complexity of the situation and to focus on specific aspects that could otherwise be overlooked or ignored. The ordered version of the situational map created for this research is shown in table 10.

STUDYING IN A UBIQUITOUS LEARNING ENVIRONMENT – SITUATIONAL MAP	
<p>INDIVIDUAL HUMAN ELEMENTS (1)</p> <p>On campus students Online students Lecturers/tutors</p>	<p>NON-HUMAN ELEMENTS (2)</p> <p>Devices VLE Connection availability (wi-fi)</p>
<p>COLLECTIVE HUMAN ELEMENTS (1)</p> <p>University as organisation</p>	<p>IMPLICATED/SILENT ACTORS (1)</p> <p>Programme administrators Tech support Learning Technologists Librarians</p>
<p>DISCURSIVE CONSTRUCTIONS OF INDIVIDUAL AND/OR COLLECTIVE HUMAN ACTORS (3)</p> <p>Technopositivist ideology Students as “children” to raise Students as customers Raising independent learners</p>	<p>DISCURSIVE CONSTRUCTIONS OF NON-HUMAN ACTANTS (3)</p> <p>Technology needs to be fast and easy to use Access to info has to be immediate Virtual worlds as “less real”</p>
<p>POLITICAL/ECONOMIC ELEMENTS (4)</p> <p>High fees bring high expectations among students about quality of technology Necessity for universities to have “cutting edge” technology to stay in the market Students’ limited funds allowance constrains technology accessibility</p>	<p>ORGANISATIONAL/INSTITUTIONAL ELEMENTS (5)</p> <p>Academic staff excluded from ICT decisions</p> <p>SOCIOCULTURAL/SYMBOLIC ELEMENTS (6)</p> <p>Living in a digital age</p>
<p>TEMPORAL ELEMENTS (7)</p> <p>Extended availability given by ubiquitous connectivity Traditional paradigm of “working hours” not applicable anymore</p>	<p>SPATIAL ELEMENTS (7)</p> <p>Ubiquitous access and impact on students’ habits Network availability constrains students’ behaviour</p>
<p>MAJOR ISSUES/DEBATES (8)</p> <p>How to give students support and guidance? Limits and potential of new technologies Setting boundaries Engagement and personalisation in online environments How communication changes in online environment. Managing students’ expectations Educating students to the use of technology Students’ reliance on VLE Mature/non tech-savvy students’ issues Lecturers’ beliefs on technology Compatibility/usability</p>	<p>OTHER KEY ELEMENTS (9)</p> <p>How students manage stress and emotions Link between technology and students’ emotions How staff members manage students’ emotions in online environments</p> <p>RELATED DISCOURSES (HISTORICAL, NARRATIVE....) (10)</p>

Table 10 – “Ordered” situational map

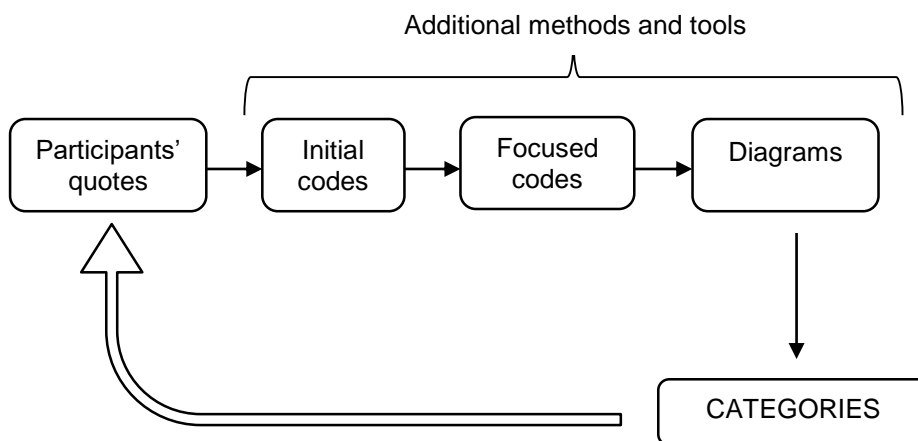
The second form of the same situational map is usually called a “messy” version, and can be used to stimulate reflections on potential connections between the same elements indicated in the “ordered” version through the construction of diagrams. In this type of map, a specific element can be selected to reflect on its connections with the other elements of the map. Therefore, different “messy” maps can be drawn by selecting each time a different element to connect to the others. Appendix L shows an example of a “messy” map where the potential connections between the element “lecturers/tutors” and the other elements of the map were considered.

The second situational analysis tool used in this research, the “social world/arena” map, will be illustrated in section 5.2 as it will be used to introduce the results of the research.

4.2.4 From categories back to quotes

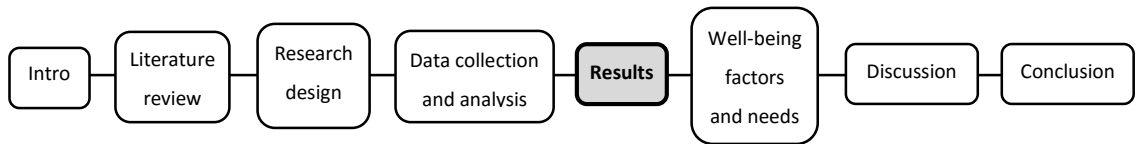
The data analysis process and the methods and tools described in this chapter, contributed to the construction of the grounded theory that will be described in detail in chapter 5. As will be explained, seven main categories were identified at the end of the data analysis process and included in the grounded theory: experiencing ease, experiencing freedom, feeling secure, being engaged, managing information availability, managing communication and managing expectations. These categories encompass all the main codes and concepts identified during data analysis and represent the core of the grounded theory. Once the main categories were identified, a reversed process was conducted to reconnect the categories to students’ quotes. This action led to the construction of an Excel database that can be downloaded from the cloud using the following link: <http://1drv.ms/1S0Gnny>. In the database, each single category was linked back to relevant students’ and staff members’ quotes. A small excerpt from the database is available in appendix M. This final phase of data analysis ensured the grounding of the final theory in the data, and avoided the risk of losing connection with students’ narratives when working on a more abstract level of conceptualisation. Figure 14 summarises how the process of data analysis started and ended with the identification of participants’ quotes.

Figure 14 – Details of the data analysis process



In synthesis, segments of participants' narratives were identified at the beginning of the data analysis process and initial codes were attributed to them. Initial codes were then grouped in focused codes and further elaborated through the use of diagrams and of additional methods and tools such as constant comparison and memo-writing. This process led to the identification of abstract categories of meaning connecting students' experiences with new technologies and ubiquitous connectivity to their sense of well-being. Finally, these categories were related back to students' and staff members' quotes through the construction of the database to confirm the connection of the categories to the initial data.

The next chapter will present the results of the research and illustrate the grounded theory constructed during the data analysis process using the procedures, methods and tools described in this chapter.



5. RESULTS

5.1 Introduction

As indicated in section 1.3.1, the main aim of this research was to investigate students' experiences with new technologies and ubiquitous connectivity in relation to university-related activities, and to identify how these technological advances affect students' day-to-day social and psychological life and their consequent well-being.

The data analysis suggests that students perceive an increased sense of well-being in using new technologies and ubiquitous connectivity when these technological innovations are used as a means to satisfy their basic psychological needs. However, the data also indicate that the quality of students' daily life is also affected by students' and staff members' difficulties in managing the consequences of this ubiquitous availability of resources.

Before providing a detailed presentation of the findings and of the grounded theory, the next section will propose an overview of the "arena of investigation" adopting one of the tools used in situational analysis (Clarke & Star, 2008).

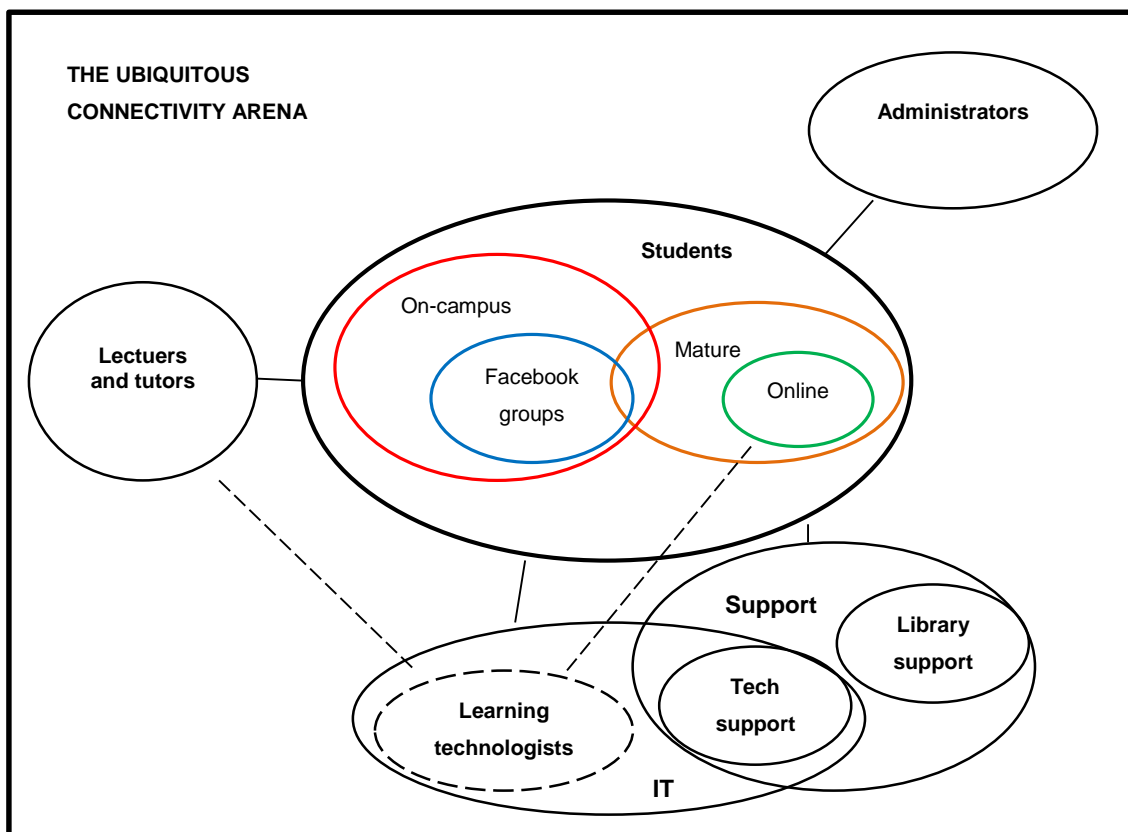
5.2 The arena of investigation

As mentioned in section 4.2.3.4, a second tool proposed by situational analysis was used during data analysis. The "social worlds/arenas" map was adopted to construct a diagram representing the arena of investigation called here "the ubiquitous connectivity arena" (Figure 15). As described in section 3.6.4, according to the "social worlds" framework (Strauss, 1978) and situational analysis (Clarke & Star, 2008), an arena is constituted by different social worlds (like a specific group or occupation) organized around issues of "mutual concern and commitment to action" (Clarke & Star, 2008, p.113).

In this case, the diagram represents connections, interactions and overlaps between the different social worlds (represented by ovals and circles) identified in this research at the university where the data were collected. This diagram is not intended to provide a

detailed representation based on an exhaustive investigation supported by quantitative data. Instead, it was conceived as a pragmatic tool to illustrate the context in which the data collection was performed. In addition, the diagram adds an element of reflexivity by showing how the arena of investigation was conceived by the researcher using the data collected from students and staff members and his personal and direct knowledge of the situation (as postgraduate researcher at the same university).

Figure 15 – The arena of investigation



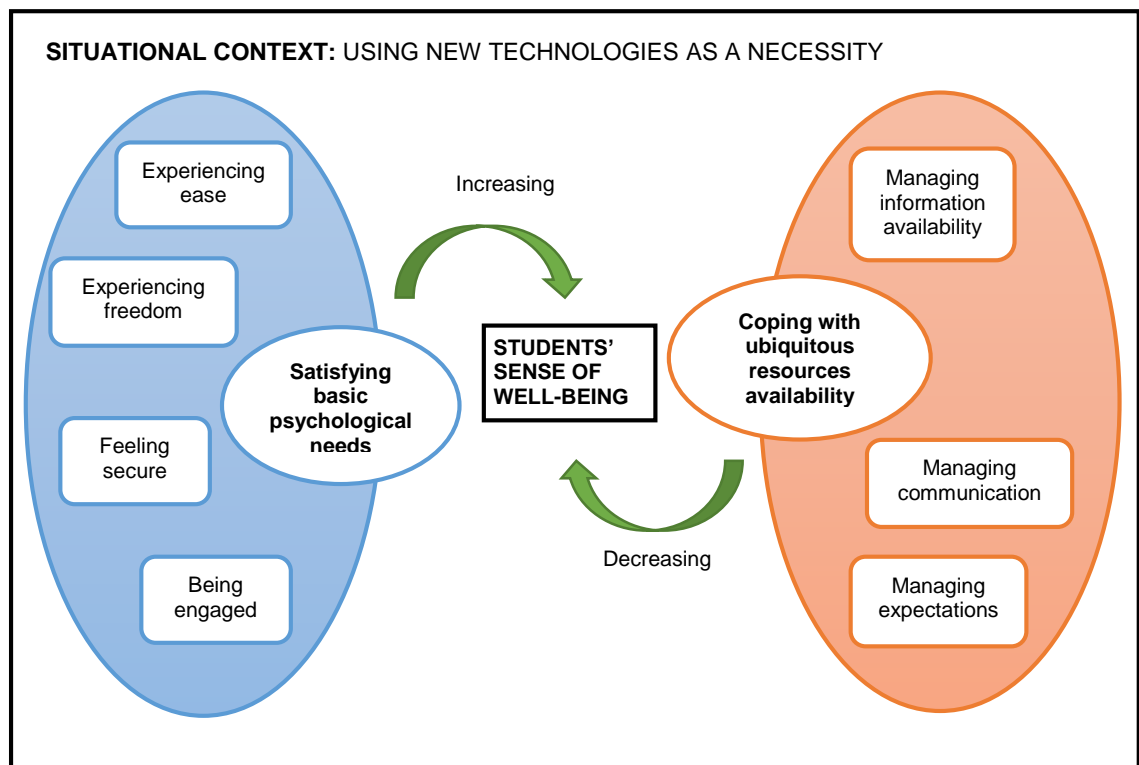
Specifically, it is noticeable that the social world named “students” is constituted by different and partially overlapping sub-worlds. From the qualitative data it emerged that the majority of on-campus students are also members of specific Facebook groups according to their year of study. Each of these groups can be considered as a social world where students interact, exchange ideas and opinions and discuss about assignments and exams. Mature on-campus students are in general reluctant to use Facebook groups, since these are not perceived as being the preferable way to interact with other students, favouring instead face-to-face contacts. Online students belong to the group of mature students, and do not interact through social media but only through discussion boards within the VLE.

The other circles and ovals represent groups of staff members that can have direct or indirect interactions with students. Online tutors, lecturers, programme administrators, technical and library support staff all have all direct contact with students through emails, announcements posted on the VLE main page, and through live chats used specifically by librarians. Learning technologists usually interact with tutors and lecturers, but are not a recognisable contact figure for students. The online learning technologist represents an exception in this research. This specific figure has direct contacts with both students and online tutors as it performs part of the administrative functions.

5.3 Grounded theory theoretical model overview

Figure 16 presents a theoretical model that summarises the structure of the grounded theory developed at the end of the data analysis process. The goal of this section is to provide a description of this model to facilitate the understanding of the findings of this research and to explain how the results are presented in this chapter.

Figure 16 – Theoretical model of the grounded theory



The black external rectangle in the diagram represents the situational context that will be described in section 5.4. The situational context will introduce the concept that using new technologies and ubiquitous connectivity is not an option for students but a necessity.

The left side of the diagram (blue oval) shows the elements identified in the data analysis that contribute to increasing students' sense of well-being. The right side (red oval) shows the elements that contribute to decreasing students' sense of well-being. Each oval contains a theoretical concept, that represents the more abstract level of conceptualisation in the theory (see section 4.2.2.4) and a number of linked categories. These substantive categories, generated through the data analysis, provide details regarding the highs and lows of students' experiences with new technologies and highlight connections with their sense of well-being. Moreover, each of these categories includes a number of related sub-categories (table 11) that have contributed to defining the properties and attributes of the main substantive category.

As mentioned in section 1.4 and 3.10, the research was primarily focused toward on-campus students. However, online students were included as well to identify similarities and differences between the two types of learners concerning the use of new technologies. This contributed to understanding how some of the highs and lows of students' experiences are strictly related to the specific learning context in which students are involved. Therefore, it is important to underline that although all the categories identified in the grounded theory refer to both on-campus and online students, some of the related sub-categories concern only a single type of student as they emerged only in relation to specific situations. For this reason, each section describing the sub-categories specifies in the title what type of student it refers to.

Sub-category	Category	Theor. concept	Theor. concept	Category	Sub-category		
Experiencing ease in accessing resources	Experiencing ease	SATISFYING BASIC PSYCHOLOGICAL NEEDS	COPING WITH UBIQUITOUS ACCESS TO RESOURCES	Managing information availability	Managing information overload		
Looking for quickness					Looking for reliable information		
Looking for ease of use					Loosing motivation in attending lecturers		
Fitting study around life	Loosing focus and concentration						
Managing learning spaces	Switching-off						
Catching-up	Managing interactions and collaborations						
Increasing workflow and sense of productivity	Managing communication					Managing expectations	Managing limitations of communication
Receiving timely support							Over-relying on technology
Availability of needed information							Managing quality of resources
Feeling protected	Feeling secure						Managing support expectations
Increasing motivation and understand.							Feeling engaged
Feeling cared							
Gaining motivation through interactions							
Feeling like a real student							

Table 11 – Summary of the sub-categories and categories included in the grounded theory

The chapter will now proceed with a detailed presentation of the grounded theory summarised in the theoretical model.

5.4 **Situational context: using new technologies as a necessity**

The grounded theory presented in this chapter is based on an essential premise that is deemed important to contextualise all the other concepts and categories emerging from the data analysis: using new technologies and ubiquitous connectivity is not an option for students and staff members, it is a necessity. The concept is well summarised by this quote extracted from an interview with one of the on-campus mature students:

“... you have to have technology; you have to interact with technology (...) If you haven't got a smartphone or you haven't got access to a computer or you haven't got a tablet or you haven't got a laptop... you are almost alien... there is pressure to perform, to be the same, to...there is peer pressure, there is pressure from technology itself because if you don't have access to technology... you can't have access to these resources you can't have access to that resources, you can't be part to this group, you can't be part to that network, you can't see this you can't get that... and that's a pressure for everybody, not just age-determined...”

(Interview, on-campus, student 2, year 2)

This issue was barely mentioned by students but its consequences are extremely important to understand how the students and staff members involved in the research engage with new technologies in their day-to-day life.

5.4.1 **Student experience**

Concerning on-campus students, three main elements make the use of new technologies a necessity. Firstly, all the students have access to a VLE based on a Blackboard platform. Learners login on the VLE to access their emails, the materials provided by lecturers and the library catalogue. Students also need to use the VLE to submit their assignments through an online service (called Turnitin) that checks for plagiarism. Moreover, lecturers use the VLE for general announcements and communications. Lecturers also have the possibility to set up discussion forums about their units. The VLE is therefore so integrated in to the students' experience that it becomes virtually impossible for them to perform any of the university activities without engaging with this platform. The availability of the VLE has completely changed the way students organise their time and their activities during the day making it very difficult to replace the use of the VLE with alternative solutions:

“...if we didn't have the internet we'd have to come in to uni and try and find all the lecturers and get all the notes and stuff...” (Focus group 2, on-campus, student 3, year 2)

“...if you left an hour to do some revision and (the VLE) goes down you just think...I can't do it now because I have to go somewhere in an hour...you wouldn't go to the uni, take a book, come home with it because you can't do it in an hour...”
(Focus group 2, on-campus, student 3, year 2)

Being connected to the VLE is also essential for students to stay constantly updated on last minute news or announcements regarding exams or assignments:

“...so I do check (the VLE) a lot more especially if there is a circumstance where I think something might change or there might be more announcements. I do check forums because sometimes lecturers (...) they put a forum and they would be checking it and sometimes I check it more in case they put something that we need to know...” (Interview, on-campus, student 3, year 3)

The second element, that makes using new technologies for on-campus students necessary, is determined by the ease in retrieving information and resources through the internet compared to using non-technological alternatives:

“...it's probably Google scholar (...) when I discovered that, half way through my assignments last year, that was just a God-send, that was AMAZING, so, I kind of heard about it and I was using, I was trying to use the library and using all books and just, searching for information taking hours, searching for information and then Google scholar came along, and I just typed in a title and look through thousands...” (Interview, on-campus, student 7, year 3)

Finally, social media have become an indispensable resource for students to receive immediate support from peers and to facilitate collaborations:

“...we have Facebook groups for each course and unit made by students and we can ask any questions on this group and get answers from other students... at ease that other people on my course are contactable if I have any problems...”
(Survey, on-campus, student 41, postgraduate)

“...creating a private group page on Facebook. When having to complete a group activity we created a private group page on Facebook which was very handy for interacting and sending files to one another as most of us check our Facebook daily...” (Survey, on-campus, student 8, year 1)

Regarding online students, the use of new technologies is obviously even more essential since this is the only channel students have to access university resources. However, this also means that the quality of their overall learning experience is also dependent upon the quality of online resources and technologies:

“...took me a long time to figure out where everything was, it is all there but it’s trying to find it, it’s not always terribly logical, it’s done from an institutional point of view...” (Interview, online, student 6, year 2)

“...the first thing that I called blackboard when I saw it is... bramble maze... because it feels like everything is hidden behind two doors. So you don’t just go to your fridge and take out your food... you go to your fridge and there is another big room...” (Interview, online, student 2, year 1)

“...so I got the app, I downloaded it, the first thing I did, nothing worked on it, I had no timetable on it, no schedule so I spoke to the uni and they said “yeah, it doesn’t work for online people” (Interview, online, student 4, year 2)

5.4.2 Staff experience

Using new technologies and ubiquitous connectivity is not only a necessity for students but for staff members as well. In particular, on-campus lecturers are invited to take advantage of new technologies to enrich students’ learning experience, and online tutors are required to use them to implement their online learning activities. Nonetheless, the data analysis showed a wide variability regarding how lecturers and tutors use new technologies depending on their level of expertise, and how they perceive the usefulness of new technologies in teaching activities:

“I think the interesting thing about my teaching is that there are cases where purposely choose not to use online (...) because there is a danger with online in the loss of the personal touch... students become disengaged from me...” (On-campus, lecturer 1)

“...and also a bit of variation for students...I think there is a little bit of sort of benefit of doing it with different approaches in that it might engage students a little bit more it is not just “I’m looking another slide... I’m looking another slide” they can look at the slides or they can see me doing the SPSS analysis myself because I videoed it and me talking through it...” (On-campus, lecturer 2)

“...you know, I was just told... right you are doing this unit and had to develop all the materials and it’s really been a process of trial and error, talking to other people... You know making it better an improvement listening to student and so on. That, you know I don’t think that is that good really...” (Online, tutor 2)

“...I as an individual, I am still very white board, chalk and pencil, pen and paper kind of a person. So online is for me just something that I use because I’m part of this generation. So, I struggle with it a little bit...” (Online, tutor 4)

As will be described in section 5.5.7, the different approaches, beliefs and capabilities of lecturers and tutors in using new technologies reflect on the quality of their teaching and on students' engagement with their course.

In summary, this section has aimed to highlight a background concept that provides a situational context for the results emerging from the data analysis illustrated in the following sections. Although the reflections expressed in this section did not emerge directly from students' and staff members' quotes', the concept of "new technologies as a necessity" is deemed essential to understand how students and staff relate to new technologies and ubiquitous connectivity and how these impact on their daily lives.

5.5 First theoretical concept: satisfying basic psychological needs

Previous studies in the UK (Beetham, White, & Wild, 2014) have indicated that students' expectations in relation to the implementation of new technologies at university are typically focused on specific aspects such as: ubiquitous Wi-Fi access across campus locations, the use of the VLE as a central source of information and the possibility to easily connect their own devices to the university network to access personal and social web services. The interviews and focus groups conducted in this research enabled a move forward to understand how these expectations are connected to the satisfaction of students' psychological needs, and how the satisfaction of these needs is linked to students' sense of well-being. The relationship between the satisfaction of psychological needs and well-being is discussed in chapter 6.

The four categories presented in this section indicate that students look for ease, freedom, security and engagement when using new technologies in university-related activities. As will be extensively illustrated and discussed in chapter 7, all these four elements are strictly related to the satisfaction of students' basic psychological needs.

5.5.1 First category: experiencing ease

The data analysis indicates that students' experiences with new technologies and ubiquitous connectivity is characterised by learners' desire to simplify their university life not only during the preparation of assignments and exams but also in everyday situations. Different open codes in data analysis referred to the sense of ease perceived by students in performing their daily activities. Therefore, with the progression of the analysis "experiencing ease" it has become one of the substantive categories of the

emerging theory. The sub-categories linked to this first category are: “experiencing ease in accessing resources”, “looking for quickness” and “looking for ease of use”.

5.5.1.1 Experiencing ease in accessing resources (on-campus students)

“We have access to a lot of materials in a short amount of time like... you have pretty much the whole library in your computer... academic journals, book, e-books, everything... they are there for you ready... you don’t have even like read through them, we have the searches, the filter searches... it is so much easier...”

(Focus group 3, on-campus, student 3, year 2)

One of the most appreciated benefits of new technologies and ubiquitous connectivity is the easy access to information and resources. The availability of resources in the VLE and on the internet appears to have an inestimable value for students. They appreciate the easy access to resources for both the large amount and variety of information available to students and for the ease of having all the needed information available in one single place by logging into the VLE:

“...that is my lifeline for assignments and things like that (...) you literally type anything and hundreds of topics will pop up and pick and choose what you need, pick out the information that you need...” (Interview, on-campus, student 7, year 3)

“...we get a very wide range, a diverse range of information available at your fingertips all the time...” (Focus group 1, on-campus, student 2, year 2)

“I logged onto (the VLE), it has been a positive experience because everything I have needed for my assignment has been easily accessible...” (ESM, on-campus, student 10, year 2)

5.5.1.2 Looking for quickness (on-campus students)

A second sub-category linked to the previous one was named “looking for quickness”. It indicates the importance that students give to the speed in accessing and retrieving information from the internet and from the VLE:

“...so to be faster and to be able to access it quickly that would be the best thing...” (Interview, on-campus, student 1, year 2)

“...and it is a “speed” thing isn’t it... for me is a speed thing (...) if I want to go to an online resource is because I want it quickly... if I wanted to do it slowly I can go to the library myself and choose three books myself and pick up the phone myself...” (Interview, on-campus, student 1, year 2)

“...Ok, so quick access, it’s very important, easy access, so not having to go to millions of channels, to get to an articles, you just type in the title and it’s instantly there...” (Interview, on-campus, student 1, year 2)

As can be seen from the quotes above, students have high expectations regarding the ease and quickness of accessing information with new technologies. Section 5.6.5 concerning the category “managing expectations”, will illustrate that expectations are extremely important in relation to students’ well-being, since students’ negative emotions tend to emerge when these expectations are unfulfilled.

5.5.1.3 Looking for ease of use (on-campus and online students)

“Looking for ease of use” was identified in the data analysis as the third aspect that contributes to generate students’ sense of ease in relation to the use of new technologies and ubiquitous connectivity. Data showed that students search of ease of use is not only related to the use of technological devices but also to the ease of accessing and using online contents and materials:

“...I enjoyed the ease of use when doing assignments...” (Survey, on-campus, student 23, year 3)

“...it is easy to do and it is always on... you know... I don’t have to get up and turn my laptop on or my PC on... I can just pick up my phone, check my email (Interview, online, student 6, year 1)

“...I just used (the VLE) on the uni computers. It was a positive experience because the particular lecturer has organised folders so it was easy to find what I needed, the content and the folders...” (ESM, on-campus, student 10, year 2)

In relation to the usability of different devices, it is also important to mention that students tend to search for the best device to use according to the task they have to perform. Therefore, they switch between different devices to find the best usability according to specific activities:

“...I may write something up on my iPad or my iPhone because it’s quick and easy to access but I probably wouldn’t write or use it for study purposes in a long term situation like if I sat down to study (...) I mean I can check something like grades, times or room... I can check that instantly on my phone rather than on my laptop... (...) but in terms of doing actual work I normally use the uni computers” (Interview, on-campus, student 1, year 2)

Concerning staff members, both the on-campus and online learning technologists recognised the importance of focusing on usability:

“...it is quite an easy system to navigate to get around, and also it is quite interactive with other systems for example, students can get into (the VLE) and access the calendars can link into straight in to students’ e-mails, they can go straight to... through the library and resources and do research... it is very interactive...” (On-campus, learning technologist)

“...We try to remove as many obstacles as possible for them and reassure them that it’s not something they should worry about...think we don’t want the technology to be the cause of any problems (...) this is the container, it shouldn’t be the barrier (Online, learning technologist)

As can be seen from the quotes selected, the category “experiencing ease” was constructed using mostly on-campus students’ quotes. This topic emerged in online students’ data only in relation to issues that complicated their access to online resources. In section 5.6.5 it is described how online students reported various problems that made access to resources difficult, generating complaints and negative emotions.

5.5.2 “Experiencing ease” and well-being

In summary, the combination of easy and quick access to information and usability contributes to provide students with a sense of ease that enhances the quality of their experiences at university. During the interview with the on-campus learning technologist it emerged that the simplification of daily activities facilitates positive emotions and lowers students’ level of stress especially close to assignment deadlines:

“...students get stressed out, students have deadlines, what they want is something that they can click straight into and it’s all there for them... It saves them time and makes it easier for them...” (Learning technologist, on-campus)

Moreover, the data analysis indicates that students feel more empowered and perceive their final goal as easier to reach:

“...it’s just easier and quicker I suppose, all of it can be done in books and letters and whatever but we can do just as well otherwise... it’s just a much longer process, I think technology just makes the process quicker of getting your degree...” (Interview, on-campus, student 1, year 2)

5.5.3 Second category: experiencing freedom

The second substantive category identified during the data analysis and connected to the theoretical concept of “satisfying basic psychological needs” is “experiencing

freedom". This category is strictly linked to the previous one "experiencing ease" as exemplified by the following quote:

"I learn a lot, have more freedom, more control, easy access to all information (...) access to the information whenever it's needed is the best possible outcome, easy to access easy to learn from anywhere. Better- I have access to everything I need whenever I need it" (Survey, on-campus, student 11, year 1)

The data showed a close connection between the ease of accessing information and the sense of freedom experienced by students due to ubiquitous access to resources. For this reason, "experiencing freedom" was initially considered as a sub-category of the main category "experiencing ease" that was described in the previous section. However, the progression of the data analysis has indicated that the sense of freedom given by ubiquitous connectivity was linked to many different aspects of students' university life. For this reason, "experiencing freedom" has become a main category organised in three sub-categories: "fitting study around life", "managing learning spaces" and "increasing workflow and sense of productivity".

5.5.3.1 Fitting study around life (on-campus and online students)

The benefit provided by ubiquitous connectivity in helping learners to organise their study around their personal life was highlighted both by on-campus and online students:

"...it allowed me to go back and review the lectures in my own time and extra reading extended my knowledge..." (Survey, on-campus, student 2, year 2)

"...sharing information at a time that suits the individual i.e.: those that work better in the day/night..." (Survey, on-campus, student 4, year 2)

"...being able to log on at my own convenience, it didn't tie me down to a particular study time and I could fit it in with my work and family life..." (Survey, online, student 31, year 1)

"...e-learning has fitted around my busy home/work life. I would not have been able to attend uni full time. Makes learning flexible and has meant that I can work and look after my children..." (Survey, online, student 28, year 2)

As can be noticed from the quotes above, an important component of students' sense of freedom is the possibility to manage their time, according to their preferences and needs, through the ubiquitous access to resources. Students appreciate the possibility to organise their learning around their personal life, and save time when they need to communicate with lecturers and other staff members:

“...being able to communicate with lecturers and staff without having to come and find them or at more unsociable out of office hours...” (Survey, on-campus, student 3, year 3)

“...I could contact my dissertation tutor whenever I wanted without having to waste time having a meeting for every little question....” (Survey, on-campus, student 27, year 2)

Another opportunity given by ubiquitous connectivity and remarked upon by on-campus students is the possibility to stay updated with lectures when they cannot go to the university:

“...If I'm ill, I can work from home. I can access lecture materials and revision materials from home instead of getting up and moving all my work from one place to another...” (Survey, on-campus, student 16, year 2)

“...I was unable to make it into lectures and found (the VLE) a god send. I had no idea what I would have been doing but was able to print of the slides for the lecture and research the information...” (Survey, on-campus, student 19, year 2)

“...If you missed a lecture, you could easily catch up on (the VLE) from the home environment...” (Survey, on-campus, student 19, year 2)

However, as will be discussed in section 5.6.1.3, the ease of accessing lecture materials can also have an important negative side. In fact, the data indicate that students can lose motivation in attending lectures due to the ease of retrieving lecture materials from the VLE.

5.5.3.2 Managing learning spaces (on-campus students)

The data analysis has revealed that on-campus students take advantage of ubiquitous connectivity by managing their learning spaces according to their desires and needs. Students appreciate the possibility to study in their spare time but also in different places to increase their motivation.

“...I just find easier (inaudible) doing close to assignments and stuff... and you can just tap on your phone while you are on the bus and you can find an article...and then you can save it and then it is there when you go home...” (Focus group 1, on-campus, student 4, year 2)

“...I quite like meeting friends in coffee shops, we tend to go down to (name of the city), but, anywhere is good, go to the library a fair bit to study, I come here and

do work if I can, or just chill at home or in the garden..." (Interview, on-campus, student 6, year 2)

"...If I'm out, sometimes if I get a bit...umm, if I get a bit sick of sitting at home I'll go and sit in a café to do some work, using my smartphone..." (Interview, on-campus, student 7, year 3)

"...a lot of the time if I'm like at a friends' or like at my boyfriend's house, I don't take my laptop with me (...) if he's on the PlayStation like... I might as well do some research I will just get my tablet out and just do it there..." (Interview, on-campus, student 8, year 2)

Concerning online students, the data analysis has indicated that online learners have static learning habits compared to on-campus students. Since all the online students interviewed were full-time workers, they reported that they study mainly at home during evenings or weekends using their PC's or laptops. Therefore, the extension of their learning spaces did not emerge as a specific necessity for most of them. However, this need appeared in a couple of interviews:

"...It was easy to save the journal papers to the google drive and to make them available for access on my phone, so I could be underground on the tube and read it..." (Interview, online, student 5, year 2)

"...if there is a key text I will buy it...one reason is for time wise, I can put it in my bag and if I take my son to swimming...while he is having his lesson I can be doing some study... I can do it on the train, going to work, you know, I can do it in, in small snapshots, whereas if I'm studying online, using the online material, you have to sort of sit down..." (Interview, online, student 2, year 2)

5.5.3.3 Increasing workflow and sense of productivity (on-campus students)

New technologies and ubiquitous connectivity are revealed to be important allies for students also for their potential to increase their sense of productivity and workflow. In addition to the possibility to study on the go for example when commuting to university, ubiquitous connectivity allows students to record their thoughts and ideas during the day and to receive an immediate answer to their questions:

"...you can answer your questions... if you have a question in your head, you can answer it rather than just disappearing from your head and you think "I asked myself a question... what was it?" and you can't bring it back... instead you can

answer to your question there from your phone... (Focus group 1, on-campus, student 7, year 2)

"...when you have a thought about something you should carry a pad and write it down... when now you can go online and check bits of information, expands your thoughts process while it is fresh in your mind... (...) It makes you feel good because you don't immediately forget what you just thought of...because if you think about something when you are out, by the time you are at home...if you didn't write it down...you won't remember it again...so it is good and it helps you to work (...) and you feel more confident... about what you are doing...because you got a lot more of ideas, they are coming more (inaudible)... you can record down...even if it is just recording a web page that you found at that time...you can save it on your phone and go back later..." (Focus group, on-campus, student 2, year 2)

Another contribution to the increased perceived sense of productivity and workflow is given by the flexibility and interactivity of mobile devices:

"...using my tablet to display lectures slides while I make written notes. This is a very positive experience because it is very convenient to have my slides on the tablet and I don't need to find a computer..." (ESM, on-campus, student 13, year 2)

"...sometimes I take the iPad to university... I use both so I can see two screens at once, sometimes I do my research on my iPad and I type up onto the computer because it's quick to type up onto that but it's easy, it's better to see two screens at one sec and compare..." (Interview, on-campus, student 1, year 2)

Finally, an increased sense of productivity is provided by the ease of managing collaborations using new technologies and social networks:

"... using Facebook to set up groups. It makes it easier to communicate when working on a group assignment. Instead of us all sending five thousand emails and getting confused between who knew what..." (Survey, on-campus, student 17, year 2)

"...creating a private group page on Facebook. When having to complete a group activity we created a private group page on Facebook which was very handy for interacting and sending files to one another as most of us check our Facebook daily..." (Survey, on-campus, student 8, year 1)

Managing collaborations through online channels also revealed a source of issues especially for online students, as illustrated in section 5.6.3. In general, online students

did not mention specific benefits regarding workflow and sense of productivity in their interview. As mentioned previously in this section, online students showed a very limited use of mobile devices in relation to their learning, and they usually study at home during evenings and weekends having little time to dedicate to learning during working days. Therefore, they could not experience the same benefits as the on-campus students that use mobile devices to make their learning time more flexible and productive.

5.5.4 “Experiencing freedom” and well-being

The data analysis indicated that the sense of freedom provided by the use of mobile devices and ubiquitous connectivity is important to increase the quality of students’ day-to-day university life and their consequent sense of well-being. Students perceive their study as more flexible as ubiquitous connectivity allows organising learning around their life. On-campus students feel more in control of their studying time and spaces and on-line students have the possibility to pursue their educational goals without interrupting their working activities. Moreover, an increased sense of workflow and productivity enhances students’ confidence and self-efficacy.

5.5.5 Third category: feeling secure

Feeling secure, safe and reassured are among the most frequent codes emerging from the data analysis. New technologies and ubiquitous connectivity have been revealed to play an essential role in helping students to obtain feelings of security and reassurance. This category is based on three sub categories: “receiving timely support”, “availability of needed information” and “feeling protected”.

5.5.5.1 *Receiving timely support (on-campus and online students)*

The possibility to receive timely support from peers and academic staff members is one of the most appreciated features of new technologies and ubiquitous connectivity. As anticipated in section 5.2, on-campus students use social networks to share information and help each other especially close to assignment and exam deadlines. The sense of security and reassurance emerging from the use of social networks seem to have two different components. Firstly, receiving help from others relieves students from worry and anxiety:

“...if you are panicking about an assignment umm you feel like you don’t know enough information, you can go on there and ask ad someone is bound to reply saying... “yeah, you can do this, this or this...” (Interview, on-campus, student 7, year 3)

“...let’s say you are really really struggling with a piece of work and you can just email your (unit) leaders or email each other on your Facebook group or WhatsApp and you can just go.... “ahhh I don’t have to worry about that anymore for a couple of days” because you know that you are going to get the help that you want... (Focus group 3, on-campus, student 1, year 2)

Secondly, students receive comfort and reassurance by knowing that other people are in the same situation:

“...Yeah, yeah, it’s always like a comfort to know that other people are in the same situation, that other people are willing to help me out as well, if I have a problem...” (Interview, on-campus, student 10, year 2)

“...more a sense of confidence and a sense of relief... if you are struggling on a piece of work and somebody else says... “yeah, I am struggling with that as well”... you can always help each other... you get the sense of relief that you are not the only one in that situation...” (Focus group 3, on-campus, student 5, year 2)

A similar feeling of security and reassurance is provided to on-campus students by the support received from lecturers:

“...If I’m having trouble, lecturers are only an email away, and they are surprisingly quick at replying...” (Survey, on-campus, student 19, year 2)

“...I think definitely the email with lecturers... I think it’s a very boring thing to say but I think the fact that you can email lecturers and they will email you back that’s probably the most valuable thing because obviously if you are not in uni and you have a question that day... 90% would get back to (...) yeah definitely it is reassurance...” (Interview, on-campus, student 3, year 3)

“...In general it is positive, it is useful knowing that, they do look at their emails pretty much every day, so if you desperately do need something or need to book an appointment, they are there...instantly...” (Interview, on-campus, student 7, year 3)

Concerning online students, they seem to feel reassured by receiving confirmation from peers and lecturers regarding being “on the right track” with their learning:

“...being able to talk to people I think... it was the main thing because you are getting an immediate reaction, you know where you are going, that you kept along the right lines mostly...” (Interview, online, student 5, year 2)

“...It’s about reassurance, just to know that you’re on the right track, very often you’re asking questions that you probably know the answers to... but you’re never quite sure if you really do, and by the time you come to do the assignments, you’re kind of a bit “am I really doing the right thing?” (Interview, online, student 2, year 1)

Receiving feedback regarding their own learning process and abilities, has been revealed to be an essential aspect for online learning students due to the isolation of their learning experience and the fact that some of them return to education after a long break:

“...for me it was a big thing because I haven’t studied for a long time, nearly ten years now, and when you first start, you have no feel for where you are in your learning abilities, I might not have been able to do higher level study, I might have been completely rubbish at it, and you don’t find, you’ve made a massive commitment in time and money and effort, and you’re not really sure where are you going to pitch at, you know, are you going to be that kind of 40% person or are you going to be that 70% person (...) so yeah your confidence is... you’re questioning yourself all the time...” (Interview, online, student 2, year 1)

“...if I know that it is not just me vs. the world, the academic world... that there is support there, that I am on track...that will affect my confidence and probably get better results and better feedback as well...” (Interview, online, student 5 year 2)

Interacting with peers and lecturers seems to have also an additional value for online students. In fact, the connection with other students helps them to maintain engagement and motivation. This specific topic is included in a different category and it will be illustrated in section 5.5.7.3.

Finally, two specific reflections can be made regarding academic and professional support staff and students’ support. Firstly, data analysis indicates that academics are aware of the importance of providing timely support to students. However, this is interpreted by them as a way of showing interest and care, more than it being used as a way of reassuring their students. For this reason, this aspect was included under a different category and it will be discussed in section 5.5.7.2. Secondly, from the interviews with technical support members, it emerges that they consider their role in reassuring students to be very important, in particular when they experience issues in relation to their online assignments submissions:

“...it is my job to sort of... to reassure them as much as possible... explain every step to them... explain what I’m going to do... give them a reference number at

the end of the call so they know that... you know... this has been logged they got a reference.. it is not just going to get dumped somewhere and they will never hear about it again... and it is important...” (Tech support 1)

“...As I said, when they call up to say that their assignments are in 5 min... then we try to reassure them... that they have done the right thing... that having called before the deadline the ticket that (inaudible) log in has the exact time they called...” (Tech support 2)

5.5.5.2 Availability of needed information (on-campus students)

Another aspect, that plays an important role in giving students a sense of security and reassurance, is the possibility to use new technologies in order to have all the needed information always at hand. This means having the possibility to check for information at any moment thanks to ubiquitous connectivity, staying constantly updated on important information regarding for example lectures and assignments and knowing that all the information and materials about lectures are always available on the VLE:

“...the fact that if anything changes you are notified instantly... you are not wasting time going to the wrong place or... it is like a safety-net...” (Focus group 1, on-campus, student 7, year 2)

“...you are constantly connected to people... like lecturers...friends, if you are somewhere, if you don't know some information you can always message someone asking “hey where is it?” or “what do I have to do? Is there any work that we had?” It is like a safety-net again, you can find your information...” (Focus group 1, on-campus, student 3, year 2)

“... I usually check it like three, four times, just it makes me feel confident that I'm definitely right, I'm not going to get timing wrong, like, even if I've checked my timetable the night before, and I'm on to uni, say a ten o'clock lecture, I will still check the timetable again, make sure I've got the room right, make sure it's the right time...” (Interview, on-campus, student 9, year 2)

“...I am checking my email to make sure there are no last minute instructions for the assignment due tomorrow. It was a positive experience as checking emails is easy to do and there were no new instructions...” (ESM, on-campus, student 9, year 2)

“...It gives me a sense of security, a massive sense of security that it is always there... obviously it is annoying when you miss (the lecture), but it gives you a massive sense of security knowing that it is always there...” (Focus group 3, on-campus, student 1, year 2)

This sense of security provided by the availability of needed information does not appear in online students' data. For this type of student, it does not seem to be a necessity to stay updated with last-minute information. They do not have live lectures to attend, they work at a different pace and their learning is structured in a completely different way compared to on-campus students. Instead, the clarity and accuracy of provided information is considered to be absolutely essential for these online students as will be illustrated in section 5.6.5.2.

5.5.5.3 Feeling protected (on-campus students)

The last sub-category included in the main category "feeling secure" has been named "feeling protected". The data analysis showed that on-campus students consider social networks as a protected environment where they can share their doubts and worries about assignments without being judged by lecturers:

"...I guess, asking questions on there...I don't feel less stupid, but... I feel like I can ask... something that might sound stupid, but like not being judged by a lecturer..." (Interview, on-campus, student 9, year 2)

"...sometimes talking to lecturers they (inaudible) stupid but almost you feel like you are wasting their time asking a lecturer for a simple question... if you are asking friend you can have a joke about "oh you should have known this" (Focus group 3, on-campus, student 5, year 2)

Social networks are therefore used as a first step of support before forwarding questions directly to lecturers. When it is clear that various students have the same doubt or question about an assignment, the issue is usually then advanced to a lecturer:

"...Yeah we usually will discuss... we got a Facebook group for the second year so there are people asking questions on there and then there is always one person that says "I'll send them an email" (Interview, on-campus, student 11, year 2)

"...on there the reps of the different units, or the general psychology rep, is always looking on there and she can take the problems forward, from the Facebook page, up to whoever needs to see, it or hear it, and do something about it..." (Interview, on-campus, student 7, year 3)

Online students did not express in the data any concerns regarding asking direct questions to lecturers. It is possible that the worry of feeling judged by lecturers belongs specifically to young students who could perceive themselves at a great distance from academics in terms of their social status. Online students, being all workers and mature

learners, could have a different perception of lecturers in terms of social status and feel more inclined to ask direct and open questions.

5.5.6 “Feeling secure” and well-being

The data analysis indicated that new technologies and ubiquitous connectivity play an essential role in helping students to feel secure and reassured. Attending university is well known to be a source of stress and anxiety for students (Misra & McKean, 2000; Misra, McKean, West, & Russo, 2000; Regehr, Glancy, & Pitts, 2013). University activities challenge students’ cognitive and social skills and are a constant source of doubts and uncertainty. Therefore, the continuous search for security and reassurance is very important for students’ well-being. They perceive new technologies and ubiquitous connectivity as resources that can help them to manage and lower their negative emotions. However, the constant availability of support and the easy access to needed information could also show a negative side in relation to students’ well-being. In fact, as will be illustrated in section 5.6.5.3, the data indicate that this easy access to online support and resources can contribute to students developing the idea that the solutions to their day-to-day issues should always be immediately available to them. This belief could contribute to increase students’ difficulties in tolerating frustration, in managing uncertainty, in developing problem-solving strategies and in managing emotions.

5.5.7 Fourth category: being engaged

Students’ engagement emerged as a very important element in the data analysis. As illustrated in this section, the data indicate that on-campus students, online students and staff members emphasise different aspects and elements that could help to increase students’ engagement. The main category “being engaged” is related to four sub-categories: increasing motivation and understanding, feeling cared, gaining motivation through interactions, feeling like a real student.

5.5.7.1 *Increasing motivation and understanding (on-campus and online students)*

New technologies and ubiquitous connectivity provide academics with opportunities to increase students’ engagement by proposing different types of materials and activities. Data analysis shows that both on-campus and online students perceive videos and recorded lectures as important additions to PDFs and PowerPoints to increase motivation:

“...I prefer videos just because when you are revising or going through it sometimes you are doing all reading it can get a bit boring, so I think when I put the video up it's quite good because it gives you a break from reading a paper and sometimes I prefer listening anyway above of the readings... so I do think they are a plus because it's just a different way of learning... like it breaks up the reading a bit...” (Interview, on-campus, student 3, year 3)

“...videos to like... maybe related more to the real world... that could be useful...” (Interview, on-campus, student 1, year 2)

“...Please think of more varied ways to engage...YouTube, online lectures, possibly a live web cast where students can skype in questions it could be recorded for those unable to attend and watch later, anything other than text text text...” (Survey, online, student 32, year 1)

“...so, with the video it makes it more real and it helps your motivation and it helps you learning...” (Interview, online learning, student 3, year 2)

In addition, students perceive varying learning materials and activities as useful means to increase their understanding:

“...being able to learn via other opportunities such as visual, and sound rather than listening to a lecturer. Aids our understanding further...” (Survey, on-campus, student 43, postgraduate)

“...learning through video has been very useful as it helped explain written information in a more accessible way...” (Survey, online, student 36, year 1)

“...someone put up quizzes to confirm your knowledge... they are not too long so you can do them quickly and... it just tests your knowledge quickly so you know what piece you don't understand or don't really know anything about...or had listened in a lecture...” (Interview, on-campus, student 1, year 2)

“...another unit was face recognition, and its disorders, we looked at... two syndromes, Williams syndrome and Turners syndrome and it helped me remember because you watch the videos, and then you can remember these people better than the words in the lecture, it just backs up the point, ummm and makes it... more understandable and you just, yeah... generally backs up the points in the lectures...” (Interview, on-campus, student 7, year 3)

“...you know just not, you know when the lecturers upload lots and lots of reading material it's just boring umm and then you get other lectures that use, the lecture, you know the online lectures, they use umm YouTube videos, they use snippets from BBC, they use umm you know lots of different kinds of materials to learn from

not just the, the written documents and that just helps of getting the information into your head..” (Interview, online, student 1, year 2)

“...For me I’m a very visual person and I find it incredibly hard just to listen to information and I find it very hard just to read information, so for me the combination of somebody showing me and talking to me, it’s almost like a double reinforcement for me...” (Interview, online, student 2, year 1)

Concerning staff members, both on-campus and online lecturers appeared to be generally aware of the importance of varying learning resources and activities to improve students’ engagement and understanding:

“...and also a bit of variation for students...I think there is a little bit of sort of (inaudible) benefit of doing it with different approaches in that it might engage students a little bit more it is not just “I’m looking at another slide... I’m looking at another slide” they can look at the slides or they can see me doing the SPSS analysis myself because I videoed it and me talking through it...” (On-campus, lecturer 2)

“...I am just aware that they had so much reading to do. And that could be very dry. So trying to sort of mix up doing activities, with reading, with videoed lectures and seems to work quite well (...) because I sort of try to put myself in their position. Thinking... well you know, I want to try to get them engaged a bit more I suppose...” (Online, lecturer 2)

“...what I try to do is have as much variety as possible. Variety of activity but also variety of sources (...) so yeah I want to give them a bit of variety, and also a lot of the students, because they are often from non-traditional backgrounds, or else they’re returning to education, or they’ve had relatively little formal education, they find reading, reading a book chapter, reading a journal paper, they find that quite demanding sometimes, and time consuming...” (Online lecturer 3)

However, the data revealed a lack of coordination among on-campus and online lecturers, and a lack of institutional guidelines regarding preparation of materials and online materials in general. These specific aspects will be discussed in section 7.5.2 and 8.2.4.

5.5.7.2 Feeling cared for (on-campus and online students)

This sub-category emerged clearly in both on-campus and online staff members’ data. Lecturers and in some cases professional support staff identified clear connections between using online communication to show attention and care, and students’ engagement. Staff members perceived providing quick replies to emails, feedback to

students and personalising online communication as essential elements to engage with students:

“...absolutely... they can e-mail me whenever they want and I try to always... one of the things about the personal contact is to use their name... I'm trying always to begin an e-mail... You know... “Hello Claire... yes I understand your problem...”
(On-campus, lecturer 1)

“...they want to have the perception that they are being listened to and they are being responded to and that forum is for them all to see that I'm engaging with their queries about the assignment and they have got a resource that they can all access...” (On-campus, lecturer 2)

“...always try and deal with e-mails in the same day I'm trying not to let them get over on the next day no matter what they are (...) it is important because I think it would make the other person feel that they matter... that if you have just left them for a couple days it would give that person a feeling that they are not very important...” (On-campus, programme administrator)

“...what I think that I'm doing and trying to do, not just online students also with on campus students, to reply to their email immediately.... I want to, that will signal to them that they are my priority, and... so I always (...) immediately I see the email I stop everything, I reply to the students... (...) I wanted them to see that I am giving attention to all of them, going more specific to all the questions, focusing, literally on every answer and every word, and I have already had several email students that they find my feedback very useful...” (Online, lecturer 1)

“...So giving them some sort of feedback. I used to actually assess one of the units, through a discussion format. And it was quite interesting... there were not too many students so I felt that I had the time to make a comment at every single post that students put on there...” (Online, lecturer 2)

“...I want them to be reassured that I'm there and that, you know, that I'm actively, that I am a human being, you know (...) who is actively working with them...”
(Online, lecturer 3)

“...Yeah, I try to make it personal, friendly, because they don't get the interaction that other students do by coming into the office, so I try to seem as approachable as possible, whilst still being professional (...) yeah, to help students know we care...” (Online, programme administrator)

Data analysis indicates that online students have similar perceptions to staff members regarding the connection between feeling cared for and feeling engaged with:

“...the other thing is having the feeling that I know that the university is engaging with me...that it is not just...here is the materials, off you go, you have an assignment in three months... good luck...” (Interview, online, student 4, year 1)

“...(Interviewer) Could you say something more about why having this feeling that the university is engaging with you is so important? I think it affects my confidence really. If I feel that I am on my own then I'm taking this mountain of work on my own...” (Interview, online, student 5, year 2)

However, the same connection was not found in the on-campus students' data. As illustrated in section 5.6.5.3, students' expectations regarding interactions with staff members, seems more practical and focused on obtaining immediate answers to their requests and immediate satisfaction to their concrete needs.

5.5.7.3 Gaining motivation through interactions (on-campus and online students)

Interactions have a double function for online students in relation to their engagement. Firstly, peer interactions are perceived as a source of motivation:

“...but I think forum groups are extremely important for motivation because you sort of have this peer pressure so you have people watching you and everybody knows that there is work coming up that should be done... so even if there is not very much interaction on the forum you know that everybody should be posting their work and the work should be in... so I think the forums are very important because you have that aspect of a little bit social communication and a little bit... in a sense people helping each other and motivating each other...” (Interview, online, student 6, Year 1)

However, peer interactions are also seen as a way to break the isolation of the online learning experience, although not all the students interviewed felt this to be a necessity:

“...I don't know, it's because you are in a room, in, in your home, alone and you haven't got anybody else to ask...” (Interview, online student 1, year 2)

“...I started the course with complete awareness that I was not going to have a lot of interaction with the other students, and I think there has to be if you're going to do this kind of thing, it is a self-lead to a certain extent and a self-motivated style of learning...” (Interview, online, students 2, year 1)

Regarding on-campus students, although the majority of students mentioned peer interactions in relation to receiving support, the connection between interacting with peers through social media and motivation has emerged in one of the focus groups:

“...it is more like a motivation... so if you are getting stuck or you are in a little (inaudible) of information... you can just help somebody up really easily... without going there...” (Focus group 3, on-campus, student 5, year 2)

“...We are like “go on! We can do this!” ... that is literally what we say for half an hour...” (Focus group 3, on-campus, student 3, year 2)

“...it is so much easier, you can get self-motivation definitely...” (Focus group 3, on-campus, student 1, year 2)

5.5.7.4 Feeling like a real student (online students)

Although relevant only for online students, this sub-category, similarly to the previous one, underlines the importance of the human element to increase engagement. The data analysis has indicated that video-recorded lectures and videoconferences are very much appreciated by online students, as these provide learners with the feeling that they are really attending an on-campus university. Students reported feeling more engaged when they can see and hear lecturers speaking even if it is only in a recording:

“...please take time to do the online lectures although a little embarrassing they are can be very engaging and give us a taste of the real student experience...”
(Survey, online, student 32, Year 3)

“...In some units we could see a video of the actual course. So they have recorded the course (...) and sent it to us that was actually very nice because it was like attending a real university...” (Interview, online, student 3, year 2)

“...(interviewer): Can I ask you about the videoconferencing experience... what kind of addition would it be to the overall experience...? It would replace the on-campus learning environment because it would be via the video call, in that way you can have benefits knowing that you will discuss things with your teacher and everybody else... and again there is confidence that comes with the engagement.... and it sort of humanises the whole thing...” (Interview, online, student 5, year 2)

5.5.8 “Being engaged” and well-being

The feeling of being engaged appears to be very important for students' quality of day-to-day life and consequent well-being. Online materials and activities can help to increase students' understanding and motivation making them more confident regarding their academic success.

Lecturers seemed aware of the importance of showing interest and care to students to make them feel motivated and supported. Moreover, peer interactions were identified as a source of mutual motivation in addition to a source of help in case of need.

Finally, the data has indicated the importance of the human element in online learning environments to promote engagement, confidence and motivation.

5.6 Second theoretical concept: coping with ubiquitous resources availability

Section 5.5 indicated that students feel attracted by new technologies as these can help learners to experience a sense of ease, freedom, security and engagement in their day-to-day university life. As will be discussed in chapter 7, the extensive use of new technologies and ubiquitous connectivity can be explained by the fact that all the categories identified in the grounded theory are strictly related to the satisfaction of basic psychological needs. Moreover, as discussed in section 5.4, the widescale implementation of technological infrastructures, and the use of VLEs by universities have increased students' use of new technologies, since these have become necessary resources to use to perform daily activities and duties.

However, this run towards technological developments exposes students to the limitations of technological environments that brings potential risks for social and psychological wellness. As will be described in this section, students appear completely reliant on new technologies, and are unprepared to face inevitable issues associated with information overload, poor quality of resources, communication problems, technical malfunctions and limited access. Moreover, in this context also staff members play an important role in influencing the quality of students' experiences through their commitment, level of confidence and expertise in using online resources. Staff members' ability to manage and harness the potential of the online environment becomes even more essential for online students that have these technologies as their only channel to engage with the university. Therefore, students' well-being in relation to new technologies and ubiquitous connectivity lies on the one hand on the possibility that students' can satisfy their basic psychological needs, and on the other hand in students' and staff members' ability to manage the huge availability of resources. Finally, this section will illustrate how part of the issues experienced by students depend on their expectations towards new technologies and ubiquitous connectivity.

Three categories have been identified in the grounded theory to illustrate this second theoretical concept: managing information availability, managing communication, managing expectations.

5.6.1 **First category: managing information availability**

Students' issues in managing information availability can be seen as a consequence of the ease in accessing information through new technologies and ubiquitous connectivity. The easy access to resources requires students to have the ability of managing the quality and quantity of resources at their disposal. Three sub-categories were identified in relation to this argument: "managing information overload", "looking for reliable information" and "losing motivation in attending lectures".

5.6.1.1 **Managing information overload (on-campus and online students)**

The first issue that is a source of stress and frustration for students consists in managing the amount of information when searching for papers and materials online:

"...Sometimes it is a bit daunting with the amount of data and material that you have access to online. You may not always understand something that is interpreted on line...." (Survey, on-campus, student 9, year 1)

"...So it's helpful in some respects but I can understand sometimes I've typed in something and then got 8000 papers turned up, and thought oh my god what am I gonna do with that, (...) it has always overwhelmed me cause there's just so much out there...." (Survey, on-campus, student 6, year 1)

"...but you know there's so much information on there and it's almost overwhelming, so by the time you've read on the left hand side, you're bored already and it's like "oh well I really can't be bothered..." (Interview, online, student 2 year 1)

"...The main thing is that there is almost too much information sometimes... because especially if you are doing subjects like biology or chemistry... because there has been so much research done, it is almost hard to find your building blocks... the simple things..." (Focus group 3, on-campus, student 5, year 2)

As can be seen from the quotes above, students do not seem prepared to manage this amount of information, and to know how to filter it according to their needs. However, this issue seems to affect on-campus students in particular. Concerning staff members, two on-campus lecturers mentioned information overload as a potential issue for students:

“...(Interviewer): So you are saying there is an incredible amount of material and data outside... available to them... Which is overwhelming... (Interviewer): OK... Narrow it down a little bit... Make it manageable for them and not overwhelming...” (On-campus, lecturer 1)

“...I'm worried that sometimes I overwhelm them when I try to put too much up there... so (...) I remember finding all these journals...” oh God they are all terribly interesting” sharing them all... and they were e-mailing me saying ”I can't possibly read all of these journals... I haven't possibly got time to do this and I know you want me to include them but I can't” so, because it is also easy for me to access this... maybe there is a sense that I can overwhelm them giving them too much...
“ (On-campus, lecturer 2)

Information overload can be also related to the amount of information arriving to students from the University through announcements or emails:

“...on (the VLE), you have on the, on some of the links, it assumes you're a student on campus to a certain extent, so it overwhelms you with information about placements...” (Interview, online, student 2 year 1)

“...I had my university emails and I set it to my phone. But on university emails I didn't get a lot of things related to the course. There was more like general information and much of that information wasn't really relevant for me because I was an online student...” (Interview, online, student 3, year 2)

“...the notifications... I am slightly OCD about things and having just one notification or 78 as it usually happens from random sources it really winds me up...” (Focus group 1, on-campus, student 5, year 2)

“...What about when they tell you where the bus is and you don't take the bus...it is really annoying... they keep telling me that the bus is late and I don't care...”
(Focus group 1, on-campus, student 2, year 2)

As one of the mature on-campus students expressed in the quote below, students feel constantly “bombaraded” by information. Moreover, they seem to spend a lot of time and energy in managing and distinguishing useful from useless information as described in the next sub-section.

“...just being bombaraded...I think you can get too much... I think it can have a negative impact on the individual... I think that being constantly sat in front of... and bombaraded with information and technology is not good for anybody but that is just my personal opinion...” (Interview, on-campus, student 2, year 2)

5.6.1.2 Looking for reliable information (on-campus students)

The ease of accessing information on social networks raises another problem for on-campus students linked to the reliability of information:

“...Some information on the forums were sometimes incorrect or would make me panic that I was doing a piece of work wrong...” (Survey, on-campus, student 24, year 3)

“...often more panicking inducing than actual help, than actual help because everyone’s asking what’s going to come up, who knows what’s going to come up and obviously, no one knows, but everyone is panicking and creating bit of a storm...” (Interview, on-campus, student 7, year 3)

“...the Facebook page I actually I am on it but I turned off all the notifications because I found during assignments deadlines, exams deadlines, it’s stress that you have so much because when you have 200 of you, there is always someone is wrong, someone who thinks is right (...)it’s very misleading and very stressful (...) and you kind of question yourself. I have just rather not be a part of it...” (Interview, on-campus, student 3, year 3)

When anxiety rises close to deadlines, unreliable information starts to circulate. For this reason, some students leave the groups temporarily to avoid a further increase of stress and worry. In these cases, they tend to rely on lecturers considered as sources of correct and trustworthy information:

“...yeah that was really good, because you knew he was checking it and he was answering in, you kind of knew that everything that was going in there had been approved by him... so I think with the forum, (...) it is reliable where there is an actual lecturer checking it and approving it, it’s definitely a good idea...” (Interview, on-campus, student 3, year 3)

5.6.1.3 Losing motivation in attending lectures (on-campus students)

Another issue reported by on-campus students is related to the lack of motivation (defined by them as “laziness”) in attending lectures due to the ease of retrieving lecture materials and notes from the VLE and from peers:

“...sometimes ubiquitous environment means we rely too heavily on the screen and not on real life interaction, for example knowing that lecture slides are online means a student may not have the motivation to attend an early 9am lecture on a Friday, meaning they miss out on real world learning interaction...” (Survey, on-campus, student 23, year 3)

“...I put laziness... you can miss lectures and just look at the power points online and even if you don’t get as much information you (inaudible) because you don’t have as much information you would have if you turned up... so it can make you like... “oh I missed this one... it is online already”... or it can make you like...”what I need to do...” ...you can message your friends about it (...) so you can be quite lazy...” (Focus group 1, on-campus, student 7, year 2)

As will be discussed in section 7.3.3, the key element here seems to lay in how lecturers manage their own courses. As an example, during one of the focus groups students reported attendance dropping from 300 to 40 people in one of their courses. This happens when students perceive attending lectures as not adding any benefit to their knowledge. This argument was also raised by one of the on-campus lecturers concerning the amount of the materials they should make available on the VLE:

“...as I said earlier the concern is always... If you put too much on... they don’t necessarily need you... they don’t come to a lecture because they feel they can all access it online... (On-campus, lecturer 2)

5.6.1.4 Losing focus and concentration (on-campus students)

During the discussions in the focus groups, on-campus students reported another issue related to the availability of information. Students described the stream of information arriving to their devices as a source of continuous distraction. They reported having concentration issues and difficulties to focus on one task at the time. Students become easily distracted by emails, announcements and by social media notifications. Moreover, the internet becomes an easy source of distraction when students struggle with assignments preparation and look for an easy escape from their university activities.

“...I think that because it is all quicker and because it is all there...there are also a lot of distraction...so it is like...if you are reading a book every page is like what you meant to read but if you read online...you read a page and then your phone does something...there are so much distractions, it is a lot easier...so often it takes longer because you can’t concentrate fully...” (Focus group 2, on-campus, student 1, year 2)

“...I don’t know what happened to me... I just had this moment and I did... I timed myself I wasted about an hour or two hours of a six hour study session just on Facebook or YouTube or Vine... that is the worse... and I actually go two more hours of work done because I wasn’t wasting time in these silly little hilarious websites...” (Focus group 3, on-campus, student 1, year 2)

“...If you are doing something that you don’t like more than anything... when you are searching certain things and something completely unrelated comes up... “ahhh it is so much interesting” ... and before you know it you are on Facebook scrolling through peoples commenting it... you don’t really care about it, nothing to do with anything... but it is just... I think it is too easy to get distracted... it is like in YouTube you are watching a video you would never need in your entire life...” (Focus group 3, on-campus, student 5, year 2)

5.6.2 **“Managing information availability” and well-being**

The difficulties in managing the large amount of information available on the web, and the stream of information arriving to devices, are perceived by students as affecting the quality of their day-to-day life. Students feel overwhelmed and show difficulties in finding needed information when searching online. Moreover, they feel frustrated and distracted by the amount of non-relevant information received on their devices. Students reported difficulties in staying focused and in concentrating on one single task at a time. In addition, students’ unreliable information spreading through social media regarding assignment and exams, are perceived as increasing stress and worry. Finally, the ease of retrieving lectures’ information from the VLE and from peers was revealed as a potential source of demotivation for on-campus students in attending face-to-face lectures.

5.6.3 **Second category: managing communication**

Another critical area for students in relation to the use of new technologies and ubiquitous connectivity is represented by their difficulties in managing online communication. This issue appeared in the data analysis in different ways. This led to the identification of three sub-categories: “switching off”, “managing interactions and collaborations” and “experiencing limited communication”.

5.6.3.1 Switching-off (on-campus students)

On-campus students reported difficulties in managing contactability levels due to the ease of being reached on their mobile devices and in switching-off especially from the use of social networks:

“...always contactable - never a time that is deemed inappropriate to contact...”
(Survey, on-campus, student 4, year 2)

“... so then you get stressed...because you are thinking...”oh no...I need to reply to my friend and they want me to be their friend and I am a bad friend if I don’t

reply... and now I have missed this thing and you want to re-read this thing...” so I won’t reply... or I will...(…) yeah, they want instant replying...your friend knows that you read that and you should immediately reply... (..) they are distracting...so you get a message from a mate, you look at that and you are not listening to your lecture...” (Focus group 1, on-campus, student 1, year 2)

The quote above shows that new technologies have changed peoples’ expectations in terms of contactability. As will be discussed in section 7.5.4, before the advent of mobile technologies, being unavailable for some periods during the day was in general considered to be the norm. The arrival of mobile devices changed social dynamics in relation to contactability. Now the act of deciding whether to be unavailable to others is not necessarily the norm and it needs to be explained and justified:

“...Sometimes I neglected to check my email so would possibly be considered rude since I didn’t reply to students or members of staff for prolonged periods of time when I had been busy...” (Survey, on-campus, student 3, year 3)

“...by having these devices it won’t make you do make yourself available 24 h a day, whether the person who we have been enquiring has the courtesy... not to extend that 24 hours a day or not... it is a different question... and where the person receiving the question chooses to respond 24 hours a day is a different subject ... personally I switch off all my gadgets after a specific time because I don’t want be accessible... and if I have a question it can wait... I don’t... I know that a lot of people don’t.... their phones, laptop and tablets are on 24 hours but... I can’t live like that....” (Interview, on-campus, student 2, year 2)

Finally, contactability and availability of information are perceived by students as generating addiction to new technologies:

“...it is so nice like Facebook for example crashes half an hour because it is just gone... do you know what I mean...it is sort like a break from these kind of stuff...the only way you can have a break is not to work...otherwise it is always there...it is a constant entity...” (Focus group 2, on-campus, student 1, year 2)

“...I think the only time when you are not... is in the cinema... that is the only time when you won’t check your phone once every half an hour at least... or in an exam yeah...” (Focus group 2, on-campus, student 5, year 2)

“...It is like an addiction...you know that you have to stop but you just can’t... (..) It is just frustrating because it makes you tired and you know you shouldn’t be doing it and you continue to do it...so it is your ability to stop doing something you know you really shouldn’t and that what’s hard...” (Focus group 1, on-campus, student 2, year 2)

As can be seen by the quotes cited above, issues in managing contactability and feelings of dependency on new technologies were not reported by online students. In section 5.2 it has already been described that online students experience limited socialisation and do not use social networks to stay in contact with peers. However, as described in the next sub-section, lack of socialisation and communication become in turn issues for online students when managing interactions and collaborations.

5.6.3.2 Managing interactions and collaborations (online students)

New technologies are in general appreciated by on-campus students as offering useful tools to manage and facilitate collaborations (see section 5.5.3.3). However, managing interactions and collaborations can become an issue for online students due to the lack of participation:

“...don't participate on forums if you can't be bothered to interact regularly...”
(Survey, online, student 31, year 1)

“...pull your weight, don't duck out of the group work so others have to carry you...” (Survey, online, student 29, year 2)

“...the pro-activeness of the students. I actually believe that (the university) has supplied an "ok" platform (...) they also encourage students to use it often. However, many students do not. The students' lack of pro-activeness is caused by lack of requirement. If the teachers required students to cooperate they would have a need to meet, which helps as an "ice-breaker...” (Survey, online, student 30, year 3)

“...again the frustration can be that if the lecturer has put you into teams umm and one of your team has decided... that umm, maybe they've gone on a two-week holiday (...) it can be quite scary because you are thinking “well I'm gonna lose grades here because of someone else...” (Interview, online student 1, year 2)

Interactions and collaborations are a source of stress and worry for some online students. This topic was matter of discussion during interviews with online lecturers as well:

“...what I find is... you will always get a few people that will participate, but you will have a majority of students that unless this is an assessed piece of work, unless it's an assessed activity, and even sometimes when it is an assessed activity, that they won't engage (...) you know they were basically saying “I don't

see the point of doing things that are not assessed”, so that was quite an interesting challenge...” (Online, lecturer 3)

“...and I think that that is up to them then because it is not an assessed task. They might well be doing the work but not just willing to share their ideas and so to other people...” (Online, lecturer 2)

Lecturers' assessment of forum interactions and collaborations emerged as the key element of this issue. As described in section 5.5.7.3, some online students consider online interactions and collaborations essential to increasing their level of engagement and motivation. However, other students seem to involve themselves in online interactions only if these are assessed and therefore mandatory. It is important to remember that the online learning students group consists of full-time workers and of many people living abroad. This peculiarity contributes to generate tension between students. On the one side some students are willing to collaborate and share ideas and on the other side some of them try to reduce their learning time to the minimum and take part to forum discussions only when necessary.

5.6.3.3 Managing limitations of communication (on-campus and online students)

Both on-campus and online students reported difficulties in managing online communication. On-campus students complained about lack of personalisation and difficulties in building relationships with lecturers:

“...Less face time with your lecturers. Everything is put in (the VLE) and even explanations of work are on there, this makes it feel less personal at some points...” (Survey, on-campus, student 20, year 2)

“...You don't build a relationship...” (Focus group 1, on-campus, student 9, year 2)

“...because technology is normally so successful you can spend a lot of your degree with no contact with lecturers which can be difficult- especially in first year I felt very unsupported. (Survey, on-campus, student 15, year 2)

However, during focus groups, it appeared that students perceive new technologies as hindering socialisation also among peers:

“...It doesn't really get to know each other when you first start and stuff and you try to speak with these and they are all on their phones... the other person, you'll never going to talk to, because they are never looking around...” (Focus group 1, on-campus, student 6, year 2)

“...Everyone hides behind their phones and no one takes the first step because they would be looking at something else...” (Focus group 1, on-campus, student 9, year 2)

Concerning online staff members, having clear and correct written communication with students emerged as essential elements for various reasons. Firstly, as well described by the online programme administrator, students create their own image of staff mainly through online communication:

“...If I have any type of interaction with students, what I write is absolutely grammatically correct and free of any kind of spelling problems, that’s essential as far as I’m concerned. First of all, anything I write tends to go out to everyone and the only way they see me is through those communications, they don’t know what I look like or sound like so their picture of me is those admin messages, I tell tutors the same thing (Online, learning technologist)

Secondly, some lecturers indicated that what can appear clear and straightforward in face-to-face communication can become ambiguous in online written communication:

“...So it just made me realise you have to be totally, sort of, crystal clear about where to find things...” (Online, lecturer 2)

“...Ambiguous information for example, often it happens that an assignment brief for example because you were explaining it in class it might sound very straightforward to your ears, but when someone is reading it they might not understand...” (Online, lecturer 4)

Finally, online students raised the importance of the consistency of information:

“...sometimes I’ve got a, different messages, I’ve got conflicting information from different tutors, again which is a problem because I then had to ask for further clarity...” (Interview, online, student 4, year 2)

5.6.4 “Managing communication” and well-being

The data analysis revealed many connections between students’ communications through new technologies and well-being. Firstly, on-campus students reported having difficulties in switching-off from mobile devices and described feelings of dependency and addiction. Secondly, online students referred to difficulties in managing online interactions and collaborations that generate frustration and concern. Finally, the limitations of online communication are considered by on-campus students as hindering personalisation and the development of relationships with lecturers and peers. In

addition, receiving clear and straightforward communication is essential for online students to avoid frustration and worry due to the misinterpretation of instructions.

5.6.5 Third category: managing expectations

The data analysis indicates that expectations play an important role in students' perception and use of new technologies and ubiquitous connectivity. Students showed high expectations regarding reliability and quickness of technology, navigation through websites, quality of resources and materials and staff members' support. In some cases, these expectations are explicit and it was possible to find students' quotes in the data directly referring to them. In other cases, expectations are implicit, in the sense that they were not directly mentioned by students, but they are visible in their effects. For example, when students become stressed and frustrated due to the slowness of technology, this is an indirect sign of their expectation of having fast and easy access to resources. Three sub-categories were found referring to this main category: "over-relying on technology", "managing quality of resources", "managing support expectations".

5.6.5.1 Over-relying on technology (on-campus and online students)

One of the most frequent issues mentioned by students is related to the lack of access to the VLE due to technical issues and to the lack of connectivity in general. As anticipated in sections 5.3 and 5.4, the data analysis indicates that students rely heavily on technologies and tend to experience a sense of helplessness accompanied by stress, frustration and anger when technical issues occur. Students' negative emotions in relation to technical faults appear as a direct consequence of their expectations regarding the reliability of new technologies and ubiquitous connectivity:

"...I personally get annoyed when (the VLE) shuts down because we rely heavily on online resources and to not have it...technology is there to make sure that in busy periods of time we can all access it...it is kind a bit ridiculous... especially if...I think everyone said it millions of times...you are paying nine grand...like... you do expect them to be able to keep up with it..." (Focus group 2, on-campus, student 2, year 2)

"...I think it makes people impatient if like...the information isn't there... it is like effort... like walking around the uni, everyone get annoyed and frustrated..."(Focus group 2, on-campus, student 3, year 2)

The quotes above clarify students' expectations regarding the access to the VLE. The university is considered responsible for ensuring that full and continuous access to the VLE is available to perform daily activities.

A large amount of data was collected and analysed in relation to students' difficulties in managing lack of or limited access to the VLE:

"...So much of my course was centred on using (the VLE) that when it went down I was left stranded..." (Survey, on-campus, student 5, year 3)

"...(the VLE) is what the university has as student resource... to kind of support the learning... if there is an issue with it or... if it goes down there is no alternative... so yes it has its positives because it is there as resource but when something goes wrong with it is majorly wrong..." (Interview, on-campus, student 2, year 2)

"...I am quite reliant on technology and when it doesn't work I don't have a clue where to go from there I just call off and cry... (...) I had an essay and (the VLE) went down, because I didn't have any books at home I couldn't do anything..." (Focus group 1, on-campus, student 4, year 2)

"... I don't have a plan B, my plan is to go online on (the VLE) and doing my lecture, but when (the VLE) is shut down I don't know what to do...so I have to wait until (the VLE) is up and running again in order to do my lecture...so it is quite risky in a way if you rely on it..." (Focus group 2, on-campus, student 4, year 2)

"...Working at the university last night and all the services go down... This is really frustrating, annoying upsetting because I couldn't upload my assignment on the (VLE) service, I couldn't check my student emails, I couldn't check anything course related which means it is inconvenient, because I'll need to go to the university another day to hand my assignment which I would have done last night. Due to the service being down it also means that I couldn't print any work at the university, even more frustrating because I must have tried about three different schools around the university to see what the issue was..." (ESM, on-campus, student 12, year 2)

The lack of alternatives in performing their activities seems to be the key to understanding students' stress, frustration and sense of helplessness. However, as indicated in the quotes below, not all the students react in the same way to the lack of connectivity:

"...I always check the Turnitin is on, because sometimes lecturers put that Turnitin doesn't work really close to the deadlines... which is a bit worrying, so I check that online (...) if it has been down it hasn't been down for very long and there are always ways around it... I mean you can access your email outside of it... so as long as you can access to your emails I don't think that you really need (the VLE)

urgently for anything.... ...you can always work around that..." (Interview, on-campus, student 3, year 3)

"...I'm usually ok, I give myself time to, to submit things, give them in I'm not, I don't like to panic at the end of the day..." (Interview, on-campus, student 7, year 3)

In this case, the key element seems to lay in the fact that students allow themselves more time to prepare and submit assignments and are pro-active in avoiding issues that may arise during last minute submissions. Therefore, lack of proactivity and a general passive problem-solving attitude appear as essential elements to explain students' struggles:

*"...If you are not physically at the uni, it makes you feel like... because you cannot access it, you can't be productive, you can't get anything done, so you might have like everybody on the course having a discussion about how it doesn't work (...)
whereas years ago when these things weren't available people would go uni and do work... but because we have become so dependent on it..."* (Focus group 2, on-campus, student 4, year 2)

Finally, it is important to underline the high contrast between the complete reliance that students have on new technologies and connectivity and the fact that they perceive them as totally out of their control. Students' sense of helplessness is also related to the fact that they lack control not only over their connectivity but over their devices as well:

"...when it doesn't work... it is literally the end of the world... you know... your laptop freezes, you corrupt your hard drive... gone... everything is gone... and you know... you could have worked really really hard on that piece of work but it is gone... there is no way you going to get it back..." (Focus group 3, on-campus, student 1, year 2)

"...I was freaking out so much... I thought I had to like fail this year, redo the year... drop out the uni..." (Focus group 3, on-campus, student 2, year 2)

The data analysis indicated that on-campus students are particularly affected by technical problems due to their intense use of the VLE and new technologies in general. However, similar reactions were found in online students' data analysis as well:

"...PC / Internet issues cause delays and in turn, frustration and panic..." (Survey, online, student 35, year 2)

“...not always being able to logon properly. When you make time to study and then find you can't log on to the systems you need when you need them is very frustrating...” (Survey, online, student 31, year 1)

“...At home I have the issue of slow internet speed, that has been an ongoing problem for me and it makes it more difficult to access the online library (...) I must say even here on campus it has been incredibly slow sometimes to access on e-books (...) it keeps booting me out, and I lose the page for it to flick through and for it to load up... it's so painful...” (Interview, online, student 2, year 1)

5.6.5.2 Managing quality of resources (on-campus and online students)

Students' expectations are not only concerning the functioning of connectivity and devices. Students also expect online resources to be easy to use, to navigate and to understand. This refers to the layout of websites but also to the VLE:

“...Using certain journal websites for research. Some of them are laid out in the most awful manner or have terrible, unnecessarily complex navigation systems. They never fail to irritate me because they could make it so much simpler...” (Survey, on-campus, student 17, year 2)

“...Maybe make the articles and things in library tab, much easier to understand and find and, and I'm third year and I still don't understand it, I find it quite difficult to use the articles they have on (the VLE)... that's irritating...” (Interview, on-campus, student 7, year 3)

“...Negative issues would be when (the VLE) is poorly organised. This is a negative experience as it often disrupts learning...” (Survey, on-campus, student 21, year 2)

Complicated website layouts and navigation are a source of frustration and irritation for students. These negative emotions also emerge in relation to how learning materials are organised and managed by lecturers:

“...think about the end user and organise material in a logical learning way...we're not all computer savvy and visual ease of use is paramount...” (Survey, online, student 31, year 1)

“...Some things weren't even in folders they were just kind of out, so you had to kind of guess by the title to which sub-unit it belonged to and it, it was just really difficult to organize your thoughts...” (Interview, on-campus, student 10, year 1)

“...The way discussion boards are set up varies from module to module - some have them set up so you can edit posts, some don't - very frustrating...” (Survey, online, student 37, year 2)

“...It depends on the tutors... some of them put online materials up to date, some of them referred to current affairs that are no longer current, figures that were out of date, scenarios out of date (...) badly worded, grammatically incorrect that it was laid out and it didn't make sense (Interview, online, student 5, year 2)

“...Power points which are badly produced or copied. I think many lecturers rely too heavily on simply reading power points word for word not giving any further detail. Many students, including myself have also noticed that some power points have been copied word for word from books or other power points. I think it's created a laziness among some lecturers....” (Survey, on-campus, student 18, year 2)

Regarding staff members, the on-campus and online learning technologists interviewed were very clear about expressing their perspective regarding the importance of good layouts of websites and materials to avoid students' negative experiences:

“...you know there is a term within IT which is...is something user-friendly... (...) students need to be able to understand and access the system and get their unit information... submit their work, and do it, you know, quite easily, quite quickly and efficiently and be able to have, I guess ease of access through the systems, you know, like I've already said students get stressed out, the last thing we want to do is making the systems very complicated or convoluted... (...) they just want to be able to click onto something, see they can access the unit information, click and open it, read it, upload they work, and be done with it....” (Learning technology, on-campus)

“...The experience is damaged if the tutor doesn't know how to do that properly. If they are not maintaining links getting renewed and updated each year the students might come across links that don't work and they are not checking that the videos work properly, those kind of things cause frustration for students ...” (Learning technologist, on-line)

Finally, one of the online lecturers expressed during the interview his perception of the link between the quality of students' experience and their expectations:

“...so when students get upset, it's often because those things are not being done, it's often because communication is not good, it's often because the materials are not coherently organised, it's because the expectation of the assignment are not properly understood or communicated, it's because channels of communication

are not being used effectively. So I think, and often it is because the technology is not working properly, so a lot of it is hygiene factors, in my experience. The things that most irritate students, all students, is a breakdown in a hygiene factor or a mismatch in expectations...” (Online, lecturer 2)

The concept of hygiene factors expressed in this quote can be useful to summarise the content of this section. This concept introduced by the psychologist Herbert Herzberg (Herzberg, 1974) indicates some basic factors necessary for people’s satisfactions in workplaces (i.e. work conditions, good pay, vacations). A similar concept can be applied regarding students’ expectations in learning environments. Students expect some basic factors to be always part of their online experience such as easy access to information, easy layout and user-friendly navigation and good quality of materials. When these expectations are not met, students experience negative emotions such as stress, frustration and irritation.

Another important component of students’ expectation is related to the quality of support provided by staff members and by lecturers in particular. This aspect is illustrated in the next section.

5.6.5.3 Managing support expectations (on-campus and online students)

Data analysis shows that both on-campus and online students have expectations regarding lecturers’ support. As described in section 5.5.5.1, support received from academics plays an important role in making students feel secure and reassured. Receiving quick replies to emails or questions posted on discussion boards is highly appreciated by students. However, rapidity of support becomes also an expectation that can raise complaints when not fulfilled. This expectation is well described by one of the on-campus lecturers:

“...and they want it instantly... and they want it customising to the exact question they are doing... that is kind of their expectation...” (On-campus, lecturer 1)

Although receiving “instant support” seems to be an expectation related to on-campus students in particular, both on-campus and online students tend to express their complaints when support is slower than expected. The quotes below were collected through the online survey by asking students to provide examples of negative experiences with new technologies and ubiquitous connectivity and to suggest improvements:

“...when lecturers don't reply to emails when you are positive they have received them...” (Survey, on-campus, student 4, year 2)

“...Not getting a response when I needed it...” (Survey, on-campus, student 42, postgraduate)

“...having to wait for a response from lecturers and students on my cohort...” (Survey, on-line, student 32, year 1)

“...respond to emails sooner...” (Survey, on-campus, student 32, year 1)

“...Be available more than once a week to respond to e-mails...” (Survey, on-line, student 14, year 2)

Another aspect of students' expectations on support that concerns on-campus students in particular, regards the possibility to receive replies during out-of-office hours and weekends. However, students themselves appear to have different expectations about this issue:

“...if the students are expected to study outside of ordinary confines... then the tutors should be flexible enough to tutor outside ordinary confines (...) I do think there is some individual responsibility yes...” (Interview, on-campus, student 1, year 2)

“...(interviewer) Do you expect a reply during the weekend? I suppose not, well, if just say they set an assignment in for the Monday and they know that it's a bit confusing and stuff they should probably like be on the lookout for big problems, like they shouldn't answer every question but say someone has a major problem, maybe they should just take a look in the evenings quickly to just see...” (Interview, on-campus, student 5, year 2)

“...I will check for it but I don't get upset if they don't, I don't think it's fair to expect someone to reply on their days off if they don't want to...” (Interview, on-campus, student 6, year 3)

The data analysis also indicates that on-campus students' expectations regarding support combined with the lecturers' approach, tend to generate a dynamic of dependency where the more availability lecturers give to students, the more students try to take advantage of it in the attempt to manage their need for security and reassurance described in section 5.5.5. This dynamic is well synthesised by one of the on-campus lecturers:

“...students will identify the weak link and they will go for that, so if they think someone would respond...or, you know, someone who that will spoon-feed them...the soon they identify who the individual is...and they focus on that individual...and you can understand that it makes perfectly sense...so if they know

that you respond on a Sunday, they will email you on a Sunday...that is the obvious downside... (On-campus, lecturer 2)

Moreover, as indicated by another on-campus lecturer during the interview, this dynamic can contribute to raise their level of anxiety instead of helping students feeling reassured:

"...Students well-being... it is difficult... like that students I said that was e-mailing me... I think she was making herself anxious because she wasn't get any reply... so I think there is... some sort of anxiety that kind of comes in there around..." (On-campus, lecturer 3)

This dynamic seems to be supported by lecturers' conflicting beliefs regarding support and by a lack of university policies regarding replies during out-of-office hours:

"... generally if I'm not answered on the same day, by sort of five o'clock... then if I'm answering on the next day I would be saying... Sorry for the delay... (...) It is their right to seek the help particularly in the first year..." (On-campus lecturer 1)

"...You know...we need to get the balance as academics in terms of spoon-feeding them... you can spoon feed them for example and then they not...we want them become independent learners...and if you give them too much they are not independent learners..." (On-campus, lecturer 2)

"...so in terms of their experience and their learning... and it is kind of...I'm glad that they are doing work on a Sunday I suppose...I glad of it...so I feel I should reward that...yeah..." (On-campus, lecturer 2)

"...I do think there is this expectation, the lecturer should reply within a certain time period and even though I think... I think it is kind of almost a given... but I'm not sure students are aware of that... that we would reply within two days... but I think they certainly expected to be a lot sooner... If I had a student e-mail me after five o'clock... and I do check my e-mails but I make an effort that I would never reply to a student out of office hours... because I don't want them to have that expectation..." (On-campus, lecturer 3)

From the quotes above it is also possible to understand how on-campus lecturers tend to feel divided between satisfying students' expectations by fulfilling their requests in terms of support, and the educative goal of helping them to become independent learners.

Online students' expectations regarding lecturers' support seem less focused on the quickness of reply and more on the consistency of support:

“...Yes, yes that is a major problem, umm generally my past tutors have been good, within this semester from 2013 September... they haven't been, what I mean by that to elaborate, I will ask a question and it's taken up to six weeks to get a reply, which is unacceptable...” (Interview, online, student 4, year 2)

“...when you're sat at home really struggling with something and then your lecturer is like, you know “don't be so stupid” that, that can be demeaning, and then on the best level, you have lectures that are there, it feels like they are there twenty-four seven for you, so... and they are really helpful, and they, any question that you ask they are really positive and they try to umm come up with new ways to, umm teach you something, it's, it's down to the lecturer isn't it, its people...” (Interview, online, student 1, year 2)

A possible explanation for lecturers' delays in replying to online students is the fact that all the lecturers of the online course investigated in this research teach to on-campus students as well. From the interviews it emerged that in busy periods some lecturers tend to give priority to on-campus students, letting online learners' needs fall into the background:

“...Because also it is online students, unfortunately and unintentionally it is quite easily to forget about them to some extent. (...) Therefore like I mentioned before unintentionally I can forget about it for a while...” (Online, lecturer 2)

“...So I don't always stick to that, and sometimes with everything else that's going on. I do find it, it might have been about a week and I think, you know, because they are so remote. And you tend to, I tend to prioritise face-to-face students than online students. I know I do. I do...can have a habit to neglecting them. Because unless you go on to the unit and to have a look on what's going on. You would not know that anybody is out there...” (Online, lecturer 4)

The same reflections can be found in online students' data as well:

“It would appear that...staff are spread too thinly and that their main focus is the students physically at the university so that the online students are a secondary consideration” (Survey, online, student 38, year 2)

“...maybe they don't have enough time to dedicate to the online offering... and the service they provide to online students because they also try to work hard with full time students that are physically on campus...” (Interview, online, student 5, year 2)

A final consideration can be made regarding expectations in relation to support, but also in general concerning the quality of digital services and infrastructures provided by the

university. Data analysis suggests that staff members perceive students as having a double identity. Students are considered individuals that pay to receive an education but also customers that pay to see their expectations fulfilled:

“...we have more and more students who perceive themselves as customers and consumers, this is much more prevalent amongst the full time students, not so much the online students, but that changes the boundaries and it changes the expectations...” (Online, lecturer 3)

“..... they are paying for something... they are consumers... and I think some members of staff perhaps don't respond as much as students would like them to respond...” (On-campus, lecturer 2)”

“...The students are paying a lot of money for their courses so they want to be able to click on that be able to see... to view the content... the unit information...” (On-campus learning technologist)

Some of students' data confirm that students perceive themselves as customers as well:

“Yeah, it's annoying because we're paying so much for uni, it would be nice to just get a reply” (Interview, on-campus, student 2, year 2)

“I think everyone said it millions of times...you are paying nine grands...like... you do expect them to be able to keep up with it...” (Focus group 2, on-campus, student 2, year 2)

This double identity of students as customers and learners can help to partially understand the dynamics between lecturers and students described above. From one point of view staff members have the goal to provide students with an academic education, but from another point of view they perceive them as customers that need to see their expectations satisfied. As will be discussed in section 7.4.2, this ambiguity can generate difficulties among lecturers, in particular in managing students pressing requests of support that can sometimes conflict with educational goals of helping them to become independent learners.

5.6.6 “Managing expectations” and well-being

The data indicate many possible connections between students' expectations and their well-being. Firstly, students' over-reliance on technology tends to become very visible when technical failures occur. Students reported feeling helpless, stressed, angry and frustrated when connectivity is not available and when their devices stop working. Moreover, students' sense of helplessness in these situations seems linked to their lack

of pro-activeness and passive problem-solving attitude due to the dependency on new technologies and ubiquitous connectivity.

Secondly, students feel irritated and frustrated when dealing with complicated website layouts and poor quality of materials. Students seem to have expectations regarding basic factors that should be always present when using new technologies and ubiquitous connectivity. When these expectations are not fulfilled, they tend to experience irritation and frustration.

Finally, students' expectations regarding lecturers' support have a potential impact on students' quality of experiences. Concerning on-campus students, learners' pressing requests and lecturers' ambiguities and lack of homogeneity in managing support could contribute to develop a psychosocial dynamic between students and staff. Students tend to become dependent on academics' support and their desire to obtain security and reassurance turns into increased stress and anxiety. Instead, online students' frustration seems to emerge when they do not feel like they are being treated the same as the on-campus students regarding quality and quickness of support. This issue seems to be confirmed by lecturers' difficulties in managing both on-campus and online students' support requests.

5.7 Realising a grounded theory: students' well-being as a balance of elements

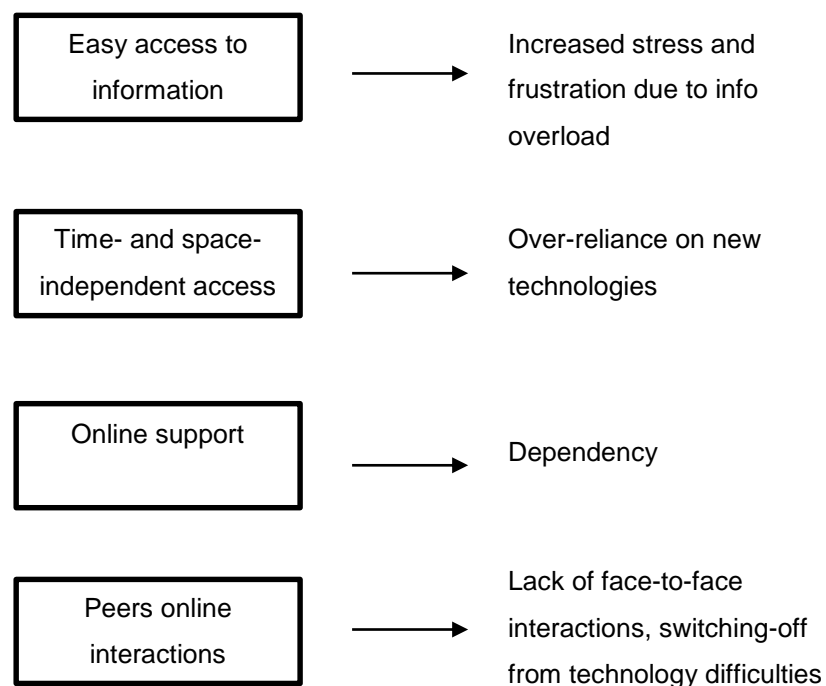
The results presented in this chapter can help to understand the contrasting nature of students' experiences with new technologies and ubiquitous connectivity emerging from the data analysis. Students conceive new technologies as a set of resources that can be used by them and by staff to improve the quality of their learning experiences at university, and to facilitate the preparation of assignments and exams. Nonetheless, the potential constant and ubiquitous availability of these resources can also carry several issues for learners. The fact that using new technologies is a necessity for learners implies that they have no choice but to accept both the benefits and the negative consequences of making technology the pivotal element of their university experience. The data analysis highlights the contrast between the complete reliance that students have on new technologies to facilitate their daily activities, and the fact that students and staff do not appear entirely prepared to manage all the inevitable issues that an extensive use of technology brings to their daily experience.

This contrast has important consequences for students' well-being. Students use new technologies and ubiquitous connectivity as a means to experience a sense of ease and freedom in managing their daily learning duties; they have a sense of reassurance by knowing that peers' and lecturers' support is always at hand, and a sense of engagement in their daily activities that can help to increase their confidence and motivation.

However, ubiquitous accessibility of resources can also raise the problem of how to manage the enormous amount of information available, how to manage pros and cons of digital communication, and how to manage issues concerning technical faults, as well as the quality of materials and quality of support that are often exacerbated by students' high expectations. All these issues can contribute to enhance students' levels of stress, raise feelings of frustration and irritation, affect students' motivation and engagement and hinder the development of face-to-face relationships.

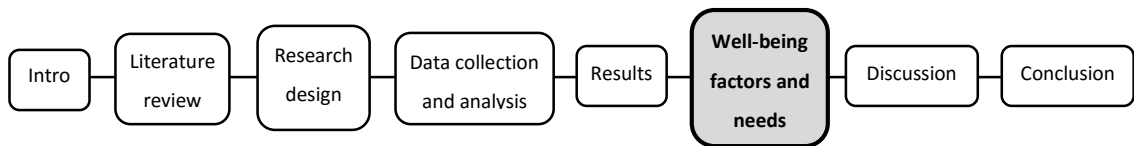
The results also suggest the existence of a strong connection between the benefits that new technologies and ubiquitous connectivity provide to students and their struggles. Figure 17 illustrates some examples of the relationship between some of the positive and negative elements of students' experience with the use of new technologies described in this chapter. These connections between positive and negative elements will be further explored and analysed in the discussion chapter (chapter 7).

Figure 17 – Examples of connections between positive and negative elements of students' experiences with new technologies



As illustrated in the figure, the ease in accessing information can turn into difficulties in managing information overload with consequent feelings of stress and frustration. The time-and space-independent access to resources and services can bring students to over-rely on new technologies. This can result in a decreased proactivity and problem-solving attitude and in experiencing negative emotions such as a sense of helplessness and frustration. Students' ease of reaching online support can lead to the development of a dynamic of dependency between students and academics that could undermine their autonomy. Finally, the ease of interaction among students, provided by social media and instant messaging applications, can hinder the development of face-to-face relationships and generate difficulties in switching-off from technology.

These examples can be helpful to substantiate the view proposed by this study that indicates students well-being in relation to the use of technology and ubiquitous connectivity as a delicate balance of elements. New technologies can be extremely helpful to promote and support students' sense of well-being, but they can quickly transform students' activities into negative experiences when they are not well-managed. Therefore, as will be illustrated in detail in section 8.2, the data analysis suggests that in order to increase students' quality of experiences, actions should be taken to educate students, staff members and institutions on how to manage and channel the potential of new technologies and ubiquitous connectivity. This will allow students and staff to take advantage of all the benefits of new technologies without being exposed to the negative consequences of an uncontrolled use of resources.



6. WELL-BEING FACTORS AND PSYCHOLOGICAL NEEDS

6.1 Introduction

As indicated in section 1.5 (step four), one of the main objectives of this research was to discuss the findings of the research in light of the main psychological well-being theories existing in literature. This comparison would have allowed highlighting the psychological dynamics behind students' use of new technologies and ubiquitous connectivity and to understand how students' positive and negative experiences with new technologies are connected to the fulfilment of the well-being factors described in the literature.

However, when the analysis of the results started to suggest a possible connection between students' use of new technologies and the satisfaction of their psychological needs, a further analysis of the literature was undertaken to gain better understanding of the connections between well-being and need theories. This extension of the literature review is in line with the constructivist grounded theory guidelines. In fact, as indicated by Charmaz "...any research should tailor the final version of the literature review to fit the specific purpose and argument of his or her research report" (2014, p.308).

The existence of a strong link between well-being factors and psychological needs was already suggested in the literature review by the self-determination theory. This theory indicates that the satisfaction of basic needs is essential for people to experience well-being. In fact, as described later in this chapter, a further analysis of the literature evidenced that many of the factors indicated by well-being theories can also be considered as basic human needs.

In relation to these considerations, the literature review on existing well-being theories proposed in section 2.2 was expanded in this chapter to include three needs theories: the self-determination theory, already presented in the literature review, Maslow's hierarchy of needs (1943, 1954) and Glasser's five needs (1998) that are introduced in section 6.3.

Secondly, in order to illustrate the extent of the overlap between well-being factors and psychological needs, a Venn Diagram was constructed. The diagram was based on a

well-being/needs table that merged the synthesis table of well-being factors presented in section 2.2.3 (table 1) and a synthesis table of psychological needs that will be presented in section 6.3.3. The Venn diagram and the well-being/needs table were used as a basis in the findings to shed light on the complex relationships between students' use of new technologies, the satisfaction of their psychological needs and their well-being.

Before illustrating the process of the construction of the Venn diagram, section 6.2 will introduce the topic by presenting some considerations concerning the relationship between the satisfaction of human needs, desires and well-being. Section 6.3 will briefly present Maslow's and Glasser's need theories to integrate, as previously mentioned, the literature review. Finally, section 6.4 will present the Venn Diagram and the well-being/needs table.

6.2 Needs, desires and well-being

Deci and Ryan (2000) identified two different traditions in the area of psychology that employed the concept of human needs. A tradition referring to experimental psychology and the work of Hull (1943) defines needs as a set of physiological necessities that motivate humans to interact with the environment (such as the need for food and water). In the second tradition, that stems from the body of work of Murray (1938), needs are intended from a psychological perspective and considered as forces that organise and guide human perception, reasoning and action. The distinction between physiological and psychological needs is an essential categorisation that provides a first basic framework to contextualise the topic.

The definition of human needs proposed by Deci and Ryan (2000) suggests a direct connection between the satisfaction of psychological needs and well-being. The authors define human needs as "...innate psychological nutriments that are essential for ongoing psychological growth, integrity, and well-being" (p. 229). According to this definition, human needs do not depend on cultural or educational influences but belong to the nature of all human beings, and their satisfaction is an indispensable requisite for people to experience well-being.

A similar connection between human needs and well-being is also proposed by Grix and Mickibbing (2015) that suggests a relational/conditional interpretation of needs that is summarised in the expression "P needs N in order to E". According to this view, a need (N) is something required for an individual (P) to achieve an end (E). Therefore, in relation

to well-being, the satisfaction of psychological needs can be considered as an essential requirement for people to experience well-being.

Very different considerations can be found in literature concerning human desires whose fulfilment does not necessarily coincide with the satisfaction of human needs. As indicated by Ryan (1995) "... not only are one's conscious desires not definitional of needs; conscious wants and desires may often run counter to basic needs...". Grix and Mickibbing (2015) expressed a similar concept by affirming that as there is no limit concerning what people can desire, similarly there is no limit regarding how human desires can be perverted. Consequently, there can be a very small overlap between what people can desire and what they actually need. Therefore, although the so-called desire-fulfilment theory (Heathwood, 2015) affirms that the fulfilment of desires is a sufficient condition for people to experience well-being, there is a general consensus in literature that well-being cannot be reached only by following one's desires, as these can turn against being a benefit for people as for example in the case of addictions (Parfit, 1984, p.497).

Another important reflection concerns the relationship between human needs and the well-being factors identified by the different well-being theories presented in section 2.2. Regarding the hedonic perspective, as indicated by Grix and Mickibbing (2015), there is only a partial connection between need theories and hedonic well-being. According to the authors, the satisfaction of needs is meant to bring more to people than just experiencing pleasure and avoiding pain. Instead, need theories are more in line with a eudaimonic perspective that focuses on human development. In fact, the goal of both need theories and eudaimonic well-being theories is to identify essential factors that promote human wellness and personal growth. For this reason, as will be highlighted in the Venn diagram, there is a great degree of similarity between lists of well-being factors indicated in some well-being theories and basic human needs. A practical example in the literature, of this interchangeability between well-being and need theories, is provided by Tay and Diener (2011) who constructed a list of basic human needs utilising both factors taken from need theories (such as Maslow's hierarchy of needs) and well-being theories (such as the psychological well-being theory, the self-determination theory and the theory of flow).

These reflections were used as a base to justify the construction of the Venn diagram and the related well-being/needs table to facilitate the discussion of the results that could encompass both need and well-being theories.

The next section will present the need theories that were used in addition to the well-being theories described in the literature review.

6.3 Human basic needs theories

As reported in section 2.3.4, the relationship between students' needs and use of technology has already been a matter of investigation in the literature. Table 12 summarises the needs identified in the studies cited in the literature review.

Author	Needs
Li et al. (2014)	autonomy, entertainment, achievement, influence, identification, expression and information
Liu et al. (2016)	self-promotion, interpersonal communication, achievement, entertainment, role playing and autonomy
Suler (1999)	sexual need, need for an altered state of consciousness, need for achievement and mastery, need to belong, need for relationships, and need for self-actualization and the transcendence of self

Table 12 – List of needs connected to the use of new technologies mentioned in the literature review

Two main considerations can be made concerning these lists of students' needs. Firstly, all the research mentioned in the table did not specifically investigate students' university-related activities, but learners' use of new technologies and the internet in general. Therefore, the lists of needs identified above refer to students' general use of the internet. Secondly, as can be noticed, some needs are cited in more than one study (such as the need for autonomy, achievement and entertainment) suggesting the existence of some basic needs satisfied by the use of new technologies. However, the studies cited above do not clarify completely how these needs were identified and how they related to theories that investigate basic human needs.

For this reason, in order to gain a better understanding of students' psychological dynamics in relation to the use of new technologies, it was decided to refer directly to three theories that explored human basic needs. These approaches were preferred over other theories of human needs (such as Alderfer's ERG theory (1969), Doyal and Gough's (1991) and Max-Neef's (1992) need theories) for their specific focus on psychological needs.

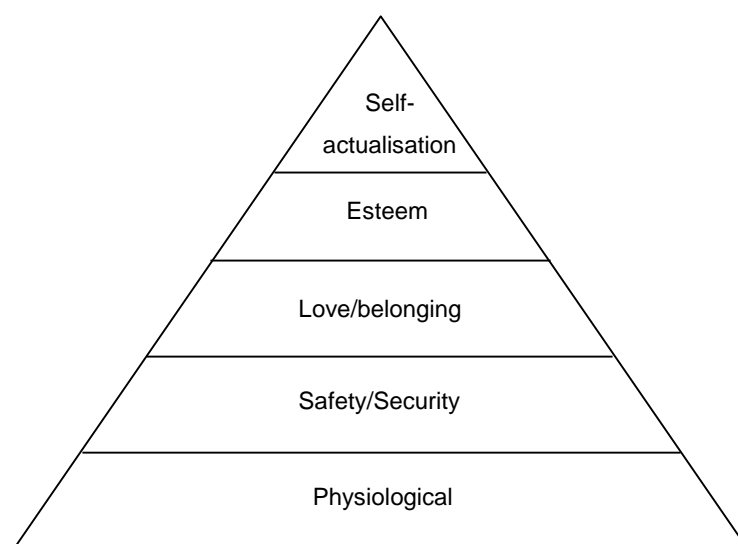
The first of these theories, the self-determination theory (Deci & Ryan, 2008) has already been presented in section 2.2.2, as it belongs to the body of work that refers to the area

of eudaimonic well-being, and can be considered both a well-being and a need theory. The self-determination theory introduces three basic psychological needs (autonomy, competence and relatedness) that are considered the foundation of personal growth, integrity and well-being (Ryan et al., 2008). The second contribution is Maslow's hierarchy of needs (section 6.3.1). Although criticised throughout the years from empirical, cultural, and methodological standpoints (Gambrel and Cianci 2003; Hofstede 1984; Mittelman, 1991; Wahba and Bridwell 1976), this theory was chosen as it is still considered the reference point of the theories of human needs in psychology. Also, as mentioned in section 2.2.2, it is considered a precursor in the area of eudaimonic well-being. Finally, the five basic needs identified by Glasser (1998) were selected for their psychological focus but also for their application in the educational sector (Glasser, 2000; Wubbolding, 2007).

6.3.1 Maslow's hierarchy of needs

Maslow (1943, 1954) developed a theory of human motivation affirming that human actions are motivated by the satisfaction of five basic groups of needs: physiological needs, safety needs, love and belonging needs, esteem needs and self-actualisation needs. A peculiarity of this theory is that these needs are considered having a hierarchical order of satisfaction (Figure 18), that is "... the appearance of one need usually rests on the prior satisfaction of another, more pre-potent need." (Maslow 1943).

Figure 18 – Maslow's hierarchy of needs



Physiological needs are considered the most basic needs and refer to what is physically required by human beings in order to survive in the environment. On the second level of

the hierarchy are placed the safety needs that motivate people to look for safety, security and to avoid danger. Some examples of needs that can be found in this group are: security, stability, dependency, protection, freedom from fear, from anxiety and chaos, need for structure, order, and limits. The third group of needs in the hierarchy, love needs, refers to the necessities of human being for love, affection and belongingness. These needs motivate people to develop relationships, friendships and to find a role in groups. The esteem needs placed on the next level are connected to a series of human desires. Some of them (desire for strength, for achievement, for adequacy, for confidence independence and freedom) are directed toward the increase of one's self-esteem while others (recognition, attention importance, appreciation) are directed toward the obtainment of reputation or prestige. Finally, the self-actualisation needs refer to self-fulfilment, that is, to the actualization of human potential.

6.3.2 **Glasser's choice theory**

The choice theory developed by Glasser (1998), a revision of his previous theory named control theory, is based on the concept that all human behaviours are the result of a choice, and that the choices that people make are driven by five basic needs: survival, belonging, power, freedom and fun. The theory is grounded on the assumption that the human brain is genetically predisposed to the satisfaction of these needs.

The need for survival encompasses Maslow's physiological and safety needs. Survival needs refer to basic vital needs such as food, water and sleep but also needs for shelter and safety. The "love and belonging" need is very similar to Maslow's third group of needs and it concerns the need for relationships, social connections, to give and receive affection and to feel part of a group. The need of power is the result of the combination of the needs of competency, achievement and recognition, and is driven by the search for self-worth and control over one's own life. The need for freedom concerns the need for independence and autonomy and the need to be able to take control of the direction of one's life. Finally, the need for fun refers to the necessity to experience pleasure and enjoyment in life.

6.3.3 **Psychological needs synthesis table**

proposed in appendix A in relation to the well-being theories, a table summarising and describing all the psychological needs mentioned by the theories introduced in this chapter was constructed (appendix N). Similarities and differences identified in the psychological needs proposed by these theories were used as a base to construct a synthesis table where similar needs were included under the same label (table 13).

SYNTHESIS TABLE OF PSYCHOLOGICAL NEEDS	
BASIC NEEDS	THEORIES
Relatedness	Relatedness (SDT), Love/Belonging (Maslow), Love/Belonging (Glasser)
Autonomy	Autonomy (SDT), Esteem (independence and freedom – Maslow) Freedom (independence, autonomy – Glasser)
Competence	Competence (SDT), Esteem (mastery and competence – Maslow) Power (to be competent – Glasser)
Achievement	Esteem (need for achievement – Maslow) Power (to achieve – Glasser)
Confidence	Esteem (need for confidence – Maslow)
Recognition	Esteem (recognition, attention – Maslow), Power (to be recognised for achievement – Glasser)
Self-actualisation	Self -actualisation (Maslow)
Safety	Safety (security, stability. protection – Maslow)
Fun	Fun (pleasure, playfulness – Glasser)

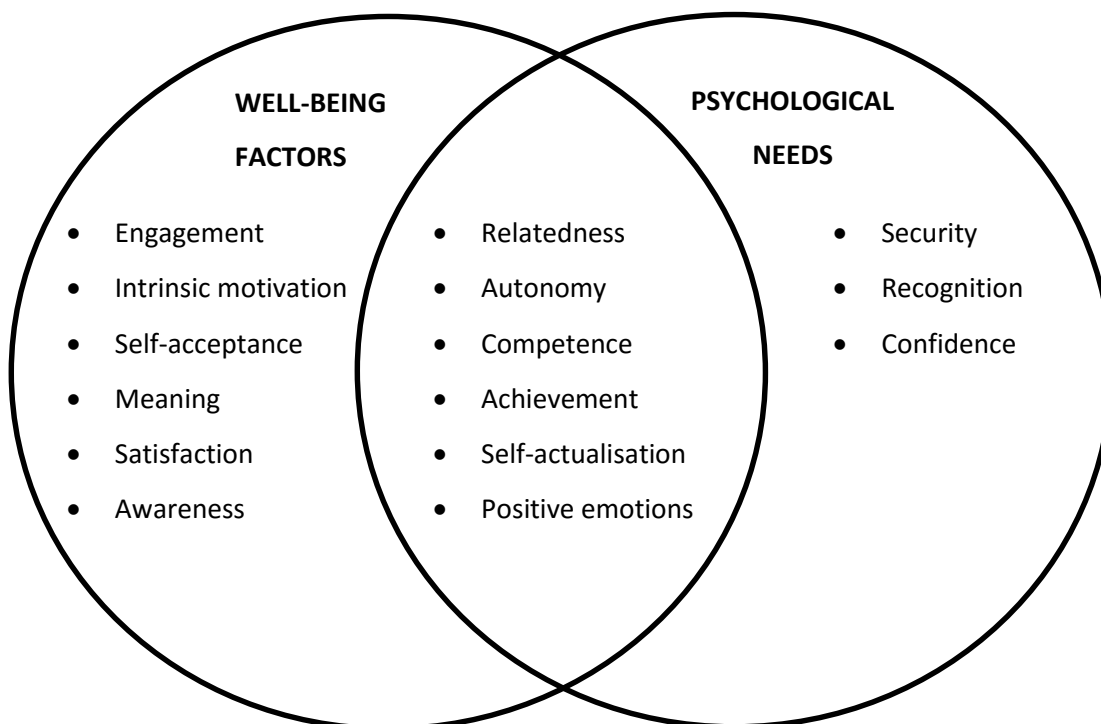
Table 13 – Synthesis table of psychological needs proposed by need theories

Concerning the construction of the table, it is important to clarify that the psychological needs proposed by Maslow and Glasser can be considered as groups of needs including a list of more basic needs. For example, the need for esteem indicated by Maslow is constituted by more basic needs such as the need for achievement, competence, confidence, freedom and recognition. It was noticed that some of the basic needs contained in these groups could be compared to other needs expressed in different theories. For example, the need for esteem proposed by Maslow (1943) and the need for power introduced by Glasser (1998) both contain and refer to the need for competence presented in the SDT. Similarly, the need for freedom proposed by Glasser is also one of the basic elements of the esteem needs described by Maslow. Therefore, in order to make these theories comparable, the synthesis table was constructed using the most basic needs proposed in each theory.

6.4 Venn diagram and well-being/needs table

The Venn diagram illustrated in Figure 19 shows the extent of the overlap between well-being factors and psychological needs. As mentioned in the introduction, the diagram was constructed using the need theories described in the previous section and the well-being theories presented in the literature review.

Figure 19 – Venn diagram representing the extent of overlap between well-being factors and psychological needs



As can be noticed, six factors were identified as common to both well-being and need theories (relatedness, competence, autonomy, achievement, self-actualisation, positive emotions). Six factors were found referring only to well-being theories (engagement, intrinsic motivation, self-acceptance, meaning, satisfaction, awareness). Finally, it is important to notice that there were only three basic needs that could not be compared and assimilated to well-being factors (security, recognition and confidence). This seems to confirm the notion emerging from the literature that most of basic human needs can be considered also essential well-being factors.

As mentioned in section 6.1 the Venn diagram proposed in Figure 19 is based on a well-being/needs table (table 14) constructed by merging the well-being synthesis table

proposed in section 2.2.3 (table 1) and the psychological needs synthesis table introduced in section 6.3.3 (table 13).

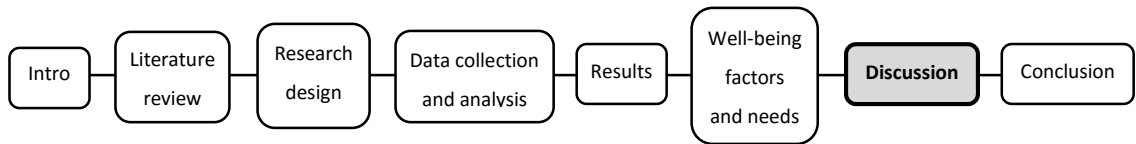
WELL-BEING ONLY	WELL-BEING AND NEEDS	NEEDS ONLY
ENGAGEMENT Flow (Flow theory), Perceived engagement (PERMA), Intense involvement (PE)	RELATEDNESS Relatedness (SDT), Love/Belonging (Maslow, Glasser), Positive relations (PWB), Relationships (PERMA)	SECURITY (Maslow)
INTRINSIC MOTIVATION Autotelic personality (Flow Theory), Intrinsic motivation (PERMA)	AUTONOMY Independence and freedom (Esteem – Maslow), Autonomy (SDT), Freedom (Glasser), Autonomy (PWB)	RECOGNITION Attention, importance, appreciation (Esteem – Maslow), being recognised for achievements (Power – Glasser)
SELF-ACCEPTANCE (PWB)	COMPETENCE Mastery and competence (Esteem - Maslow), Competence and skills (Power - Glasser), Competence (SDT), Environmental mastery (PWB)	CONFIDENCE (Esteem - Maslow)
MEANING Purpose in life (PWB), Meaning (PWB)	ACHIEVEMENT Achievement (Esteem - Maslow), Achieve (Power - Glasser), Accomplishment (PERMA)	
SATISFACTION (SWB)	SELF-ACTUALISATION Self-actualisation (Maslow), Personal growth (PWB), Self-fulfilment (PE)	
AWARNESS (SDT)	POSITIVE EMOTIONS Fun (Glasser), Positive affect (SWB), Positive emotions (PERMA)	

Table 14 – Well-being/needs table

From table 14 it is possible to understand how different well-being factors and/or psychological needs that are considered to be expressing similar concepts were included under the same label. For example, the table specifies that the factor denominated “relatedness” in the Venn diagram includes and represents the need of relatedness

expressed by the self-determination theory, the need for love and belonging described by Maslow and Glasser, and the well-being factors of positive relations and relationships proposed respectively by the psychological well-being theory and the PERMA model.

The Venn diagram and the well-being/needs table are used in the next chapter as a base to discuss how students' positive and negative experiences with new technologies and ubiquitous connectivity could be directly connected to the satisfaction or dissatisfaction of basic psychological needs and well-being factors.



7. DISCUSSION

7.1 Introduction

The discussion of the findings of this research, proposed in this chapter, has three specific goals. Firstly, the discussion aims to contextualise the findings in relation to the literature in the field already summarised in the literature review. The second main goal is to discuss how students' use of new technologies and ubiquitous connectivity relate to the well-being factors and psychological needs described in the Venn diagram and in the well-being/needs table presented in section 6.4. To facilitate their identification, these factors are highlighted in the discussion using bold characters. The third goal is to present a model of students' well-being in relation to the use of technologies and ubiquitous connectivity. This model was constructed starting from the grounded theory illustrated in chapter 5 and the reflections proposed in the discussion concerning the well-being factors and psychological needs identified in the literature.

In order to reach these specific goals, the four main categories (experiencing ease, experiencing freedom, feeling secure, being engaged) identified in the findings concerning students' positive experiences with new technologies, and linked to the satisfaction of basic psychological needs, will be discussed. A specific section will be dedicated to the discussion of each category. Each section will also discuss the interconnections concerning students' positive and negative experiences with new technologies in relation to each different category. Finally, the model of students' well-being will be presented in section 7.6.

7.2 Experiencing ease

As reported in section 5.5.1, three main sub-categories are associated with the main category experiencing ease: experiencing ease in accessing resources, looking for quickness and looking for ease of use. The importance of new technologies in helping students in their information seeking and handling is a well-known theme in literature. For example, as indicated in the literature review, the studies conducted by JISC highlighted that students appreciate the ease of retrieving information from the web

(Conole, 2008; Sharpe et al., 2005; Sharpe et al., 2009). Access to information was also indicated as one of the factors motivating students' to use smartphones (Park & Lee, 2012), and linked to students' needs satisfaction (Liu et al., 2016) although not in relation to university activities. Information seeking is also indicated as the first motivation for in-class use of smartphones among undergraduate students (Dahlstrom, Walker, & Dziuban, 2012).

7.2.1 **Ease, technology acceptance and perceived competence**

From a theoretical perspective, students' appreciation for easy and quick access to resources and ease of use of technological devices suggests a direct connection with the Technology Acceptance Model (TAM) (section 2.4.3). The technology acceptance model (Davis, 1986) identifies perceived usefulness and perceived ease of use as the two basic factors influencing students' acceptance of new technologies. Davis (1989) defines perceived usefulness as "...the degree to which a person believes that using a particular system would enhance his or her job performance". Perceived ease of use is defined by the same author as "...the degree to which a person believes that using a particular system would be free of effort". Ease of use is based on the concept that the benefits of using technology should not be outweighed by the perceived difficulty of using such technology (Davis, 1989). The application of these definitions to students' learning context, suggests that students' appreciation of the ease of accessing resources implies perceived usefulness and ease of use of new technologies, as these would simplify university activities such as retrieving information for the preparation of assignments.

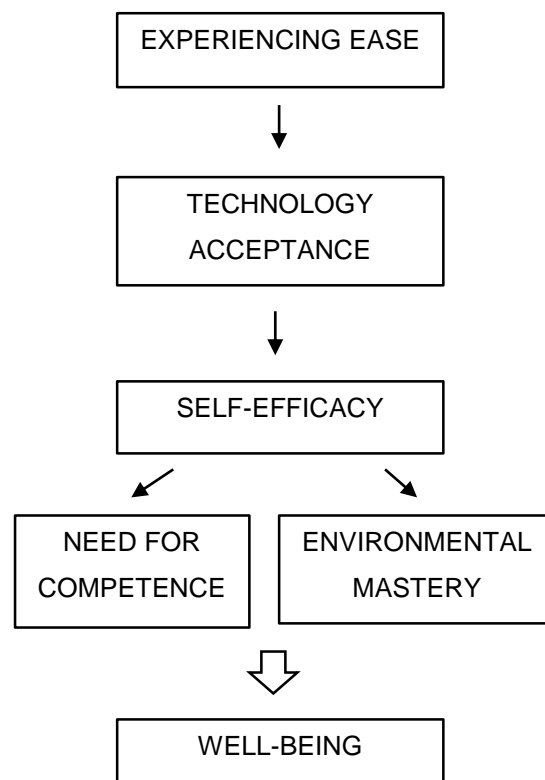
Among the lines of research proposed by Davis (1989) to provide a theoretical explanation of people's criteria of technology acceptance, it is important to cite the cost-benefit paradigm (i.e. Payne, 1982) and the self-efficacy theory (Bandura, 1982). From a cost-benefit evaluation standpoint, students' appreciation of the ease in using new technologies and in accessing resources can be explained as a cognitive perception of benefit due to a positive balance between the quality of the result obtained (such as the preparation of an assignment) and the effort produced. This perceived benefit could translate in an increased perception of self-efficacy as this is defined as "...the judgments of how well one can execute courses of action required to deal with prospective situations" (Bandura, 1982, p.122).

In terms of the satisfaction of students' needs, "experiencing ease" can be identified as a students' desire that underlies important psychological processes. As indicated above, there seems to be a direct link between students' perception of ease, technology

acceptance and perception of self-efficacy. This link suggests that students' perception of ease in accessing resources and in using new technologies has a positive effect on their sense of self-efficacy with a consequent positive impact on their need of **competence**. In fact, the psychological need of competence (indicated by the SDT theory) is defined as "the sense of efficacy one has with respect to both internal or external environment" (Ryan, Huta, & Deci, 2008, p. 153). The satisfaction of this need can have a direct reflection on students' well-being as, according to SDT, the conditions supporting individual experiences of competence, autonomy and relatedness are considered to have a positive impact on well-being. This positive effect of perceived usefulness and ease of use in using new technologies on well-being is also indicated by the construct of "environmental mastery" proposed by the psychological well-being theory (Ryff, 1989) (section 2.2.2.3) as one of the six essential factors that foster well-being. This construct was placed in the well-being/needs table presented in section 6.4 (table 14) in the same section of the construct of competence as they share many similarities. In fact, as indicated in the definition, a person experiencing environmental mastery "...has a sense of mastery and competence in managing the environment, controls complex array of external activities, makes effective use of surrounding opportunities" (Ryff, 1989, p.1072).

Figure 20 summarises the concept expressed in this section. As indicated in the diagram, students' desire of experiencing ease in using new technologies (that translates in ease and quickness in accessing resources and ease of use) underlies a basic process of technology acceptance. The fulfilment of the technology acceptance criteria (perceived usefulness and ease of use) promotes students' sense of self-efficacy. In turn, an increased perceived self-efficacy contributes to enhance students' sense of competence and environmental mastery that are considered essential factors to facilitate well-being.

Figure 20 – Connections between students' experience of ease, need of competence and well-being



7.2.2 Experiencing ease and quality of online resources

The relationship between ease and well-being presented in Figure 20 can be also used to explain some of students' negative experiences with new technologies reported in the findings of the research. For example, section 5.6.5.2 reported that students have high expectations concerning the quality of online resources. Students expect online resources (such as the layout of websites and the VLE) to be easy to use, to navigate and to understand. The same expectations emerged in relation to how learning materials are organised and managed by lecturers. The results indicate that complicated website layouts, navigation and materials are sources of frustration and irritation for students. The interpretation of these data in the light of the theoretical reflections introduced above, suggests two considerations. Firstly, any element adding obstacles to online navigation and in general to students' online experiences modifies the balance between perceived costs and benefits of the online experience. Secondly, when the experience of using new technology is perceived as complicated, one of the two essential criteria of technology acceptance is denied. This has direct consequences for students' sense of self-efficacy

and a negative effect on their perceived competence and environmental mastery that brings the emergence of negative emotions and a diminished sense of well-being.

7.2.3 **Ease and information overload**

Another negative consequence for students' experiences is connected to the ease of accessing resources. As reported in section 5.6.1.1, information overload is one of the negative outcomes reported by students in relation to the ease of retrieving information from the web. The findings indicate that students do not seem prepared to manage the amount of information available on the internet, and they do not know how to filter information according to their needs when preparing assignments and exams. From a need satisfaction and well-being perspective, the findings suggest that an uncontrolled and untrained access to online resources can lead students to experience distorted consequences of their attempt to satisfy their basic needs. In this case, students' search of ease in accessing resources can translate into a diminished sense of well-being due to the difficulties in managing the amount of resources available that can become a source of stress and frustration for students.

7.2.4 **Ease, students' stress and expectations**

A final reflection can be made concerning the relationship between students' search for ease, stress and expectations. This relationship is well described in a quote taken from the interview with the on-campus learning technologist and cited in section 5.6.5.2:

"... students need to be able to understand and access the system and get their unit information... submit their work, and do it, you know, quite easily, quite quickly and efficiently and be able to have, I guess ease of access through the systems, you know, like I've already said students get stressed out, the last thing we want to do is making the systems very complicated or convoluted..." (On-campus, learning technologist)

This quote suggests that implementing technological infrastructures that allow easy access to resources and ease of use of VLEs can be considered as a way to avoid potential sources of stress to students. From a well-being perspective, the sense of ease that students experience when using new technologies and ubiquitous connectivity can be seen as a way to increase students' **positive emotions**, and to diminish negative emotional reactions such as stress and frustration. As indicated by the subjective well-being theory (section 2.2.1), the experience of positive emotions and of low levels of negative affect is one of the essential factors that promotes well-being. This reflection gains further significance if considered from the perspective of students' expectations.

These expectations are well represented by the concept of “hygiene factors” mentioned by one of the online lecturers in relation to the use of new technologies (section 5.6.5.2). As indicated by the lecturer, learners expect some basic factors to be always part of their online experience such as easy access to information, easy layout and user-friendly navigation and good quality of materials. When these expectations are not met, students tend to experience negative emotions such as stress, frustration and irritation. In synthesis, the findings indicate that the sense of ease experienced by students when using new technologies has the potential to increase their positive emotions by satisfying their expectations and to avoid possible sources of negative emotions.

7.3 Experiencing freedom

The data has indicated that students highly appreciated the sense of freedom and flexibility provided by new technologies and ubiquitous connectivity. Three sub-categories were identified as related to this topic: fitting study around life, managing learning spaces and increasing workflow and productivity. Students’ appreciation for the flexible time-and space- independent access to resources was identified in the literature review as one of the main positive points raised by learners concerning the use of new technologies in academic settings (Sharpe, 2009). Moreover, as indicated by Russel et al. (2014) students seem to value the central role played by VLEs in providing freedom and flexibility through the ubiquitous access to lecture materials and information. Concerning online students, the literature review also indicated that the flexibility provided by distance learning methodologies can be a source of excitement for students (Zembylas, 2008; Zembylas et al. 2008). At the same time, the online experience can become a source of frustration when students have difficulties fitting study around their life (O’Regan, 2003).

7.3.1 Ubiquitous connectivity, freedom and autonomy

The first two sub-categories identified in the findings “fitting study around life” and “managing learning spaces” refer to students’ appreciation of the independence allowed by ubiquitous connectivity and mobile devices concerning learning time and spaces. The importance of this independence in organising one’s own study was reported by both on-campus and online students. Some examples of the benefits provided to students by ubiquitous connectivity are the possibility to study at students’ most convenient hours, to retrieve lecture information and materials when unable to go to the university, to communicate with staff without the necessity to move from home and to study and

access information from anywhere. As indicated in the well-being/needs table (table 14 – section 6.4), autonomy, independence and freedom (included under the label “**autonomy**”) are considered both as psychological needs and essential well-being factors. Autonomy was indicated by the self-determination theory (section 2.2.2.1) as one of the fundamental human needs to be satisfied to experience well-being, and it was mentioned also by the psychological well-being theory (section 2.2.2.3) as one of the six main well-being factors. Independence and freedom were mentioned by Maslow (section 6.3.1) and Glasser (section 6.3.2) as essential psychological needs. Students’ high appreciation of ubiquitous connectivity appears, therefore, justified by the fact that the space- and time-independent access to resources satisfies psychological needs of freedom and independence and fosters students’ sense of autonomy. Moreover, as indicated by some students, another positive consequence of the increased freedom and autonomy provided by new technologies is an enhanced sense of control over their own study. In fact, as indicated by Glasser (1998), fulfilling the needs for freedom tends to increase people’s sense of control regarding the direction of their own life.

7.3.2 **Over-reliance on technology**

The reflection proposed in section 7.3.1, concerning students’ gained sense of autonomy and control through new technologies and ubiquitous connectivity, can also be used to shed light on some negative experiences reported by students regarding their over-reliance on technology. As described in section 5.6.5.1, students tend to experience a sense of helplessness accompanied by stress, frustration and anger when they experience lack of access to the VLE and lack of connectivity in general. A high contrast emerges between the complete reliance that students have on new technologies and the fact that they perceive them as totally out of their control. The data analysis suggests that these negative emotions are generated by the perceived lack of alternatives in performing daily university activities when ubiquitous connectivity is not available. As suggested in section 5.3, students’ high expectations concerning the reliability of new technologies and ubiquitous connectivity can be linked to the fact that the use of new technologies has become a necessity for students. In fact, most of the daily university activities require access to the VLE and to the internet in general. In terms of perceived autonomy, this extensive use of new technologies and ubiquitous connectivity creates a great paradox in students’ life. The use of new technologies and ubiquitous connectivity appears to be fundamental to fulfil students’ need for autonomy and freedom. However, at the same time students’ necessity to use new technologies in their daily university life generates a sense of dependency that becomes a limit to their autonomy and freedom.

Moreover, as indicated in section 5.6.5.1, this limitation of autonomy seems to be increased by the fact that the dependency on technology diminishes students' proactivity and problem-solving attitudes. From the cost-benefit perspective mentioned in the previous section, the ease experienced by students in performing tasks through new technologies generates a great unbalance in terms of costs-benefits. Technology provides great benefits in students' daily activities in exchange for relative low costs and effort. However, when students need to perform the same tasks in the absence of connectivity, the perceived costs rise steeply. Therefore, usually students prefer to wait until all the technical problems are solved instead of looking for alternative solutions. For example, in the case of lack of access to the library tab on the VLE, students prefer to wait for hours until the connection is re-established instead of going physically to the university library. In synthesis, the data suggest that ubiquitous connectivity and access to the VLE are largely appreciated by students as these satisfy learners' need for autonomy and freedom. Nevertheless, the same technologies force students to become dependent on them for most of their daily activities with a consequent reduction of their autonomy and independence.

7.3.3 Attendance at lectures

Another important reflection can be made regarding the relationship between the ubiquitous availability of resources and students' motivation to attend lectures. Some on-campus students reported perceiving a diminished motivation to attend lectures due to the availability of lecture materials on the VLE, and to the ease of retrieving important information from friends using social networks. The relationship between ubiquitous availability of resources and students' attendance at lectures has been widely investigated in literature (Billings-Gagliardi & Mazor, 2007; Dineva & Nedeva, 2013; Latreille, 2008). However, a clear connection between online availability of materials and a diminished lecture attendance was not identified. Similar inconclusive results were found concerning the connection between the availability of lectures recordings for on-campus students and their lecture attendance (Bailey, 2013). One of the most important factors influencing attendance, identified in the findings in relation to online materials and confirmed in literature (Dineva & Nedeva, 2013), seems to consist in the perceived value of attending lectures. Students can develop a diminished motivation in attending lectures when they think all the necessary information concerning a specific course can be retrieved from online materials, handouts and textbooks. In this case, live lectures are not perceived as adding further useful information for the preparation of assignments and exams.

7.3.4 Life flexibility and self-actualisation

Another element that connects the sense of freedom and the flexibility provided by new technologies and students' well-being concerns online learners in particular. The findings indicate that online students seem to particularly appreciate the possibility to fit their own study around their personal and working life. In fact, attending a university online gives working students the opportunity to obtain an academic degree that would be impossible for them to gain by attending the university in person. Obtaining a degree while working is often a way for them to increase their job position and also to fulfil their personal interests, passions and a desire for knowledge. This suggests that the sense of freedom and autonomy provided by new technologies give students the opportunity to satisfy their need for **self-actualisation**. This label was used in the Venn diagram to indicate people's need for personal growth and self-fulfilment as indicated by Maslow (1943) and in the eudaimonic well-being perspective (section 2.2.2).

7.3.5 Perceived productivity and workflow

A final important reflection concerning students' experience of freedom and autonomy can be made regarding how these factors impact on their sense of productivity and workflow. The potential role of new technologies in improving students' productivity has been an object of attention since technological infrastructures had started to be introduced in universities (Green & Gilbert, 1995; Massy & Zemsky, 1995). From a psychological perspective, the findings of the research indicate that the flexibility provided by new technologies and ubiquitous connectivity can help on-campus students to increase their sense of productivity and workflow. The data analysis indicates that this perceived sense of increased productivity manifests at different levels. Due to mobile technologies, learners reported being able to record their thoughts and ideas during the day and to receive immediate answers to their questions. Students also indicated an improved sense of productivity during study due to the flexibility and interactivity of mobile devices. Finally, perceived productivity was facilitated by the ease of managing collaborations using new technologies and social networks. The connection between students' perceived productivity and workflow, their sense of well-being and needs satisfaction is well summarised by some quotes reported in the findings of the research:

“technology just makes the process quicker of getting your degree” (On-campus, student 1, year 2)

“and you feel more confident... about what you are doing...because you got a lot more of ideas... you can record down...” (On-campus, student 2, year 2)

These quotes can help to understand how the increased sense of productivity and workflow has the potential to help students to improve their **confidence** and to satisfy their need for **achievement**. These two factors were both indicated by Maslow as essential to satisfy the esteem needs. In synthesis, new technologies seem to have the potential to make students more confident regarding the possibility to reach their academic goals as they improve workflow and facilitate daily activities in many different ways. These benefits can translate into an enhanced self-esteem for students that can make them feel more empowered in the pursuit of their academic goals. These reflections find confirmation in one of the annual surveys published by ECAR (Educause Center for Applied Research) (Dahlstrom et al., 2012). According to the survey, undergraduate students believe that technology is critical to their academic success and that it plays an essential role for their future accomplishments.

Concerning online learners, none of the students interviewed mentioned an increased sense of productivity and workflow provided by new technologies. As mentioned in section 5.5.3.3, these students showed a very limited use of mobile devices and more structured studying habits compared to on-campus students with most of their study concentrated at home during evenings and weekends. Therefore, they could not experience the same benefits of on-campus students concerning the study flexibility provided by mobile devices. However, it is also important to report that the university mobile application was not enabled for online students, and that some of them lamented for example the scarce usability of e-books on portable devices. Therefore, it was not possible to establish if the online students would have received the benefits of an enhanced sense of workflow and productivity with the same tools and resources available on mobile devices.

7.4 **Feeling secure**

Using technology to obtain security and reassurance was a very frequent theme raised by students in the data collected. Three sub-categories were linked to the main category “feeling secure”: receiving timely support, availability of needed information and feeling protected.

In relation to students’ support, the importance of new technologies and ubiquitous connectivity in facilitating communication among students and between students and staff is well known in the literature (Conole, 2008; Sharpe et al., 2005; Sharpe et al., 2009). Moreover, other studies reported in the literature review evidenced for example that the use of social media among students can help to increase their level of perceived

support (Kim & Lee, 2011; Manago et al., 2012). Other research indicated that instructors' support plays an essential role in increasing students satisfaction in e-learning programmes (Paechter et al., 2010), and in decreasing feelings of anxiety and stress among online learning students (Angelaki & Mavroidis, 2013).

7.4.1 Sense of security and support

The data collected indicate that peers' and instructors' support received through new technologies can contribute to increase students' sense of security in different ways. Firstly, as indicated in section 5.5.5.1, students experience a sense of relief and reassurance by receiving support from peers (through social networks) and from lecturers (by email or discussion forums) that helps them diminish their stress and anxiety close to submission deadlines or exams. Secondly, learners experience a sense of reassurance and comfort by knowing that other students are in the same situation. This phenomenon, that is usually summarised using the expression "being on the same boat" has already been identified in literature as an essential element of peer support in general (Jacklin & Le Riche, 2009) and in online learning settings (Anderson, 2004). Another important element emerging from the findings, regarding specifically online students, concerns the sense of security and reassurance experienced by online learners by knowing to be "right on track" with the preparation of assignments. The data analysis indicates that peers' and tutors' online feedback is essential for online students. This is due to the lack of face-to-face contacts, and to the fact that online learners are often unsure about their learning abilities as many of them return to education after long time.

The great importance given by students to support can be understood by the fact that obtaining a sense of **security** is considered by Maslow (1943, 1954) as the most basic among all the psychological needs. Moreover, as indicated by some online students, receiving feedback from tutors has also a positive effect on their sense of **confidence**, indicated by Maslow as one of the components of the esteem needs. Therefore, although as indicated in the Venn diagram (Figure 18 – section 6.4), security and confidence are not reported in literature as proper well-being factors, these elements seem to be considered essential in students' learning experience as they represent basic psychological needs. Finally, students' use of peer and staff support to decrease anxiety and stress can be seen also from a hedonic well-being perspective. In fact, according to the subjective well-being theory, experiencing positive emotions and avoiding unpleasant emotions and moods is an essential requisite for people to experience well-

being. Looking for support can be interpreted, in this sense, as a means that the students use to lower their negative emotions when preparing for assignments and exams.

In relation to this topic, an important consideration needs to be made concerning how lecturers' management of students' support can influence learners' well-being and satisfaction of basic needs. As indicated in section 5.6.5.3, the data indicate that students have in general high expectations regarding support received from academics. As explained above, these expectations find a full explanation in the importance that support has in increasing students' sense of security and in lowering negative emotions. However, the data indicated that lecturers' support can influence students' well-being and needs satisfaction negatively depending on how these expectations are managed.

Concerning on-campus students, the data indicated that lecturers have a clear perception of students' expectations of receiving quick replies to emails. However, the findings showed that lecturers manage these expectations in different ways according to their personal preference. A lack of coordination among lecturers and a lack of department policies emerge from the data. Academics showed different habits regarding how to manage students' online support in general and students' requests in out-of-office hours and weekends.

A first reflection that can be made concerning this issue is that the ambiguous messages sent by academics regarding online support availability prevents students from understanding the confines and limits of this service. Consequently, as reported by one of the lecturers "... students will identify the weak link and go for that..." (On-campus, lecturer 2). Students will look for the most available lecturer that could satisfy their need of security and reassurance. In fact, only a few of the students interviewed showed self-regulation concerning how and when to ask for academic support through new technologies. The students' general attitude emerging from the findings is to obtain as much support as they could if lecturers make themselves available. Secondly, as reported by the same lecturer mentioned above, this attitude toward support poses a potential issue concerning finding a balance between "spoon-feeding" students and helping them to become independent learners. In terms of needs satisfaction and well-being, the objective identified by the university of helping students to become independent learners implies the intention of helping them to increase their sense of autonomy. As indicated in the Venn diagram, autonomy is considered both an essential well-being factor and a basic psychological need. Therefore, the increased ease in receiving quick support from lecturers provided by new technologies and ubiquitous

connectivity appears to open a potential conflict between the satisfaction of students' need of security and the satisfaction of their need of autonomy.

Concerning online students, a similar issue does not emerge from the data collected. As reported above, online learners highly appreciate tutors' support and feedback received by emails and discussion forums as this helps them increase their sense of security and confidence. However, the findings do not indicate any attempt by the online students to take advantage of tutors' support. These students seemed more concerned about the consistency of support among the different tutors. The data indicate that having regular online interactions with tutors and receiving regular feedback helps online students to satisfy their need for security (as on-campus students), but also increases their motivation and engagement (as will be explained in section 7.5.3). However, the findings also suggest that online students' expectations are often dissatisfied due to the lack of homogeneity of tutors in managing their online programmes. This seems to be mostly connected to the work overload of tutors as they teach in both online and on-campus programmes but also to their different levels of competence as online tutors.

7.4.2 Students' expectations and satisfaction

A further consideration can be made regarding students' expectations and needs satisfaction. As indicated in section 5.6.5.3, data analysis suggests that staff members perceive students as having a double identity. Students are considered individuals that pay to receive an education but also customers that pay for a service. In terms of well-being and needs fulfilment, this double role has the potential to generate conflicts for staff members. In fact, if students are considered just learners, the role of the university is to help them to satisfy some of their psychological needs such as competence, autonomy, achievement and security. However, if students are considered as customers, the main role of the university becomes to keep students satisfied of the "product" they buy. Although as indicated in the well-being/needs table (table 14 – section 6.4), satisfaction is considered by the subjective well-being theory as one of the elements that foster well-being, it is important to underline that students' satisfaction does not necessarily match with university educational guidelines. In this scenario, the role of technology appears to be very important. New technologies have the potential to help academics facilitating the satisfaction of students' needs by pursuing educational goals. At the same time, new technologies and ubiquitous connectivity have also raised students' expectations in terms of access to support and availability of resources that have become important requisites of students' satisfaction. For this reason, one of the key considerations regarding the use of new technologies at university seems to lie in

finding a balance between keeping students satisfied as customers, and guiding them to the achievement of educational goals that can facilitate the satisfaction of their basic needs.

7.4.3 Sense of security and availability of needed information

Regarding access to information, as indicated in section 5.5.5.2, the availability of needed information emerges from the findings as another significant element that helps on-campus students in particular to feel secure and reassured. Ubiquitous connectivity allows students to stay continually updated on important information regarding for example lectures and assignments. Moreover, the VLE provides ubiquitous and constant access to lecture materials. However, the findings indicate that students' attempt to satisfy their need of security through constant access to information can also bring negative outcomes. Firstly, as reported in section 5.6.1.2, social networks can become a source of unreliable information for students. The data indicate that when students' stress and anxiety rises close to deadlines, unreliable information start to circulate in Facebook groups influencing students to leave these groups temporarily to avoid an additional increase of worry. In this case, the attempt to satisfy the need of security through the use of new technologies seems to obtain the opposite effect of augmenting students' anxiety and concern. Another aspect related to information availability concerns how students' constant access to information can become detrimental to their concentration and motivation. As reported in section 5.6.1.4 the stream of information arriving to students' devices can become a source of distraction that leads to concentration issues and difficulties on being able to focus on one task at a time. This issue has already been explored in literature (i.e. Junco & Cotten, 2011) with data indicating for example that students' use of instant messaging applications and multitasking activities have negative effects on learning.

7.4.4 Sense of security and protection

A final consideration concerning students' perceived sense of security and new technologies regards the sense of protection provided by social networks. The findings indicated that year-of-study Facebook groups are considered by on-campus student as a place where they can share doubts and worries about assignments and exams without being judged by lecturers. This feeling of protection can be related to the avoidance of the sense of anxiety identified by O' Regan (2003) associated with feeling exposed and incompetent in online contexts. In this case, social networks are used as a first step of support before forwarding questions to lecturers to avoid a direct and personal

exposition. Moreover, as indicated in section 5.5.5.3, this sense of protection was not reported by online students. The results did not evidence any perceived negative emotion in having direct contacts with their tutors. This difference between on-campus and online students could be connected to the higher average age of the online students involved in the research. On-campus students could perceive a greater distance with academics in terms of social status due to their average young age compared to online students. However, this affirmation would need to be supported by further future investigations.

7.5 Being engaged

“Being engaged” was identified in the findings as the fourth main category associated with students’ positive experiences with new technologies and ubiquitous connectivity in reference to university-related activities. Four sub-categories were identified: increasing motivation and understanding, feeling cared for, gaining motivation through interactions, feeling like a real student. The importance of new technologies to facilitate students’ engagement was evidenced in the literature review in the studies promoted by JISC (Conole, 2008; Sharpe et al., 2005; Sharpe et al., 2009). These studies reported students’ high expectations concerning standards and interactivity of lecture materials to keep them engaged. Students’ high expectations are confirmed by worldwide surveys conducted by ECAR (Dahlstrom & Brooks, 2014; Dahlstrom et al., 2012). These reports evidenced that on-campus students expect their instructors to use technology to engage them in the learning process. These surveys also indicated that there is a continuous increase in the number of instructors that use technologies in their teaching practices. However, the same studies reported a students’ general dissatisfaction with the ability or perceived ability of the tools available on VLEs to actually engage students.

7.5.1 Students’ engagement and flow

A first important reflection needs to be made concerning how the term “engagement” was used by students in the data collected compared to the well-being factors included in the well-being/needs table. As indicated in appendix A, the PERMA model (Seligman, 2011) utilises the term “engagement” to indicate an intense involvement in an activity referring to what Csikszentmihalyi (1997) defined as a state of “flow”. In these theories, the term engagement is used to indicate a state of complete absorption in an activity. Similarly, Waterman (1990) uses the expression “intense involvement” in the personal expressiveness theory to specify a comparable experience. For this reason, these well-

being factors indicated were all included in the well-being/needs table under the label “engagement”.

However, the data collected indicate that the same term was used by students and staff members with a more general meaning. In fact, students and staff used the expression “being engaged” as a synonym of “feeling involved and motivated”. The same meaning can also be identified in the studies conducted by JISC and ECAR cited above. For this reason, it is important to underline that when students and staff used the term “engagement” in the data, they did not refer to a state of “flow” but more in general to a sense of involvement and motivation in learning activities. In this regard, it is also important to specify that none of the students and staff members involved in the research provided descriptions or experiences regarding the use of new technologies that could be considered similar to a state of flow. As indicated in section 2.2.2.2, people tend to experience a state of flow when they are involved in activities that combine a high level of perceived challenge, and a high perceived sense of competence in that activity. In relation to the use of technology, a typical example of flow experience is given by the use of videogames. The powerfulness of the flow experience is one of the reasons that influenced the production of educational videogames to stimulate students’ engagement (Squire, 2003). In reference to this research, most of the academics involved utilised very basic technological materials and tools to involve students such as PowerPoint slides and online videos. Only one on-campus lecturer reported the use of online quizzes to engage students between lectures. Therefore, the reason behind the lack of descriptions of states of flow in the data could be related to the fact that the type of technology utilised by students was not sufficient to generate such a state. However, it is also possible that students could have experienced flow for example when using technology during the preparation of assignments. In this case, the lack of data could be attributable to the type of questions asked in the interviews. Nevertheless, the fact that none of the students described flow experiences in their narratives can indicate that these were not considered as prominent in their daily university experiences with new technologies.

7.5.2 Online materials and activities and intrinsic motivation

In relation to engagement, as this term was used by students in the data, the first element identified in the analysis refers to the types of online materials and activities used by lecturers. The findings (section 5.5.7.1) indicate that both online and on-campus students perceive the use of video materials as a way to interrupt the monotony of learning through written text with a consequent improvement of motivation and engagement. Moreover, data suggest that varying learning materials and activities by introducing videos and

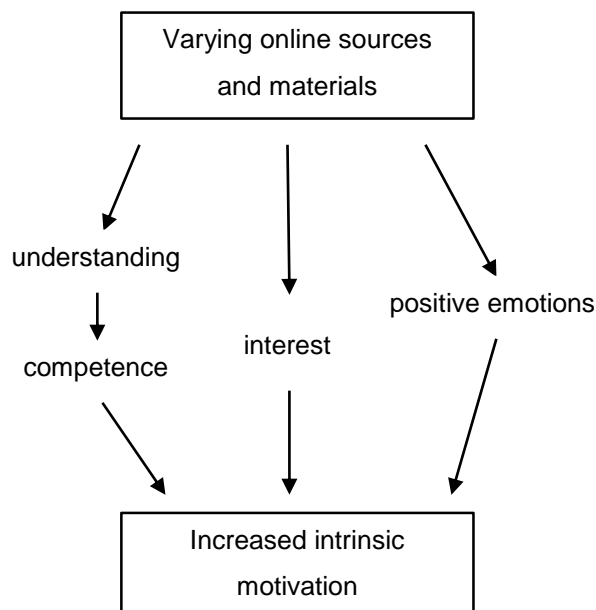
online quizzes is perceived by students as an additional help for their comprehension and memorisation of contents. This help provides a consequent positive effect on engagement. The data also indicate that most of on-campus and online lecturers are aware of the importance of varying their learning resources and activities to increase students' engagement. However, the findings also evidenced lack of coordination among on-campus and online lecturers concerning the use of new technologies to engage students. Similarly to what was reported concerning the use of new technologies for students support, the findings reveal a lack of institutional guidelines regarding this topic with a consequent implementation of online learning activities and materials by lecturers left to their own personal initiative. Moreover, the findings also reveal a general lack of preparation and competence of on-campus and online academics concerning how to harness the potential of new technologies to improve learning engagement.

From a well-being and needs satisfaction perspective, the positive indications provided by students in relation to the variation of learning materials and activities can be related to different elements. Firstly, the introduction of video materials facilitates the emerging of students' **positive emotions** as this variety interrupts the monotony of reading. Secondly, the use of videos to illustrate and clarify concepts and to provide examples seems to have positive effects on students' understanding with a consequent positive impact on their need for **competence**. Moreover, an increase of positive emotions and sense of competence seem to have an important influence on students' motivation.

The expression "**intrinsic motivation**" was used in the Venn diagram to encompass the concept of intrinsic motivation provided by the self-determination theory, and the concept of autotelic personality described in the theory of flow. Both concepts refer to the idea that people experience an increased sense of well-being when involved in activities for their inherent interest and satisfaction and not in order to pursue external goals. As indicated by Ryan and Deci (2000) students show a greater level of intrinsic motivation in studying and doing homework when they develop a genuine interest and curiosity for the subject rather than being just motivated by an external outcome. In relation to this, new technologies can be seen as a useful instrument to stimulate students' interest and curiosity, as for example by using videos as identified in the findings of this research.

In synthesis, as indicated in Figure 21, the findings suggest that a strategic use of new technologies by lecturers to provide students with different types of learning materials can have a benefit on their intrinsic motivation and engagement by increasing their sense of competence, their genuine interest for the subject and their positive emotions.

Figure 21 – Potential benefits of varying online sources and materials on intrinsic motivation



Therefore, although university students are usually extrinsically motivated by the obtainment of good grades, the variety of activities and materials made available by new technologies could help them to improve their intrinsic motivation for their subject of study.

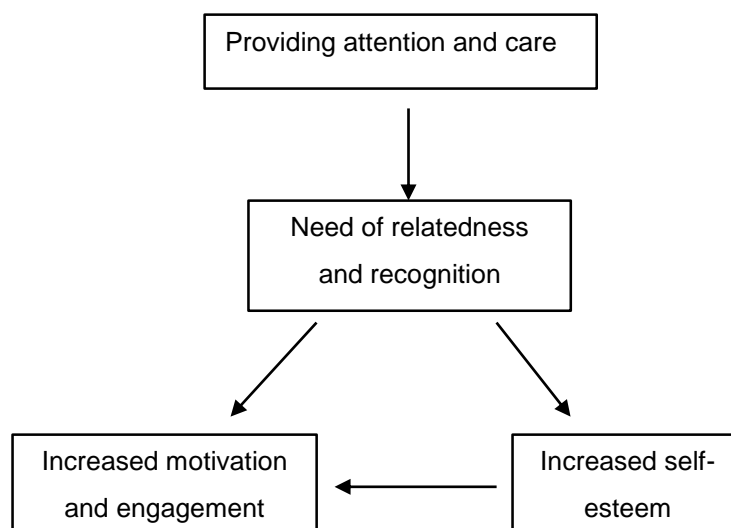
7.5.3 The role of the human element in students' engagement

As indicated in Ryan and Deci (2000) another element fostering students' intrinsic motivation is given by the sense of care provided by teachers. Teachers' attention and care offer a secure relational base to students and satisfy their need of **relatedness**. As reported in the Venn diagram, relatedness (i.e. the development of significant relations with others) is considered both a well-being factor and a basic psychological need. These reflections can help to understand the importance of the great attention emerging from staff members' data to provide attention and care to students. As mentioned in section 5.5.7.2, the sense of attention and care provided by lecturers seems to be appreciated by online students in particular. The data indicate that the attention given by online tutors helps online learners to increase their motivation and sense of confidence. A similar positive effect on online students is obtained by the use of video-recorded lectures and videoconferences. The data indicated that the use of these tools helps online learners feel like a "real student". Students reported that watching lecturers in video contributes to make them feel more engaged and more confident in their learning process. These

data are confirmed also by other research (Draus, Curran, & Trempus, 2014) reporting that instructor-generated video content have a very positive impact on online students' engagement and satisfaction.

In synthesis, from a well-being and needs satisfaction standpoint, the presence of the human element when using new technologies in learning settings appears to be essential as it satisfies different well-being factors and psychological needs. Firstly, lecturers' attention and care seem to have a positive general effect on students. These two elements satisfy students' need for **relatedness** with a consequent increase of **intrinsic motivation** and sense of engagement. A second positive effect seems to be on students' sense of **confidence**. Finally, the feeling of being treated like "real students" could have a positive impact on students' need of attention and appreciation that were included in the well-being/needs table under the label "**recognition**". This aspect seems to be particularly important also in consideration of the feeling of being treated like "second class students" as reported by some online learners. The need of attention and confidence are both indicated by Maslow as components of the esteem needs. Therefore, as indicated in Figure 22 the use of new technologies to provide attention and care to students seems to have a potential positive impact on learners' need for relatedness and recognition with a consequent benefit on motivation and self-esteem.

Figure 22 – Potential benefits of lecturers' attention and care on students' motivation and engagement



As described above, although both online and on-campus lecturers indicated using new technology to provide attention and care to students as a priority, only online students reported a positive impact on their engagement and motivation. As mentioned in section

5.5.7.2, on-campus students' interactions with staff members, seem more practical and focused on obtaining immediate clarification of their doubts concerning the preparation of assignment and exams. A possible explanation of this difference could lie in the fact that video-materials and online communication with tutors and peers are the only tools available to online students to feel engaged in online programmes. Instead, on-campus students have the possibility to develop a sense of engagement outside the use of technology through face-to-face interactions with lecturers and peers. For this reason, the search for support by on-campus students through new technologies could be more driven by the necessity to obtain practical advice in order to satisfy their need of security (as discussed in section 7.4.1) rather than to feel engaged.

7.5.4 Peer interactions and engagement

Concerning peer interactions, the findings indicate that communication among students has the potential to be a source of mutual motivation for both on-campus and online students. The data indicate that on-campus students use social media applications such as Facebook and WhatsApp to help and motivate each other. However, the same students suggested that the massive use of social networks brings some negative consequences for them. Firstly, some students indicated that social networks hinder face-to-face socialisation. Secondly, learners reported difficulties in switching-off from technology and from the use of social networks in particular. As mentioned in section 5.6.3.1, these data suggest that the introduction of mobile devices have changed the social dynamics in relation to contactability among peers. The data analysis indicates the presence of social pressure among students to make themselves available on social networks to maintain connections. From a well-being viewpoint, the data concerning on-campus students' use of social networks look controversial. In fact, the use of social networks and of Facebook groups in particular, seem to have a very positive impact on students' perceived support and sense of security (as indicated in section 7.4.1) and on students' mutual motivation as reported above. However, the use of social networks can work also as an obstacle to the development of face-to-face relationships, and also contribute to students developing signs of addiction to technology due to the perceived social pressure to make themselves available online. These controversial findings seem to find confirmation in the literature in the field. In fact, as indicated in the literature review, the relationship between students' use of social networks, development of relationships, self-esteem and engagement appear to be debatable. For example, Kalpidou et al. (2011) found a positive relationship between students' Facebook use, self-esteem and social adjustment to college, but a negative relationship concerning emotional

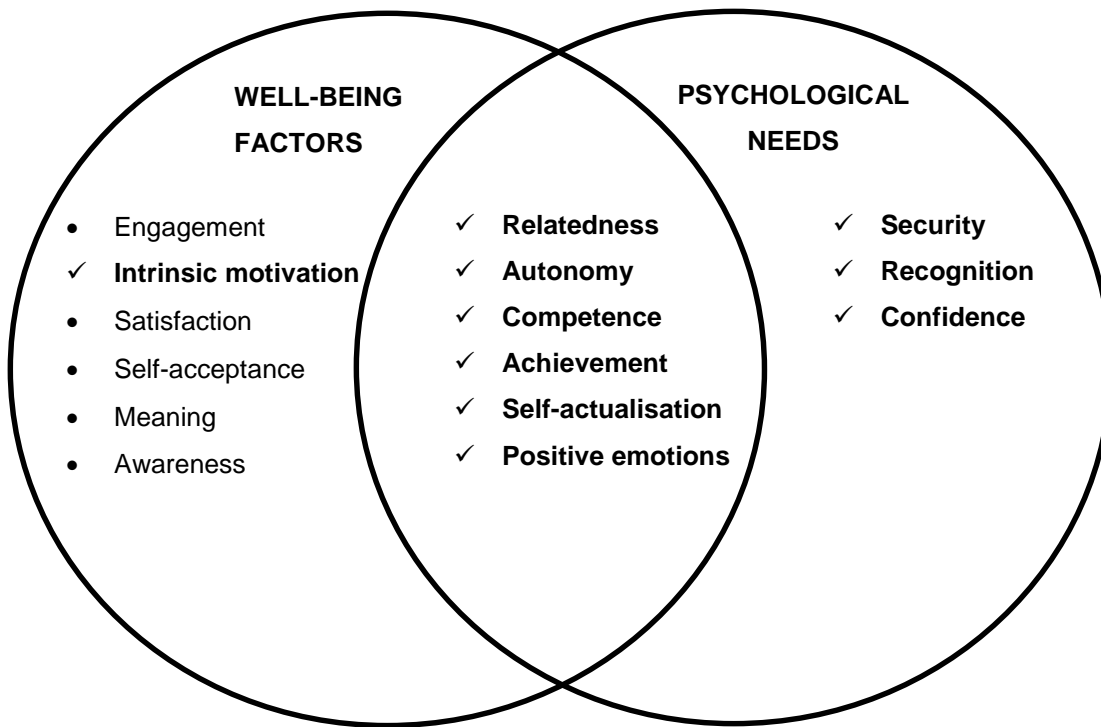
adjustment. In this regard, studies indicated that Facebook facilitates the construction and maintenance of large but impersonal social networks (Manago et al., 2012). Moreover, Facebook is seen as a real source of support for students only when users can dedicate time and energy to maintain close connections with friends (Kim & Lee, 2011). Finally, in relation specifically to engagement, Junco (2012) identified a negative relationship between time spent on Facebook by college students and their academic engagement. In synthesis, also the findings of this research indicate the impossibility of defining clear and straightforward relationships between students' use of social media and well-being evidencing the complexity of the topic.

Regarding online students, some of the learners interviewed indicated peer interaction as an essential source of motivation and as a way to break the isolation of the online learning experience. However, not all the online students involved in the research showed interest in developing significant relationships with peers. As reported in section 5.6.3.2, these differences among online students concerning communication with other students generate important issues in the online learning community, due to the lack of participation in discussion forums and the lack of collaboration among learners. This problem was confirmed by the online lecturers interviewed. They reported that a consistent number of students involve themselves in online interactions only if these are assessed and therefore mandatory. However, also in this case the data collected from academics indicate a lack of coordination among lecturers and evidenced the adoption of different strategies to manage the issue.

7.6 Towards a model of students' well-being

The discussion of the findings suggests that new technologies and ubiquitous connectivity are extensively used by students as a means to satisfy psychological needs. A modified version of the Venn diagram introduced in section 6.4 (Figure 19) is proposed in Figure 23 below. This new version highlights which of the well-being factors and psychological needs identified in the literature can be considered connected to students' experiences with new technologies according to the findings of this research. It can be noticed that all the psychological needs included in the diagram were mentioned in the discussion of the findings and that most of these needs are recognised in the literature also as essential well-being factors.

Figure 23 - Venn diagram of well-being factors and psychological needs related to students' experiences with new technologies



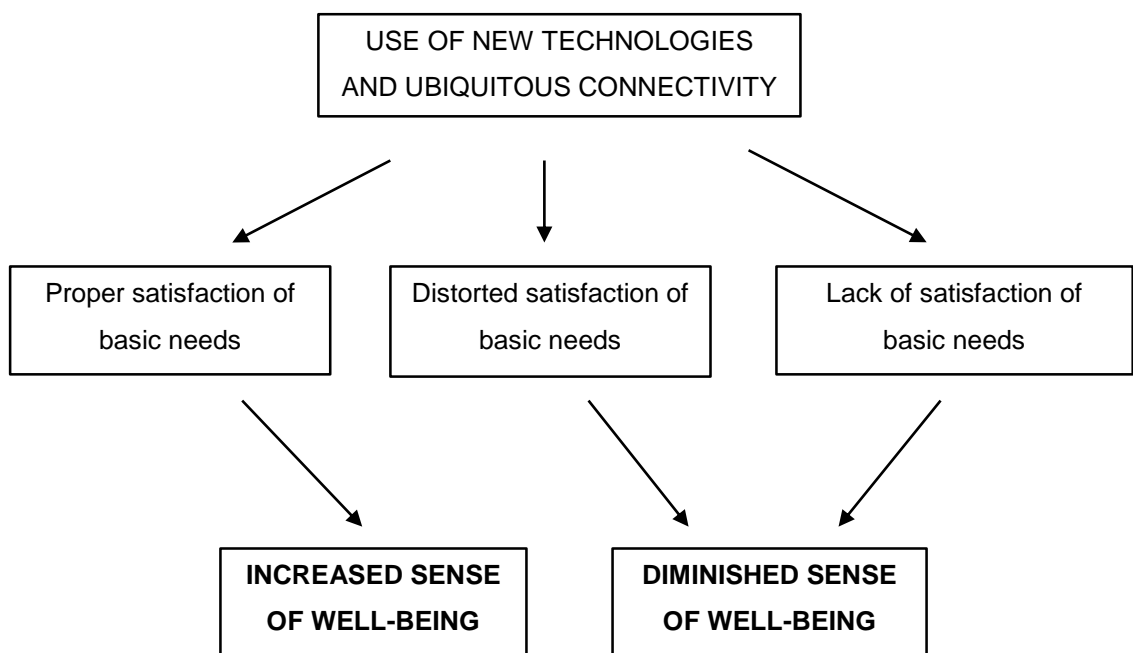
- ✓ **Well-being factors/needs related to students' experiences with new technologies**
- Well-being factors/needs unrelated to students' experiences with new technologies

Some additional considerations can be made concerning the well-being factors that are not included in the list of psychological needs. Firstly, as it was already discussed in section 7.5.1, there is a difference between the term engagement used in literature and the same term used by students and staff members in this research. Secondly, the findings indicate that although students are generally extrinsically motivated by the obtainment of grades, the use of engaging online materials and tools can help them to increase their intrinsic motivation. Moreover, intrinsic motivation can also be increased by lecturers' attention and care especially in regards to online students. Therefore, this factor was highlighted in the diagram to indicate its importance in relation to students' well-being. Concerning the well-being factor "satisfaction", it was suggested in the discussion that when students are considered like customers, their satisfaction can become a potential source of conflict with university educational guidelines. Finally, it is important to underline that no references to the remaining well-being factors (meaning, self-acceptance and awareness) were identified in students' and staff members' narratives. These factors represent the eudaimonic well-being paradigm and they are

typically connected to the concept of human personal growth. This consideration suggests that, although the use of new technologies at university can stimulate some eudaimonic well-being factors (such as relatedness, autonomy and competence), it does not seem to involve some other important aspects of eudaimonic well-being.

An additional consideration can be made concerning how students' psychological needs are satisfied through the use of new technologies and ubiquitous connectivity and the consequences for students' well-being (Figure 24).

Figure 24 – Connections between students' use of new technologies, needs satisfaction and well-being

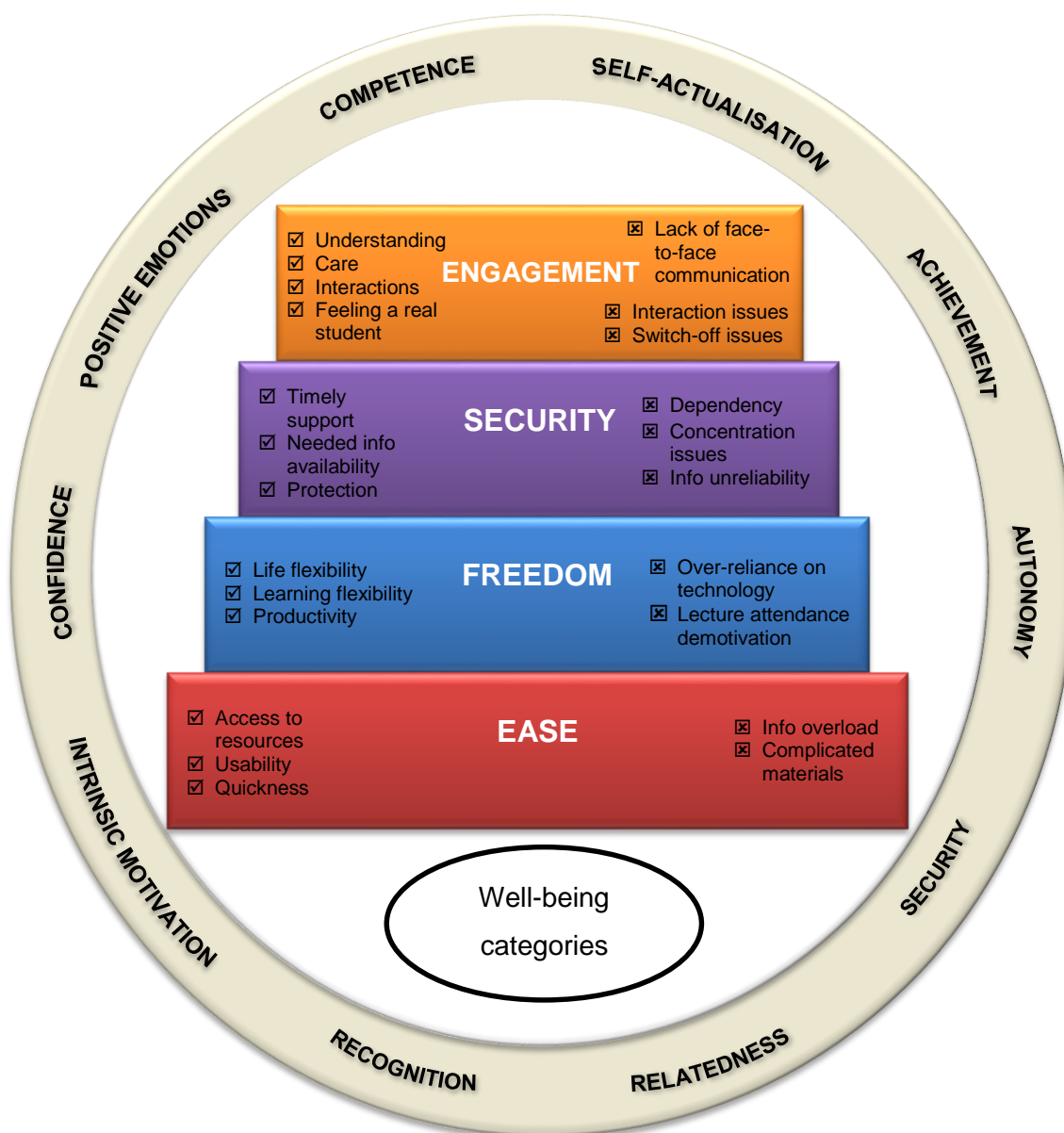


The discussion of the data indicated that new technologies can provide important benefits to students through the proper satisfaction of basic psychological needs, and the promotion of essential well-being factors that contribute to an increased sense of well-being. However, the discussion also suggested that students' attempts to satisfy their psychological needs through the use of new technologies could result in some cases distorted in its practical application and thus contribute to negative consequences for students' well-being. Finally, the discussion evidenced that when the use of new technologies does not satisfy basic psychological needs, it can translate into a diminished perceived well-being for students.

7.6.1 Presentation of the well-being model

The reflections proposed in this chapter were used to construct a students' well-being model concerning the use of new technologies and ubiquitous connectivity in relation to university-related activities (Figure 25). As reported in section 1.5, proposing a model of students' well-being that could be used as a basis for future research was one of the objectives of the research (step 5). The model is meant to synthesise the reflections made in this thesis concerning the relationship between students' experiences with new technologies, psychological needs and well-being.

Figure 25 – Students' well-being model concerning the use of new technologies



Concerning the relationship between this well-being model and the theoretical model presented in Figure 16 (section 5.3), the theoretical model can be considered as a summary and an overview of the grounded theory developed from the data collected in this research. Differently, this well-being model integrates the main elements of the grounded theory presented in chapter 5 with the reflections proposed in the discussion concerning the well-being factors and psychological needs identified in the literature.

The central part of the model is represented by a pyramid made of four levels. Each level refers to one of the four categories emerging from the grounded theory related to students' positive experiences with new technologies that facilitate students' well-being: ease, freedom, security and engagement. The pyramid orders the different aspects of students' experiences from the most basic and essential to the most optional. Moreover, each level summarises the main positive and negative aspects of students' experiences in relation to each specific category.

As explained in the discussion (section 7.2.1) students' sense of ease can be directly related to their acceptance of new technologies. Therefore, this category was positioned at the base of the pyramid as when technologies are considered complicated and not user-friendly they tend to be avoided by users. In this sense, experiencing ease appears to be the most essential aspect of students' experience with new technologies since it defines its acceptance and use. This section indicates that easy and quick access to resources and usability are the key elements that promote students' sense of ease when using new technologies. At the same time the section summarises that students' sense of ease can be undermined when the easy access to resources contribute to students' experiencing information overload and when students interact with complicated and disorganised online resources.

When students' sense of ease is satisfied and learners accept and perceive themselves as competent in the use of new technologies, they immediately appreciate the sense of freedom and **autonomy** provided by ubiquitous connectivity. Therefore, "freedom" was positioned at the second level of the pyramid to indicate the importance that space- and time-independent access to resources has on students' daily university life. This level shows that new technologies and ubiquitous connectivity help students experience a sense of freedom, as these allow for fitting study around life (life flexibility), facilitate space- and time-independent learning (learning flexibility) and stimulate a sense of productivity. However, this section also indicates that ubiquitous access to resources influences students to over-rely on technology generating a sense of dependency that

weakens their autonomy. Moreover, the model specifies that ubiquitous access to resources can potentially be related to students' demotivation in attending lectures.

The third level of the pyramid is represented by students' sense of security. The findings indicated that ubiquitous access to resources plays a basic role in providing students with a sense of security and reassurance as it allows constant access to support and to information. Therefore, students' sense of security can be satisfied only when the conditions indicated in the first two levels of the pyramid are met. This level indicates that students' sense of security is provided by receiving online timely support by academics and peers, by the constant availability of needed information and by the sense of protection provided by the use of social media. This level also specifies that students' sense of security can also turn into dependency when staff support is not well balanced and managed. Moreover, the model shows that the sense of security provided by the stream of information constantly arriving to students' devices can easily generate concentration issues and disrupt students' learning. Finally, the diagram introduces the expression "info unreliability" to indicate that social networks can also contribute to raise students' stress and frustration when becoming a source of unreliable information.

The top level of the pyramid shows that when the criteria of ease, freedom and security are met, technology can help students to develop a sense of engagement with their learning. In fact, online materials and resources can be used to facilitate and increase students' understanding, and ubiquitous technologies can be used by staff to provide learners with attention and care and stimulate students' online interactions. Moreover, the presence of the human element in the use of new technologies can help online learners feel like real students. However, this level also suggests that online interactions can lead to a lack of face-to-face communication for on-campus students, and interaction and collaboration issues for online students. The expression "switching off issues" is indicated in the diagram to specify that online contactability can be related to students' difficulties to switch-off from the use of new technologies.

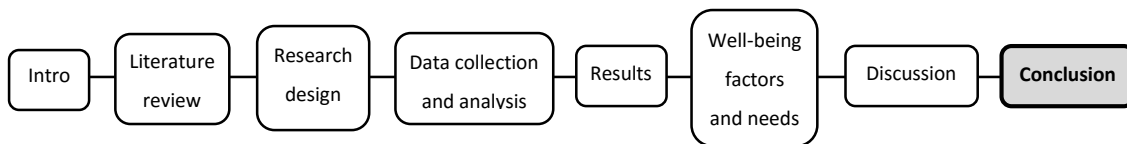
The outer circle of the model connects the four levels of the pyramid with the well-being factors and psychological needs mentioned in the discussion of the findings. This part of the model indicates that students' experiences of ease, freedom, security and engagement in the use of new technologies facilitate students' well-being as these elements are directly connected to the satisfaction of psychological needs. In fact, the outer circle includes all the psychological needs mentioned in the discussion with the addition of the well-being factor "intrinsic motivation" connected to students' sense of engagement. However, as indicated by Deci and Ryan (2000) this factor is strictly related

to psychological needs as intrinsic motivation tends to emerge in students when the needs of competence, autonomy and relatedness are satisfied.

In synthesis, according to the model the relationship between students' use of new technologies and ubiquitous connectivity and their well-being is regulated by four main principles:

- Students tend to experience a sense of well-being when their use of new technologies is associated with four main elements: a sense of ease, freedom, security and engagement.
- These four elements can be ranked from the most basic and essential to the most optional.
- The experience of ease, freedom, security and engagement tend to foster students' well-being as these elements are directly connected to the satisfaction of basic psychological needs.
- Each of the four elements can be associated with positive and negative aspects of students' experiences depending on how these are connected to the satisfaction of their psychological needs (as explained in Figure 24).

The model possesses strengths and limitations that will be presented in section 8.4 when these points will be discussed in relation to the research in general.



8. CONCLUSION

8.1 Introduction

In this final chapter, some recommendations are provided based on the findings of this research (section 8.2). These recommendations represent the final step (step 6) of the research as described in section 1.5. The recommendations include technological, educational and organisational guidelines that could help to improve the quality of students' experiences with the use of new technologies and also provide benefits to staff members. Section 8.3 discusses how this research addressed the quality criteria for grounded theory studies proposed by Charmaz (2014) and the criteria proposed by Lincoln and Guba (1985). Section 8.4 discusses the strengths and limitations of the research and illustrates the theoretical and methodological contributions of this research to the field. In section 8.5 the research questions are reviewed to summarise how they were addressed and answered in this research. Section 8.6 illustrates future studies that could be undertaken starting from the findings of this research to continue the investigation of students' experiences with new technologies and ubiquitous connectivity. Finally, a short summary of the research is provided in section 8.7.

8.2 Recommendations

The considerations provided during the discussion of the results support the central concept emerging from the grounded theory (see section 5.7) that students' well-being in relation to the use of new technologies depends on a delicate balance of different elements. These critical elements include quality of technological infrastructures and tools, staff members' competence in the use of new technologies, lecturers' educational goals, university policies and institutional objectives. The data suggest that working on these elements could help students to obtain a better satisfaction of their psychological needs through the use of new technologies and to increase their sense of well-being. For this reason, the reflections emerging from the discussion of the findings will be used in this section to provide educational guidelines that could increase students' satisfaction

of needs and well-being through the use of new technologies and reduce their negative experiences.

The recommendations proposed in this section have been developed on the basis of the implications that the findings of the research could have for students' and staff' members daily practice. The recommendations are directed to staff and to the university as an institution in general. They include organisational, pedagogical and technological suggestions that could improve students' experience of ease, freedom, security and engagement in using new technologies in their daily activities, and avoid some of the negative experiences identified from this research. Moreover, the implementations of these suggestions could provide some benefits to staff by introducing some standards in the use of new technologies that could facilitate their teaching practices.

8.2.1 Focusing on students' sense of ease

The model proposed in section 7.6.1, suggests that the sense of ease is the most basic well-being aspect of students' experiences with new technologies. As mentioned above, the decision to position the sense of ease at the base of the "well-being pyramid" is grounded on the reflection that experiencing ease in using technologies is essential for technology acceptance and use. Moreover, it is important to underline that the development of technology in society is mostly driven by the desire to simplify, facilitate and quicken human activities. The introduction of technology in universities is not an exception to this consideration. New technologies and ubiquitous connectivity have been implemented in universities to simplify and quicken students' and staff members' daily activities. Therefore, experiencing a sense of ease when performing university-related activities with the help of new technologies should be the norm for students. As suggested by the results of the research, this sense of ease should be based on two main elements: easy access to resources and ease of use. Section 5.6.5.2 reported that difficult access to the VLE and websites in general and disorganised learning materials are potential sources of stress and frustration for students. Moreover, the online and on-campus learning technologists interviewed emphasised the importance of improving the layout of the VLE and usability in general to simplify students' experience.

The importance of focusing on students' sense of ease is also related to two other main considerations. Firstly, as reported in section 1.2.3, it is important to avoid generalisations regarding students' expertise with new technologies. The results of this research seem to support the argument that students' level of knowledge on the use of technology is not necessarily related to their age and that young students' are not

necessarily technology experts. In this sense, focusing on students' sense of ease is also a way to focus on students' inclusion policies concerning the use of new technologies. This reflection is supported by previous studies (i.e. Pretorius & Van Biljon, 2010) that identified a relationship between students' ICT skills, usability of the VLE and learning. A similar concept can be applied regarding students with specific requirements. An example is provided in the data by the online learning technologist:

"...I think it's one of those things, going back to the lecturers themselves never being on the other side of it. If you were leaving aside people who have got specific requirements ...be they are partially sighted or have dyslexia or something. If you have a tutor who is cutting and pasting announcements and they are using different texts and font sizes all on one page, then anybody trying to read that might have trouble and it looks bad..." (Online, learning technologist)

Therefore, concentrating on students' sense of ease does not only mean avoiding complicated website navigation or poor quality of materials to prevent students feeling stressed or frustrated. Focusing on ease also means working on inclusivity, and giving all students the possibility to enjoy the experience of using new technologies at university.

A final consideration regards the risk of information overload for students related to the ease of access to information. In this case, the recommendation for universities is to educate students to the use of new technologies. This does not only require teaching students how to use for example the library search interface and how to access the library database. Focusing on this aspect means also teaching them the basic principles to follow when searching for references and how to distinguish reliable from unreliable and high quality from low quality sources.

8.2.2 Aiming to complete compatibility

The findings of the research indicate that the online students involved were facing difficulties in using their mobile devices to access university resources. On-campus students' struggles with mobile devices appeared less evident in the data, however, they also reported difficulties for example in accessing library resources using mobile technologies. The complete compatibility and accessibility of resources from different devices and from different places is the base of students' time- and space-independent experience that takes them to the sense of freedom as indicated in the findings. Therefore, assuring full compatibility of university resources and the same ease of access to resources from inside and outside the university should be one of the main goals for universities.

As indicated by recent worldwide research published by ECAR (Dahlstrom & Brooks, 2014, p.27) laptop ownership among undergraduate students was around 90% in 2014, ownership of smartphones was 86% and tablet ownership almost reached 50%. These data suggest that creating resources compatible only for desktop computers and laptops has become an anachronistic goal. The data analysis reported that students tend to change device depending on the task they have to perform. However, the data also indicate that students' habits of accessing learning resources from tablets and smartphones helps them to increase their sense of productivity and workflow.

A final consideration on this theme concerns the type of materials produced by lecturers. The data analysis indicated that some of the lecturers involved do not pay much attention to the compatibility of the materials produced:

"...this is a very good point until you said it now I never thought about it because I think subconsciously the assumption is that they would always have a desktop computer somewhere that you're accessing the materials on, but you're absolutely right... they can have a mobile device it might have something I have never seen in my life..." (Online, lecturer 4)

This reflection raises an issue concerning the competences of staff in using technology for learning purposes and the necessity to standardise the tools available to them to assure the full compatibility of the materials produced (see also section 8.2.3).

8.2.3 Setting standards and rules for students' support

One of the most important themes that emerged from the findings concerns students' support. The data highlighted that there is a general lack of coordination among both on-campus and online lecturers regarding how to manage learners' support. Differences concern availability over weekends, speed of reply to requests and tools used to support students (emails, discussion boards, announcements). The data indicated that these disparities tend to confuse students' expectations with a consequent raise of stress and anxiety.

Moreover, specifically in relation to on-campus students, as indicated in the discussion, staff support can play an essential role in balancing students' need of security and need of autonomy. This reflection poses important questions regarding the pedagogical use of online support for on-campus students. As reported in section 7.5.3, the data indicated that lecturers conceive online support as a way to provide attention and care to students. However, data also suggest that an excessive availability offered by lecturers could undermine the development of learners' autonomy. Therefore, the definition of standards

and rules concerning online support should not only regard lecturers' time availability (for example concerning replies to emails during evenings and weekends) and speed of reply to emails and messages. Departmental or university regulations should also include suggestions to staff members concerning the type of help to provide to students and the definition of limits of online support based on pedagogical premises (see also section 8.2.6). Finally, it is also recommended to consider the possibility that there could be different guidelines concerning online students' support for different years of study. It is possible to consider providing first year students with a higher level of online support that could be decreased as students gain a higher level of autonomy with the progress of their academic education.

Concerning online students, the data analysis indicate that quality of support is essential for online learners to facilitate engagement, motivation and to satisfy their need of confidence. Therefore, setting common standards and rules among lecturers appears to be an essential requisite to help students to identify limits and boundaries of support, and to avoid false expectations and consequent negative emotions. The definition of standards and rules would also help online lecturers to define the boundaries of their intervention, and at the same time would ensure the provision of equal treatment and services to all students. The definition of these rules should also include a certain degree of flexibility for lecturers to give them the possibility to adjust some aspects of students' support according to their necessities. Finally, the most important element should be concerned with providing clear communication of these standards and rules to students in order to help them to set realistic expectations about support, and to be able to report in case the agreed standards are not met.

8.2.4 Setting standards and rules for academics' use of technology

Similar reflections to the ones reported in section 8.2.3, can be applied to lecturers' use of new technologies when preparing materials for on-campus and online lectures.

As discussed in section 7.2.2 and 7.5.2, providing good quality materials has a positive effect on students' sense of ease, but it can also have an important impact on their level of engagement. Varying learning materials, using videos, online quizzes, and discussion boards can help students to feel more motivated and engaged with their learning. For this reason, it is recommended to set standards and rules regarding lecturers' use of new technologies in order to provide students' with a comparable experience between different programmes, and to avoid leaving the use of new technologies completely to lecturers' personal initiative. At the same time, it is important to enable lecturers to use

new technologies appropriately. The findings indicated that both the on-campus and online lecturers involved in this research did not receive any official training that could help them to understand and to manage the potential of online learning tools. Previous studies (Larbi-Apau & Moseley, 2012; Smarkola, 2008) indicated that lecturer's use of technology is highly influenced by their beliefs and attitudes concerning the value of technology on learning. In particular, lecturers' positive value beliefs in relation to the use of technologies seem to be related to addressing their own professional needs and students' needs (Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010). Moreover, other key factors that stimulate lecturers' use of technology are the availability of resources and training. These considerations suggest that lecturer's support on the use of new technologies should be based on three main points: helping academics to understand the potential of new technologies in facilitating teaching practices and in addressing students' needs, providing lecturers with adequate technological resources and support, and offering them the necessary training to master the use of such technologies.

8.2.5 Creating interesting lectures and materials

Another important recommendation to academics concerns the preparation of lectures and of online materials in general. The findings indicated that the ease of retrieving online materials from the VLE and from friends could be linked to on-campus students' demotivation in attending lectures. However, the data also suggest that this potential issue is related to the quality of teaching proposed by academics in their courses.

As indicated in section 7.3.3, the literature seems to confirm that the key factor of students' attendance consists in the perceived value of attending lectures (Dineva & Nedeva, 2013). Therefore, on-campus students could feel tempted to miss lectures when they have a low perceived value of attending them. Oppositely, when lectures are perceived by students as a stimulating and engaging experience that goes beyond the dissemination of contents, they tend to be more willing to attend. Therefore, it is important that on-campus students perceive online materials as complimentary and not as a replacement for lectures.

Concerning specifically the preparation of online materials, the data indicated that quality and variety of online materials are directly related to students' engagement. Well-prepared, grammatically correct and full-functioning (in terms of links and layout) online presentations should be the minimum standard required to be provided by lecturers. Moreover, providing engaging materials that include the use of videos is recommended

for both on-campus and online lecturers to foster students' motivation and to facilitate the learning process. Finally, the findings indicated that the possibility of students seeing lecturers in videos has a positive effect on online students' engagement, as this increases their sense of belonging and the feeling of attending a real university. In this case, the recommendation consists in defining minimum standards for online lecturers concerning the use of videos. The implementation of video-lectures would be highly recommended to foster students' engagement. However, if the use of video-lecturers is considered too costly in term of time spent in the production, it is recommended to include video-introductions or video-presentations in online courses made by lecturers as a minimum requirement to facilitate learners' engagement.

8.2.6 Managing communication with students

This section includes recommendations regarding staff's online communication with students in relation to two main critical points which emerged in the findings. The first point concerns the use of the online communication tools provided by the VLE. The use of these tools, for example the possibility to post announcements, has both practical and pedagogical implications for students. The use of online announcements as official means of communication to students has the potential to help them to develop a sense of responsibility by giving value to the communications made by lecturers. If important and official communications are sent to students only through online announcements, learners would need to take responsibility to pay attention to the information sent by lecturers. Oppositely, providing continuous reminders to students, concerning for example assignments deadlines, tends to lower the efficacy and authority of staff communication and to keep students in a position of dependency toward lecturers. In fact, in this case it is unlikely that students would feel the need to remember and pay attention to this type of information as they know that there will always be at some point another reminder provided by lecturers. Therefore, the first recommendation consists in suggesting to staff members that they avoid multiple reminders to on-campus students, and that they use online announcements to send official communications. This will contribute to help students' feel responsible to remember information, instructions and deadlines. Moreover, online announcements are always available to students for the entire duration of the course and can be consulted at any time.

The second recommendation concerns the importance of sending unambiguous information to online students to avoid misinterpretations. As written communication is the main mode of communication between staff and students, it is essential for staff to provide total attention to how they manage their communication to students. This

includes sending clear information and instructions, avoiding colloquialisms or narrative forms that could be misinterpreted by non-native English speakers, sending grammatically and syntactically correct messages, and avoiding sending changes of instructions or plans that contradicts what was communicated previously.

8.2.7 Balancing students' satisfaction and educational goals

The findings of the research seem to indicate that staff members could experience a potential conflict between setting educational goals and focusing on students' satisfaction. As reported in section 5.6.5.3 and discussed in section 7.4.2, the description of students as customers appears in both learners' and staff members' narratives. This aspect can generate difficulties among staff members as educational goals can conflict in some cases with students' satisfaction. Lecturers' struggles in managing students' online support is one of the examples of these difficulties. One of the aspects emerging from the findings is that lecturers involved in this study have to manage students' expectations without the support of any indications or policies provided by the university.

Another important reflection related to this topic concerns the implementation of new technologies by the university. As reported in section 1.2.2 a potential conflict is identified in literature between the necessity for universities to remain up-to-date with the latest technology in order to be competitive in the marketplace, and focusing on how these technologies could have an impact on teaching and learning practices (Njenga & Fourie, 2010; Price & Oliver, 2007). This conflict can translate into lecturers' mistrust toward new technologies or in difficulties in using them to pursue educational goals.

The picture emerging from the findings in relation to the university involved in the research suggests a lack of clarity concerning the distinction between pedagogical and "customer satisfaction" goals that reflects in staff's daily use of new technologies. Moreover, the data suggest the existence of a disjunction between the implementation of technological innovations and the pursuit of pedagogical goals by the university.

In this case, the recommendation is to involve academics more in the choices made by the university concerning the implementation of new technologies, and to provide clear indication to staff regarding how each technological tool provided by the university could be used by them to facilitate the pursuing of educational goals. This could help universities to find an alignment between the necessity of offering cutting edge technology to satisfy students, and providing staff with tools that could facilitate their daily teaching practices.

8.3 Addressing quality criteria of the research

Defining quality criteria in qualitative research is an issue first and foremost related to the paradigms applied. As indicated by Willig (2001) validity, reliability and generalizability are usually good criteria to evaluate studies within the positivist or post-positivist paradigm but they become problematic when they are used with research embracing interpretivism or constructionism. In fact, the nature of the underlying reality defined by each paradigm plays an essential role in defining what criteria can be applied.

Concerning the criteria of validity, Finlay (2006) affirmed that since validity "... refers to the degree to which research truly measures what it was meant to measure (p.4)", this criterion can only be applied to research embracing a positivist or post-positivist paradigm that claim the existence of an underlying objective reality. Merriam (1995) recognises the problem of using validity in qualitative research by affirming that in these studies reality is not pre-determined but it is constructed and multi-dimensional where the role of the researcher is offering his or her interpretation about other peoples' interpretations of reality.

Similarly, according to Finlay (2006) the concept of reliability, that concerns the repeatability of measures, assumes that reality does not change through time and that therefore researchers should obtain the same findings if data are collected under the same conditions in different moments. Differently, qualitative research starts from the opposite assumption that situations can never be exactly replicated. In relation to reliability, Merriam (1995) affirmed that peoples' understanding of the world changes day after day and human behaviour is never static. Therefore, the concept of reliability loses its sense in this the context of qualitative research.

Concerning generalizability, Finlay (2006) asserts that this is not usually an objective that qualitative research tries to pursue as qualitative studies focus on how "... findings can be transferred and may have meaning or relevance if applied to other individuals, contexts or situations" (p.5). Willig (2001) offers a contribution to the discussion in relation to generalizability affirming that representativeness of population is not an issue for research focusing on specific case studies or on internal dynamics of organisations. In other research, where studies aim to extend the findings to a wider population she suggests that accumulative techniques can be applied within and across studies. Accumulative techniques "within studies" concern comparing different observations made in different contexts. To apply these techniques "across studies" means reviewing comparable studies in order to integrate the findings and to draw wider conclusions.

In relation specifically to grounded theory, Charmaz (2014, p.337) proposed some specific quality criteria that can be applied to evaluate the quality of constructivist grounded theory studies: credibility, originality, resonance and usefulness.

Appendix O reports an extract from Charmaz's book that presents some of the questions that researchers should ask to ensure they are addressing the criteria proposed by the author. In relation to these criteria, this is how quality was assured in this grounded theory study:

Credibility: this research conducted a deep investigation of students' experiences with new technologies in a UK university. The study is grounded in a wide amount of qualitative data collected from different types of students and staff members. Different data collection methods were used and data were analysed following the procedures suggested by constructivist grounded theory. The categories proposed in the grounded theory were defined after an intense and accurate process of data analysis. Finally, the description of each category and sub-category was supported by participants' quotes to ensure the existence of a strong link between the data collected and the categories defined. In synthesis, credibility has been assured in the research by collecting a consistent amount of data from different sources using different methods. Moreover, the data collected underwent a solid data analysis procedure to ensure that the phenomena was accurately investigated and that the grounded theory proposed was strongly linked to the data.

Originality: the originality of the research is ensured by the innovative perspective adopted concerning the investigation of students' experiences with new technologies. The analysis of students' positive and negative experiences and the involvement of staff members has offered insight into the complex psychosocial dynamics between students and staff concerning the use of new technologies. Moreover, the research offered an original theoretical contribution concerning the relationship between students' experiences with new technologies, well-being and satisfaction of psychological needs.

Resonance: the categories and sub-categories proposed in the research covered many aspects of students' experiences with new technologies with particular attention to social and psychological implications for students. The main positive and negative elements of students' experiences considered linked to their well-being were presented and discussed in focus groups to confirm the relevance of the findings from the students' perspective. Moreover, the involvement of staff members through one-to-one interviews allowed this study to discuss and confirm the importance of the research topic in staff members lives.

Usefulness: The grounded theory and the well-being model illustrated in the research have many implications for students' and staff members' daily practice. Some of these implications were used to propose practical recommendations that could contribute to improve students' and staff's quality of experiences in relation to the use of new technologies. Moreover, the well-being model constructed from the findings of the research could be utilised as a base for future research investigating how students' well-being can be improved when new technologies are used to satisfy learners' psychological needs.

In addition to the criteria proposed by Charmaz, this research can be evaluated also in relation to the criteria introduced by Lincoln and Guba (1985) to ensure trustworthiness in "naturalistic" research: credibility, dependability, transferability and confirmability.

The criteria described here below are compared by the authors to those usually used in quantitative enquiries:

Credibility replaces the concept of internal validity and it regards how researchers assured that they have accurately studied the phenomena (Shenton, 2004) and that they have confidence that data were interpreted accurately (Carboni, 1995).

Reliability is replaced by *dependability* that, instead of assessing if the results are consistent along different studies, it evaluates whether the results of the study are consistent with the data collected (Merriam, 1995).

Transferability substitutes generalizability encouraging researchers to describe the setting where the research is conducted to help other researchers to understand if the findings can be applied to different settings (Finlay, 2006).

Finally, *confirmability* replaces the concept of objectivity and encourages researchers to conduct a reflective analysis of the methodology used in the research and of the role played by the research in data collection and analysis.

The first two criteria (credibility and dependability) can be enclosed in the criteria of credibility proposed by Charmaz. In fact, as indicated by the questions proposed in appendix O, the author defines credibility as a criterion to ensure both the accuracy of the study and the existence of a logical link between the data collected and the arguments proposed during data analysis. Therefore, these criteria will not be further discussed. Concerning instead the criterion of transferability, this aspect will be discussed in the next section where the strengths and limitations of the research will be presented. Finally, regarding the criteria of confirmability, the role of the researcher as

co-producer in grounded theory (Mills et al., 2006), and the fact that the findings of the research are considered a co-construction between the researcher and the participants of the research have been extensively discussed in section 3.6.3 and 3.7.

8.4 Strengths and limitations of the research

The research has many strengths and some limitations that will be described in the next two sections.

8.4.1 Strengths

Concerning the strengths, this study proposes an original contribution to knowledge by introducing some innovative methodological elements. The first element of originality is the use of constructivist grounded theory to investigate students' well-being in technology-mediated learning environments. As described in section 2.3 most of the studies exploring students' well-being in relation to the use of new technologies adopted a quantitative approach to test existing well-being theories and models. Moreover, in relation specifically to grounded theory, the research presents some points of originality in the extensive use of diagrams and in combining the constructivist grounded theory methodology with elements of situational analysis (see section 4.2.3). Concerning the participants' sample, another element of originality is given by the inclusion of different type of participants in the research (students, academics, tech support, administrators and librarians) that allowed the research to collect different viewpoints on the topic of investigation.

From a theoretical perspective, the research included an in-depth work of comparison of well-being and need theories and models that allowed the identification of the main well-being factors and psychological needs mentioned in the literature. This work led to the development of a Venn diagram and a well-being/needs table (section 6.4) that could be used for future studies.

Finally, the findings of the research included in the grounded theory developed were linked to the Venn diagram and the well-being/needs table to generate a model of students' well-being in relation to the use of new technologies and ubiquitous connectivity (section 7.6.1). The model was constructed after an in-depth qualitative analysis of on-campus and online students' experiences and it can, therefore, be considered as being consistently grounded in the data. Moreover, although presenting some necessary simplifications, the model provides an original perspective on students' experiences with

new technologies by capturing the complex relationships between positive and negative elements of students' experiences, psychological needs and well-being.

8.4.2 Limitations

The main limitation of the research and of the model generated from the findings is related to its applicability outside the confines of the university that provided the data for this research. In fact, as indicated by Charmaz and Bryant (2010), in contrast with the classic version of grounded theory (Glazer & Strauss, 1967; Glazer, 1978), constructivist grounded theory does not aim for generalisation but aims for “interpretative understanding and situated knowledge” (Charmaz, 2010, p.409). That is, grounded theory recognises that the research process and the outcomes of the research are located in a specific historical, social and situational context. Moreover, according to constructivist grounded theory, the findings of the research are considered a co-construction between the researcher and the participants of the research. Consequently, the grounded theory and the model presented in this study need to be considered as a construction of the researcher based on the analysis of the data. However, the research tried to partially address the quality criteria of transferability (section 8.3) by offering a detailed description of the setting where the research was conducted, to help other researchers to understand if the findings could be applied to different settings. Moreover, to increase the transferability of the findings the type and number of students involved in the research was extended in the last phase of data collection (phase 5, section 4.1.6), by including learners enrolled in different courses at the same university.

In relation to this aspect, as explained in the next section, the main objective of future research could consist of utilising a quantitative approach to validate the model proposed in section 7.6.1.

8.5 Reviewing the research questions

This section will review the research questions introduced in section 1.3.2 to clarify how these were addressed and answered in this study:

Q1: What are the highs and lows of on-campus and online students' experiences with new technologies and ubiquitous connectivity and how do these experiences affect students' sense of well-being?

The answer to Q1 is explored in particular in the chapter 5 and it is summarised in the grounded theory theoretical model proposed in figure 16 and in the summary of the

grounded theory provided in section 5.7. In synthesis, the findings indicate that the highs of students' experiences are linked to the fact that new technologies help learners to experience a sense of ease and freedom and to make them feel secure and engaged in their daily activities. The findings also illustrate that the negative aspects are mainly linked to the difficulties in managing the amount of information available and communications, and to students' expectations on quality of technology, resources and support.

Q2: What is the role of staff members in influencing the quality of students' experiences with the use of new technologies and ubiquitous connectivity?

The results indicate that staff members play an important role in influencing the quality of students' experiences. The most important aspects emerging from the findings are related to how staff members use new technologies to manage students' support (sections 5.5.5.1, 5.6.5.3 and 7.4.1) and students' engagement (sections 5.5.7, 7.5.2 and 7.4.3).

Q3: How do interactions and dynamics between students and staff with new technologies influence students' well-being?

This question is strictly related to Q2. The findings illustrate how the support provided by staff through the use of new technologies influences students' feelings of security (section 5.5.5.1) and the related pedagogical implications (section 7.4.1). Moreover, reflections were made concerning the relationship between staff support, students' expectations and students' satisfaction (sections 5.6.5.3 and 7.4.2). Interactions and dynamics between students and staff emerged to be important also in relation to students' engagement. In particular, sections 7.5.2 and 7.5.3 discussed the importance of the quality of online materials and activities and of the human element in influencing students' engagement, confidence and motivation.

Q4: What are the main factors related to students' well-being emerging from the research?

The main factors are described during the presentation of the categories and sub-categories identified in the grounded theory. Students' well-being appears to be connected to the ease and quickness in accessing resources and the ease of use of technological devices, online contents and materials. Other important factors are related to the sense of freedom provided by new technologies and ubiquitous connectivity. The findings indicated that students appreciate the possibility to fit their study around their

personal life, to manage their learning spaces and to use new technologies to increase their workflow and sense of productivity. In addition, students' well-being is positively associated with the possibility to use new technologies to receive timely support, accessing all the needed information and feeling protected. All these factors contribute to enhancing students' sense of security. Finally, quality of online materials and quality of online interactions with staff members and peers are positively related to students' well-being as these elements contribute to enhance students' sense of engagement.

Q5: How do these factors relate to existing well-being theories?

In chapter 7, the factors related to students' well-being, included in the grounded theory categories, were discussed in light of existing well-being and need theories. Ten well-being factors and psychological needs were identified in the discussion as related to students' use of technology: competence, self-actualisation, achievement, autonomy, security, relatedness, recognition, motivation, confidence and positive emotions. During the discussion these well-being factors and needs were related to the categories and sub-categories identified in the grounded theory to explain how these are connected to students' well-being.

Q6: How could the findings of the research and the comparison to existing well-being theories inform a model of students' well-being in relation to their everyday use of new technologies?

A model of students' well-being in relation to students' daily use of new technologies is presented in section 7.6.1. The model connects the categories illustrated in the grounded theory to the well-being factors and psychological needs identified in the literature and mentioned in the answer to the previous question.

Q7: What are the guidelines and suggestions that could be provided, in light of the outcomes of the research, to increase students' well-being in relation to the use of new technologies and ubiquitous connectivity in Higher Education?

Concerning this final question, recommendations including organisational, pedagogical and technological suggestions, were provided in section 8.2 on how to increase students' well-being in relation to the use of new technologies in light of the findings of the research.

8.6 Future research

A possible continuation of this research would consist in testing the validity of the well-being model developed (section 7.6.1) on a large scale by involving online and on-campus students belonging to different universities. As the model contains different assumptions concerning students' well-being in relation to the use of new technologies, these would need to be tested separately.

What follows is a possible indication for future research on how to proceed with the validation of the model in different phases:

Phase one: Four main categories emerged in this research as associated with students' well-being when using new technologies. The model asserts that students tend to experience an increased sense of well-being when the use of new technologies is associated with experiencing a sense of ease, freedom, security and engagement. A first preliminary phase could consist of using the online qualitative survey proposed in this research (appendix E) on a larger scale with students enrolled on different university courses. This would allow the research to confirm the assumption that ease, freedom, security and engagement are the main elements of students' experiences connected to their sense of well-being when using new technologies and to exclude the presence of other significant elements.

Phase two: once the relevancy of the four basic well-being categories of the model have been established, multiple regression analysis could be used to examine which of these categories are considered by students as being more important for their own well-being in relation to the use of new technologies and to evaluate possible interactions between different categories. In order to reach this objective, a questionnaire could be built presenting a number of sentences representing the four main categories. Every sentence, exemplifying a specific category, would be directly extracted from students' qualitative data preventing the researcher from using his own constructions to create the questions.

Participants would be asked to rate how much they recognise themselves in every sentence (or how much every specific element is important for them) using a rating Likert scale.

Alternatively, students could be asked to rank different sentences by importance in relation to their personal experiences with new technologies. This would allow the

research to establish if, as asserted by the model, the four elements can be ordered from the most basic and essential to the most optional in students' daily experiences.

Phase three: the model affirms that students perceive an increased sense of well-being when experiencing ease, freedom, security and engagement as these four categories are connected to the satisfaction of psychological needs. The goal of this phase would consist in verifying the connections between the four well-being categories of the model and the psychological needs indicated in the outer circle. In order to reach this goal, a set of sentences linking the four categories with underlying psychological needs would be submitted to students. For example, to verify the validity of the connection between students' sense of ease and their need of confidence an example of a sentence would be: "... the ease of using new technologies to access online resources helps me to feel confident in my learning process". As in the previous phase, participants would be asked to rate how much they recognise themselves in every sentence using a rating Likert scale.

Finally, once the validity of the model is established the next step would consist in testing it in practice by helping a specific university to set-up a technology-mediated learning environment based on the principles proposed by the model, and to monitor students' perceived sense of well-being while attending a specific course by recording students' positive and negative experiences.

Another potential area of future research could consist in adapting the model to identify the necessities of specific groups of students such as on-campus, online and mature learners. In this case, the three phases described in this section would be applied to particular groups of students to generate variations of the model for each group.

8.7 Summary

To conclude and synthesise the arguments proposed in this research, this study consisted of conducting an innovative project that connected students' experiences with new technologies and ubiquitous connectivity in university-related activities to their sense of well-being. Differently from previous research, this study was not focused on investigating mental health related issues. Moreover, the research did not test existing well-being theories but adopted a qualitative approach to allow positive and negative elements of on-campus and online students' experiences related to their sense of well-being to emerge from the findings. Constructivist grounded theory methodology allowed the identification of four main categories of meaning connected to students' sense of

well-being that were compared to existing well-being and need theories and models. This comparison allowed to theorise that students' sense of well-being when using new technologies is increased when such technologies help them to satisfy basic psychological needs. These reflections led to the development of a well-being model in relation to students' use of new technologies that represents the main contribution to knowledge of this research and that is intended to be tested and validated in future research.

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APPENDIX

Appendix A – Summary table of well-being factors proposed by well-being theories

SUMMARY TABLE OF WELL-BEING FACTORS (part 1)	
Subjective well-being (SWB - Diener et al. 1998)	
Positive affect (emotions)	experiencing many pleasant emotions and moods), and low levels of negative affect (experiencing few unpleasant emotions and moods)
Satisfaction	life satisfaction (global judgments of one's life), satisfaction with important domains (e.g., work satisfaction)
Theory of flow (Csikszentmihalyi, 1990)	
Flow	Intense and focused concentration on what one is doing in the present moment, merging of action and awareness, loss of reflective self-consciousness, a sense that one can control one's actions, distortion of temporal experience, experience of the activity as intrinsically rewarding
Autotelic personality	a person who generally does things for their own sake rather than in order to achieve some later external goal
Self-determination theory (SDT - Deci & Ryan, 2002)	
Competence	feeling effective in one's ongoing interactions with the social environment and experiencing opportunities to exercise and express one's capacities
Relatedness	being connected to others, caring and being cared for, having a sense of belongingness with individuals and community
Autonomy	being the perceived origin or source of one's own behaviour
Intrinsic motivation	the pursuit of an activity for its inherent interest or enjoyability
Awareness	being mindful and acting with a sense of awareness

SUMMARY TABLE OF WELL-BEING FACTORS (part 2)	
Psychological well-being theory (PWB – Ryff, 1989)	
Self-Acceptance	positive evaluations of oneself and one's past life
Personal Growth	a sense of continued growth and development as a person
Purpose in Life	the belief that one's life is purposeful and meaningful
Positive Relations with Others	the possession of quality relations with others
Environmental Mastery	the capacity to manage effectively one's life and surrounding world
Autonomy	a sense of self-determination
Personal expressiveness (PE – Waterman, 1990)	
Intrinsic motivation	an impression that this is what the person was meant to do
Engagement	Intense involvement
Self-realisation	a feeling of completeness and fulfilment, a feeling that this is who one really is
PERMA model (Seligman, 2011)	
Positive emotions	positive emotions are an essential part of our well-being. Happy people look back on the past with gladness; look into the future with hope; and they enjoy and cherish the present
Engagement	When we focus on doing the things we truly enjoy and care about, we can begin to engage completely with the present moment and enter the state of being known as 'flow'
Relationships/social connections	building strong relationships with the people around us - family, friends, co-workers, neighbours
Meaning	We are at our best when we dedicate time to something greater than ourselves. This might be religious faith, community work, family, politics, a charity, a professional or creative goal
Achievement	Everyone needs to win sometimes. To achieve well-being and happiness, we must be able to look back on our lives with a sense of accomplishment: 'I did it, and I did it well'

Appendix B – Methodological approaches considered for the research

INTERPRETATIVE PHENOMENOLOGICAL ANALYSIS (IPA)

Phenomenology, can be defined as the study of “being” (of existence and experiences) (Larkin & Thompson, 2012) and it focuses on the *phenomena* that appear in our consciousness when we interact with the external world (Willig, 2001). Two main traditions can be traced in the history of phenomenology. The original transcendental phenomenology introduced by Husserl and a later revision called hermeneutic phenomenology. The transcendental approach affirms that it is possible to transcend presuppositions and biases and to describe phenomena as they present themselves to people’s consciousness (Willig, 2001) independently from cultural, contextual and historical elements. Instead, hermeneutic phenomenology emphasises the fact that all our experiences are situated and that the experiencing of phenomena depends on people’s meaning making that is influenced by social, cultural and historical perspectives.

Interpretative phenomenological analysis is, along with descriptive phenomenology, one of the main methodological approaches used in psychology deriving from the phenomenological philosophy.

Interpretative phenomenological analysis embodies the principles of hermeneutic phenomenology. Its aim is to explore in detail how participants make sense of their personal and social world by investigating the meanings that people give to particular experiences, events, and states (Smith, Flowers, & Osborn, 1997). Unlike descriptive phenomenology that derives directly from the transcendental tradition, IPA accepts the impossibility of gaining direct access to research participants’ life worlds. Interpretative phenomenological analysis aims along with the descriptive approach to capture in data analysis the quality and texture of the phenomena experienced by individuals. However, it recognises at the same time that such experiences are never directly accessible to the researcher (Willig, 2001). From an epistemological perspective, IPA embraces the interpretivist paradigm by recognising that the researcher’s attempt to make sense of people’s personal world is an interpretative activity (Smith et al., 1997). Therefore, researchers need to be able to reflect upon their own experiences and assumptions and on their role in producing their interpretations (Larkin & Thompson, 2012).

DISCOURSE ANALYSIS

This approach sees as reference points Wittgenstein’s philosophy (Wittgenstein, 1953), Austin’s speech act theory (Austin, 1975) and Foucault’s body of work on discursive practices (Foucault, 1980). Discursive analysis challenges the cognitive assumption of the representative nature of language. The constructivist ontological premises of this approach contrast the idea that the verbal expression of people’s beliefs and attitudes provide information about the representation of the world that resides in their minds (Willig, 2001). Unlike previous cognitive traditions, language is seen as productive instead of representative. One of the focuses is on how people utilise language to take actions within specific social contexts. Language is considered to

have a double nature: a constructive nature because social reality is constructed by language itself and a productive nature because it is used to obtain social objectives (Willig, 2001).

Ontologically, this approach embraces the social constructionist view that events are constructed using language; therefore, there is an infinite number of ways to construct reality.

In literature, it is possible to find many different approaches in discourse analysis (Wetherell, Taylor, & Yates, 2001; Willig, 2001; Jørgensen & Phillips, 2002). The approach that was considered for this study is Foucauldian discourse analysis. Foucauldian discourse analysis is inspired by the works of Foucault and of other authors (i.e. Harré & Gillett, 1994), and it looks at how people construct their own identity in a social context and how social life is socially constructed. As reported by Willig (2001) Foucauldian analysis investigates in particular how people's discourses construct subjectivity, selfhood and power relations.

NARRATIVE ANALYSIS

Riessman (2002) defines narrative analysis as "...a family of approaches to diverse kinds of texts, which have in common a storied form" (p.1). This approach typically emphasises subjectivity and reject the objectivist and mechanistic assumption of the positivist paradigm (Smith, 2000).

Narrative analysis is used in many different contexts (such as linguistics, psychology, anthropology and sociology) and with many different paradigms (such as structuralism and post-structuralism, hermeneutics, interpretivism and social constructionism) (Smith, 2000).

In psychology, narrative analysis starts from the assumption that every human being tends to organise their personal accounts in a narrative form. As Mc Adams (1993) wrote "...we are all tellers of tales... we each seek to provide our scattered and often confusing experiences with a sense of coherence by arranging the episodes of our lives into stories" (p.11). Similarly, Bruner (2004) affirmed that "world making" is the main function of the mind. His conception of narrative analysis embraces the constructivist assumption that people are not using narratives to make sense of the world but to construct these worlds in their heads. From this point of view narrative analysis can be considered having a privileged perspective about how social reality is constructed, about how people construct their sense of identity and about how they give meaning to their lives.

PERSONAL CONSTRUCT ANALYSIS

Personal construct analysis descends from the personal construct psychology founded by Kelly in 1950s. The main postulate of his theory is that: "A person's processes are psychologically channelized by the ways in which he anticipates events" (Kelly, 1955). Kelly did not discuss the existence of reality, as radical relativists do, but he affirmed that objective reality is a myth and that every person creates its own subjective reality in order to understand the world around them.

People are considered as scientists, always absorbed in the act of building and refining theories about the world. All these theories are built up from a system of constructs.

People use "constructs" to categorise the people and situations they encounter, in order to make sense of the world and to anticipate events. Every person has a different structure of constructs, because there are always different ways to interpret or give meaning to any event.

The main characteristic of constructs is their bipolar nature. Unlike concepts, constructs are cognitive structures defined by two poles like "good-bad" or "stressed-relaxed". Every side of the pole can exist just because the person creates an antinomy in its mind. Choices and behaviours depend on which constructs we use to give sense to our reality and to anticipate events and on where we position ourselves, others and events within the two poles of a construct.

Personal construct analysis can be used to investigate and discover people's personal constructs in relation to specific contexts. This helps to understand what categories people use to give meaning to events and to take actions.

Appendix C – Example of informed consent form used in this study

PARTICIPANT INFORMED CONSENT FORM

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

The main purpose of this study is to investigate students' experiences in online learning contexts and to analyse positive and negative aspects of studying with the help of technology.

You have been chosen because you are a (name of the university) staff member and your Job profile matches with one of these positions: lecturer, tutor, demonstrator, administrator, learning technologist, tech support, librarian.

Your participation is voluntary and you may withdraw your participation at any point of the study.

You will be interviewed by the researcher, Michele Salvagno. The interview will be audio recorded and it will take approximately 30 to 45 minutes. You will be asked questions related to your perspective about students' experiences with the use of technology in online environments.

The interview will be audio recorded and then transcribed onto computer. The audio records and transcriptions will be stored securely and protected from intrusion. The audio records will be destroyed at the end of the study. Your response will be treated with full confidentiality. You can request a copy of the interview transcript if you wish. The data gained from the interview will be analysed by me, Michele Salvagno. The results will be included in my PhD thesis, they may also be published in peer reviewed journals and conference presentations. All the data will be published anonymously and no research participant will be identifiable from any publications.

If you have any questions about this study, please contact me, Michele Salvagno, by email (...)

I give my informed consent to participate in this study. I have read and understand the consent form.

Participant	Signature	Date
Researcher	Signature	Date

Appendix D – Example of participant debrief form

PARTICIPANT DEBRIEF FORM

Thank you for taking part in the interview. The purpose of this study is to learn more about highs and lows of students' experiences in ubiquitous online environments. The final aim of the research is to construct a theory of students' well-being in online environments with a specific focus on how students deal with ubiquitous connectivity (i.e. the possibility to have access to people and information every time and everywhere).

The theory will be constructed comparing students' and staff members' perspectives about learners' preferences and needs in ubiquitous online environments. These data will be used to give pedagogical suggestions about how to improve students' experiences in this field.

If you have any questions about this study, please contact me, Michele Salvagno by email (...)

Appendix E - Students' qualitative survey (Phase 1)

First part

- What is your gender?
- What is your age?

- Which year of study are you currently in?
 - 1st year undergraduate
 - 2nd year undergraduate
 - 3rd year undergraduate
 - Postgraduate

- In general, how confident do you feel with using technology (i.e. using your computer, laptop, tablet or smartphone, using internet browsers and some common application like email or MS Word)? (1. Not confident at all - 5. Totally confident)

Second part

- From your personal experience with using technology in learning (see the previous page), can you describe one or more positive situations or aspects that you faced?

- Could you explain why you considered the experience positive?

- From your personal experience with using technology in learning, can you describe one or more negative situations or issues that you faced?

- Could you explain why you considered the experience negative?

- Modern technologies and the internet give you the possibility to study in a ubiquitous environment (i.e. the possibility to access information and interact with students and lecturers from any place and any time of the day).
 - Regarding this specific aspect, could you give some practical examples about how this "ubiquitous environment" affected your life as a student in a positive or negative way?
 - Positive: ...
 - Negative: ...

- In general, how did this experience of using technology in learning make you feel?

Third part

- How important do you consider the following people for the quality of your online learning experience? Please rate them from 1 (not so important) to 5 (very important)
 - **Lecturers, Professors or Demonstrators**
 - **Online tutors** (people that help you manage your online activities and that can help you when you have a doubt or problem with your course. In some cases, it could be your professor or demonstrator, in other cases a different person such as an assistant)
 - **Technical support** (people whom you ask for help when you have technical issues, for example when you don't have internet access or when you cannot login to an online forum or to the VLE)
 - **Administrators** (people that you contact for your administrative duties, for example when you need help with assignment extension/submission)
 - **Librarians**
 - **Other students** (that are attending your unit)
 - **Content providers** (people that created the content of your learning course and that provided the material like slides, articles or videos. In some cases it could be your professor or demonstrator, in other cases an external person)
 - **Learning technologists** (people that designed, implemented and or developed the online environment that you are using such as the VLE or your online forum platform)
- If you were asked to give some advice to the people named above to improve online learning activities, what would you suggest?

Appendix F – Students' interviews questions (Phase 2A)

Frist part

- Could you describe which technological devices (such as smartphones, laptops, tablets or computer desktop) do you usually use that could be somewhat related to your learning experience?
- Could you give me some examples about how you use technology during a typical day and a typical week at the university?

Second part

- What are in your personal experience the most positive and negative aspects of using new technologies in your daily life at the university? Can you provide some examples? How did this make you feel?
- What are in your personal experience the most positive and negative aspects of studying in a fully connected environment? Can you provide some examples? How did this make you feel?
- If you have to provide suggestions regarding how to improve the quality of students' experiences with new technologies and ubiquitous connectivity at the university, what would you say?
- If you were in charge to decide how new technologies and online services are implemented at the university what improvements and changes would you suggest? Why?
- Which do you think are the most important ingredients of a successful experience with the use of new technologies at the university? Why?

Third part

- Could you describe you experience about online collaborations with other students?
- Could you describe your experience about your online interaction with your lecturers/tutors?
- What is your opinion about (the university VLE)?
- Do you use also discussion boards, smartphone applications or Facebook groups to communicate with each other?
- (For online students) how does the use of new technologies in learning influence your work-life balance?

Appendix G - Staff members' interviews questions (Phase 2B)

First part

- Could you describe in a few words which of your duties and tasks include activities related to online learning and/or on-campus learning at the university? (*On-campus and online lecturers*)
- Could you describe in a few words which of your duties and tasks include using technology (email, VLE, chat, blogs, forums, websites...) to interact with students? (*Support staff members*)

Second part

- In relation to the tasks and duties identified above, which aspects of your job do you consider particularly important in helping students to have a positive experience and to avoid negative experiences? Could you provide some practical examples?
- Modern technologies and the internet give students the possibility to learn in a ubiquitous environment (i.e. the possibility to access information and interact with other students or staff members from any place and any time of the day). Are there particular approaches or behaviours that you adopt to help students have positive experiences in this specific aspect of their learning experience?
- If you were to receive positive or negative feedback from a student regarding their ubiquitous online experience, which aspects of your approach to your duties and tasks would you expect them to highlight?

Third part

- Are there specific emotional states, or needs of students that you consider when you interact with them with the use of technology?
- Are there specific attentions that you adopt when you have online synchronous or asynchronous communications with students?
- Are there specific students' requests or behaviours when they attend online or blended learning units that you don't think it is useful to fulfil or encourage for their own well-being? (*On-campus and online lecturers*)
- Are there specific requests or behaviours from students that you don't think are useful to fulfil or encourage for their own well-being when they interact with you with the use of technology? (*Support staff members*)
- If you were asked to give suggestions to foster students' well-being when attending online or blended learning units what would you say? (*On-campus and online lecturers*)
- If you were asked to give suggestions to foster students' well-being in relation to your duties and tasks that involve the use of new technologies, what would you say?

Appendix H – Quotes selected by students in phase 4 as related to well-being and divided by well-being areas

Experiencing sense of ease and freedom

- "Technology changes lives, it has given me ample opportunity to "google" any queries I may have. A mobile phone has given me freedom, and helps with social lives and heaps of other things. A laptop to help with uni work. And much more. I learn a lot, have more freedom, more control, easy access to all information"
- "Things like (the VLE) and researching journals online helped greatly. The use of social media made things a lot easier, in some ways sites such as Facebook are a revelation when studying. It made learning a lot easier, communication is fast and effective and it gives you new skills such as research as well as communication."
- "...if I'm ill, I can work from home...I can access lecture materials and revision materials from home instead of up and moving all my work from one place to another...If I'm having trouble, lecturers are only an email away, and they are surprisingly quick at replying...Writing essays the night before hand-in is possible as all the materials are readily available online or on (the VLE)"

Experiencing flexibility

- "I am in full time employment and am studying via the on line course. Without the IT/remote learning I wouldn't have been able to take the course."
- "Makes learning flexible and has meant that I can work & look after my children."
- "Can access materials and complete work at odd times of the day. Chat with interesting people who also want to learn."
- "I had the possibility to plan my studies much better so I could balance it together with work."

Feeling supported or unsupported

- "Because technology is normally so successful you can spend a lot of your degree with no contact with lecturers which can be difficult- especially in first year I felt very unsupported."
- "ISSUES: a) Not at University (studied remotely, online) so lacked 1 to 1 access to tutors. b) Lack of access to support (Library staff etc) c) Had to learn new IT in order to take part d) Bournemouth IT systems not always user friendly. A;ll of the above made learning more difficult - sometimes felt like I was fighting the University in order to learn rather than being supported by them."
- "I think our tutors don't relate to the fact that we are working professionals, for example if we ask a question on a Friday night, they won't respond to it be at least the Monday, if at all, by which stage we are working until the next Friday so essentially it's going to take us a week until they get the answer, and I understand that they have umm working hours and so on, but consideration need to be given to us who don't do university nine to five and that is a massive negative"

Feeling reassured

- "It is reassuring to feel that you can receive help/guidance from where ever you are, without having to take into consideration: limited time or financial constraints. Also great to have contact with others students."
- "...you get a lot of comments back of like reassuring that everyone is having the same problem as you"
- "I think definitely the email with lecturers... I think the fact that you can email lecturers and they will email you back that's probably the most valuable thing...normally it's about assignments or something about like if they haven't clarified something in the lecture and you think it's important... you can kind of ask... yeah definitely it's reassurance."
- "I usually check it like three, four times, just it makes me feel confident that I'm definitely right, I'm not gonna get timing wrong, like, even if I've checked my timetable the night before, and I'm on to uni, say a ten o'clock lecture, I will still check the timetable again, make sure I've got the room right, make sure it's the right time."

Feeling connected

- "Interacting with new students and helped to build friendships and helped to complete assignments."
- "Using Facebook to set up groups. It makes it easier to communicate when working on a group assignment. Instead of us all sending five thousand emails and getting confused between who knew what, we could see each other's ideas and thoughts and could reply as and when we could."
- "Could still get in touch with students or lecturers even if you go home on a weekend away from the university environment."
- "Well honestly I think for me the most important is... not the tutor support but the group support from fellow students on the forums and I find that because the students are in a very similar situation and can offer advice or provide a little push in a sense..."

Feeling stressed due to technical failures and lack of access

- "My laptop goes wrong a lot, at really inconvenient times, e.g. hand in dates. My stress levels rise, my IBS plays up, I get frustrated and worried and I can't fix it but have to find a solution"
- "Trying to access library resources externally and being given little information or explanation when this does not work. For the purposes of research and assignment writing, to have a resource as valuable as the library (online) is critical. The anxiety caused, when it doesn't work, far outweighs the benefits of its existence at that point."
- "We rely so much on technology and these things to function well, that when they become unavailable, even temporarily, it is very difficult to function."
- "...it is frustrating, you want to get over and done with... I want to go quick and painless, but when it takes longer... when you sat there for longer..."
- "(The VLE) is what the university has as student resource... to kind of support the learning... if there is an issue with it or... if it goes down there is no

alternative... so yes it has its positives because it is there as resource but when something goes wrong with it is majorly wrong..."

Experiencing issues and stress in managing information

- "Sometimes it is a bit daunting with the amount of data and material that you have access to online. You may not always understand something that is interpreted on line."
- "Some information on the forums were sometimes incorrect or would make me panic that I was doing a piece of work wrong."
- "Difficult to 'get away' from it all i.e. trying to take a break and constantly seeing related information."
- "...so it's helpful in some respects but I can understand sometimes I've typed in something and then got 8000 papers turned up, and thought oh my god what am I gonna do with that..."

Feeling stressed due to difficult approach to technology

- "Using certain journal websites for research. Some of them are laid out in the most awful manner or have terrible, unnecessarily complex navigation systems. They never fail to irritate me because they could make it so much simpler."
- "Okay, firstly technology has always scared me. I've always been a bit tentative in using technology wherever its gadgets such as phones and mobiles and it doesn't just come natural to me, the all concept if you know... but since I have started University, as I said earlier it was nerve wrecking."
- "Some things weren't even in folders they were just kind of out, so you had to kind of guess by the title to which sub-unit it belonged to and it, it was just really difficult to organise your thoughts"

Experiencing motivational issues

- "1) Being able to work from home sometimes has a negative effect on motivation as there are far too many distractions at home 2) You feel slightly less guilty about leaving assignments till last minute as you have all the resources readily available online, meaning that you quite often do and then realise the error of your ways at 3 in the morning..."
- "...for example knowing that lecture slides are online means a student may not have the motivation to attend an early 9am lecture on a Friday, meaning they miss out on real world learning interaction."
- "Some of the units have been very boring and lots of reading text only this can make it difficult to motivate yourself. The feedback on the discussion boards can be misconstrued and lecturers can come across as brash and unhelpful."
- "I find motivation a difficult one, it is... sometimes I am extremely motivated and get a lot done and other time it is just... nothing wants to happen no matter how long I stare, but I think forum groups are extremely important for motivation because you sort of have this peer pressure so you have people watching you and everybody knows that there is work coming up that should be done... so (...) in a sense people helping each other and motivating each other."

Appendix I – Example of memo-writing

On-campus lecturer 1 interview memo – 1/10/2013

Lecturer 1 has a clear view that the online environment should be used essentially to transmit and share information. He/she tends to make this association: online environment = anonymous environment. The lecturer has difficulties to envision the possibility to personalise the online ubiquitous experience. Some of the lecturer's objectives are: personalisation, customisation, building students' confidence and reassuring them. The lecturer tends to associate working in an online environment with giving students standardised and not personalised/customised answers/comments. Therefore, the lecturer makes every possible effort to personalise students' online experience but he/she thinks that this is not enough and it should be integrated with face-to-face support.

In the first part of the interview two main constructs are arising: working with physical tools= more real=engaging vs. working with virtual tools=less real= disengaging/less motivation. The second construct is physical environments = personalisation vs. online environments = depersonalisation/anonymity. The lecturer tends to use his/her experience with online technology and devices to interpret students' needs.

It is interesting as the lecturer is focused on the risks that online environments could bring in terms of anonymity and depersonalisation and he/she thinks that this problem could get worse with big cohorts of students. The lecturer doesn't think that the possibilities offered by online and ubiquitous technologies could be a mean to reach students more quickly and stay more connected with them, enhancing the ease to reach single individuals.

The comparison "lecturer – mother" and "students – kids" explains clearly how the lecturer interprets the relationship with the students. The lecturer thinks that in order to help them to develop future independence, they have to be protected from their own mistakes (i.e. forgetting deadlines) and accompanied along their path ensuring them a safe environment. In this context, online communications and in general the online environment is not sufficient because it doesn't ensure the control over students learning and behaviour that he/she needs.

Online communication should convey emotional content and information need to be wrapped in a discourse that carries social proximity.

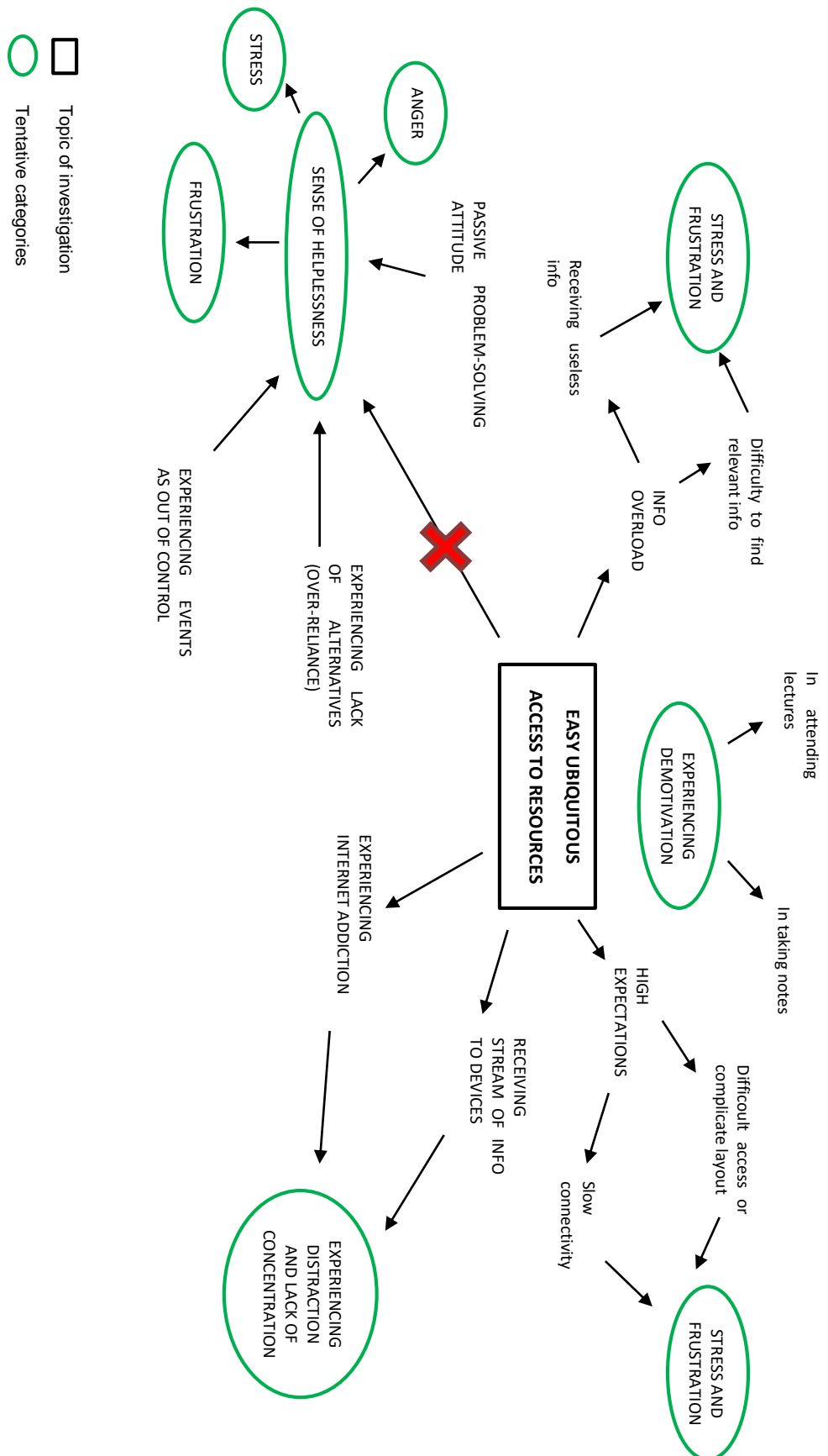
Regarding students' massive use of technology, there are a couple of interesting themes to investigate: 1. the use of mobile devices makes students mix work/study and social life. The lecturer considers it as a devaluation of work and as a distraction 2. Students' need to learn how to stay focused and how to think and accessibility and availability of online information does not help students to improve their ability of thinking and reflect upon things.

Young students look usually for quick and easy answers and the development of new mobile technologies and the easy access to information contributed to raise their expectation in terms of speed and availability of finding and receiving information. The lecturer affirms that in terms of learning, students' ability to think and to reflect can be enhanced only through customisation and guiding them during the learning process. And this is not an objective that can be reached in online learning.

Another topic that needs investigation regards how lecturers deal with students' emails and in general how they manage their online availability. Considering also the other interviews, lecturers don't seem to have always a clear strategy to manage students' emails and often they don't have defined availability times. Similarly to this lecturer, they often look torn between the wish to be always available to students and the wish to have time off.

Finally, another point of investigation could consist in understanding lecturers' knowledge and preparation in relation to their ability to harness the potential of ubiquitous connectivity and of online learning tools. Have they been trained for this? Do they know how to integrate face-to-face and online learning? Or is everything depending on personal initiative?

Appendix K – Diagram of negative aspects related to ubiquitous access to online resources



Appendix M – From categories to quotes – Excerpt from the Excel database (section 4.2.4)

The table contains some of the quotes used to construct the sub-categories “increasing motivation and understanding” and “feeling cared” included in the main category “being engaged”.

INCREASING MOTIVATION AND UNDERSTANDING	FEELING CARED
<p>Contributing to online discussions as a requirement for a unit of my course. I considered it positive as I believed I excelled in this novel type of assessment and found it refreshing compared to typical exam questions (SU,OC,S3,3Y)</p>	<p>When you're sat at home really struggling with something and then your lecturer is like, you know "don't be so stupid" that, that can be demeaning, and then on the best level, you have lectures that are there, it feels like they are there twenty-four seven for you, so... and they are really helpful, and they, any question that you ask they are really positive and they try to umm come up with new ways to, umm teach you something, it's, it's down to the lecturer isn't it, its people. (IN,OL,S1,2YI)</p>
<p>Being able to learn via other opportunities such as visual, and sound rather than listening to a lecturer. Aids our understanding further. (SU,OC,S43,PG)</p>	<p>To talk to, to have a tutor, to have a tutor discussion with them, or to be more encouraged to pick up, to phone them, because that's never mentioned that you're allowed to phone people, it's all about email, and sometimes talking to your tutor about a certain problem, you know, it would be useful, so yeah so those two things is, I think the assumption is if you're online you will type and you will do emails and that's all you will do, but actually if there's an opportunity either to Skype or to telephone or, you know to actually talk to your tutor (IN,OL,S2,1YC)</p>
<p>Helps with essays and exams including understanding topics that otherwise I would be confused (SU,OC,S21,2Y)</p>	<p>Sometimes I've got a, different messages, I've got conflicting information from different tutors, again which is a problem because I then had to ask for further clarity, (IN,OL,S4,1YI)</p>
<p>Create more useful online seminar material such as essay structures or exam answer structure (SU,OC,S21,2Y)</p>	<p>Yes, yes that is a major problem, umm generally my past tutors have been good, within this err semester from 2013 September ummm... they haven't been, what I mean by that to elaborate, I will ask a question and it's taken up to six weeks to get a reply, which is unacceptable (IN,OL,S4,1YI)</p>
<p>Videos to like... maybe related more to the real world... that could be useful. (IN,OC,S1,2Y)</p>	<p>Not only do they reply, they would have replied in a timely manner which was helpful but what they did as well is asked if there was...if that had answered my questions and whether or not I had anything further in a way that kind of coached me to develop myself to know the answers what I'm experiencing at the moment, is I ask a question and the response is "look on YouTube" that is not a response, there's nothing else there's not "have I answered it?" "Let me know if you can't find it" or "give me a call, here's my number, anytime I'm happy to help" noting, it seems like we are a burden on them (IN,OL,S4,1YI)</p>

<p>I really enjoyed it just because when you have been doing essays for 3 years it's quite nice to learn a new skill and doing something different rather than be doing essay or an assignment or an in-class tests (IN,OC,S3,3Y)</p>	<p>Ok, umm negative aspects I, I think our tutors don't relate to the fact that we are online, sorry that we are working professionals, for example if we ask a question on a Friday night, they won't respond to it be at least the Monday, if at all, by which stage we are working until the next Friday so essential it's going to take us a week to until they get the answer, and I understand that they have umm working hours and so on, but consideration need to be given to us who don't do university nine to five and that is a massive negative at... (IN,OL,S4,1YI)</p>
<p>But I think the links are great...I think they give you some visual understanding of materials... and the videos... (inaudible) more videos really... I enjoy it... so in terms of technology, videos I think are quite essential really... (IN,OC,S4,2Y)</p>	<p>Absolutely... They can e-mail me whenever they want and I try to always... one of the things about the personal contact is to use their name... I'm trying always to begin an e-mail... You know... "Hello Claire... yes I understand your problem..." (On-campus lecturer 1)</p>
<p>Another unit we was in was face recognition, and its disorders, we looked at err... two syndromes, Williams syndrome and Turners syndrome and it helped me remember because you watch the videos, and then you can remember these people better than the words in the lecture, it just backs up the point, ummm and makes it... more understandable and you just, yeah, generally backs up the points in the lectures. (IN,OC,S7,3Y)</p>	<p>...they want to have the perception that they are being listened to and they are being responded to and that forum is for them all to see that I'm engaging with their queries about the assignment and they have got a resource that they can all access... (On-campus, lecturer 2)</p>
<p>Yeah, definitely, it gives you a real life explanation of what they are talking about, err... the example... what was he doing? It's something called postpartum psychosis umm... and I've never heard of it before, it was new to me, and... Watching the video, I was, I was able to understand... the real world applications of... what postpartum psychosis does, what it is, how it affects people, it was generally... yeah it was useful. (IN,OC,S7,3Y)</p>	<p>...always try and deal with e-mails in the same day I'm trying not to let them get over on the next day no matter what they are (...) it is important because I think it would make the other person feel that they matter... that if you have just left them for a couple days it would give that person a feeling that they are not very important... (On-campus, programme administrator)</p>
<p>Please think of more varied ways to engage, you tube, online lectures, possibly a live web cast where students can skype in questions it could be recorded for those unable to attend and watch later, anything other than text text text (SU,OL, S32,1Y)</p>	<p>...what I think that I'm doing and trying to do, not just online students also with on campus students, to reply to their email immediately.... I want to, that will signal to them that they are my priority, and... so I always (...) immediately I see the email I stop everything, I rely to the students... (...) I wanted them to see that I am giving attention to all of them, going more specific to all the questions, focusing, literally on every answer and every word, and I have already had several email students that they find my feedback very useful... (Online, lecturer 1)</p>
<p>you know just not, you know when the lectures up load lots and lots of reading material it's just boring umm and then you get other lectures that use, the lecture, you know the online lectures, they use umm YouTube videos, they use snippets from BBC, they use umm you know lots of different kinds of materials to learn from not just the, the written documents and that just helps (IN,OL,S1,2YI)</p>	<p>...so giving them some sort of feedback. I used to actually assess one of the units, through a discussion format. And it was quite interesting... there were not too many students so I felt that I had the time to make a comment at every single post that students put on there... (Online, lecturer 2)</p>

...recorded lectures, umm just as they would if you know, if they were teaching face to face umm and those, those lectures are usually supported by PowerPoint, again just as it would be in a normal lecture theatre and they are really... much more interesting, as in other units were it's just read, read, read, it just gets boring and monotonous (IN,OL,S1,2YI)	...I want them to be reassured that I'm there and that, you know, that I'm actively, that I am a human being, you know (...) who is actively working with them... (Online, lecturer 3)
So, with the video it makes it more real and it helps your motivation and it helps you learning. (IN,OL,S3,2YH)	...yeah, I try to make it personal, friendly, because they don't get the interaction that other students do by coming into the office, so I try to seem as approachable as possible, whilst still being professional (...) yeah, to help students know we care (Online, programme administrator)
For me I'm a very visual person and I find it incredibly hard just to listen to information and I find it very hard just to read information, so for me the combination of somebody showing me and talking to me, it's almost like a double reinforcement for me (IN,OL,S2,1YC)	
...and also a bit of variation for students...I think there is a little bit of sort of (inaudible) benefit of doing it with different approaches in that it might engage students a little bit more it is not just "I'm looking another slide... I'm looking another slide" they can look at the slides or they can see me doing the SPSS analysis myself because I videoed it and me talking through it... (On-campus, lecturer 2)	
...I am just aware that they had so much reading to do. And that could be very dry. So trying to sort of mix up doing activities, with reading, with videoed lectures and seems to work quite well (...) because I sort of try to put myself in their position... thinking... well you know.. I want to try to get them engaged a bit more I suppose... (Online, lecturer 2)	
LEGEND	
	On-campus students
	Online students
	Staff members
SU = Survey	OC = On-campus student
IN = Interview	OL = Online student
FG = Focus group	S(x) = student(number)
ESM = Experience Sampling Method	(x)Y = year of study
Example: (SU, OL, S6, 2Y) = (Survey, online, student 6, year 2)	

Appendix N – Summary table of psychological needs proposed by the need theories identified in the literature

SUMMARY TABLE OF PSYCHOLOGICAL NEEDS	
Deci and Ryan’s Self-determination theory (SDT - Deci and Ryan, 2002)	
Competence	feeling effective in one’s ongoing interactions with the social environment and experiencing opportunities to exercise and express one’s capacities
Autonomy	being the perceived origin of source of one’s own behaviour
Relatedness	being connected to others, caring and being cared, having a sense of belongingness with individuals and community
Maslow’s hierarchy of needs (Maslow 1943, 1954)	
Safety	security; stability; dependency; protection; freedom from fear, from anxiety and chaos, need for structure, order, law, limits;
Love/belonging	Need for affectionate relations with people in general, for a place in his group or family
Esteem	Need for strength, for achievement, for adequacy, for mastery and competence, for confidence, independence and freedom. Reputation or prestige. status, fame and glory, dominance, recognition, attention, importance, dignity or appreciation.
Self-actualisation	self-fulfilment, the tendency to become actualized in what one is potentially
Glasser’s five basic needs (Glasser 1998)	
Love/belonging	need for relationships, social connections, to give and receive affection and to feel part of a group
Power	to achieve, to be competent, to be skilled, to be recognized for our achievements
Freedom	independence, autonomy, to have choices and to be able to take control of the direction of one's life
Fun	The need for fun is the need to find pleasure, to play and to laugh.

Appendix O – Description of quality criteria in constructivist grounded theory - from Charmaz (2014).

QUESTIONS DEFINING QUALITY CRITERIA IN CONSTRUCTIVIST GROUNDED THEORY STUDIES	
CRITERIA	DETAILS
Credibility	Has your research achieved an intimate familiarity with the setting or topic? Are the data sufficient to merit your claims? Have you made systematic comparisons between observations and between categories? Are there strong logical links between the gathered data and your argument and analysis?
Originality	Are your categories fresh? Do they offer new insights? Does your analysis provide a new conceptual rendering of the data? What is the social and theoretical significance of the work?
Resonance	Do the categories portray the fullness of the studied experience? Have you revealed both liminal and unstable take-for-granted meanings? Does your grounded theory make sense to your participants or to people who share their circumstances? Does your analysis offer them deeper insights about their lives and worlds?
Usefulness	Does your analysis offer interpretations that people can use in their everyday worlds? Do your analytic categories suggest any generic processes? Can the analysis spark further research in other substantive areas?