

# Ubiquitous Connectivity and Students' Well-being: a Situational Analysis in a UK University

Michele Salvagno, Bournemouth University, United Kingdom  
Jacqui Taylor, Bournemouth University, United Kingdom  
Milena Bobeva, Bournemouth University, United Kingdom  
Maggie Hutchings, Bournemouth University, United Kingdom

*Abstract: Recent research underlined as ubiquitous connectivity has changed the nature of traditional campus universities creating technology-mediated environments where physical and virtual domains integrate and overlap. The aim of the research is to investigate how ubiquitous connectivity is impacting on university students' daily lives and consequent well-being. On-campus undergraduate and postgraduate university students and staff members from the same department were involved using a qualitative survey, semi-structured interviews and a variation of the Experience Sampling Method. The data analysis followed two different steps: firstly, a socio-constructivist framework was adopted to highlight how students' experiences with ubiquitous connectivity are socially and discursively constructed. Secondly, the results were discussed in the light of the two main well-being approaches existing in literature: hedonic and eudaimonic. The results show as the hedonic perspective seems to be prominent among students. Ubiquitous connectivity is mainly appreciated for its capability to make university day-to-day experiences easier to manage. Moreover, stress avoidance or relief seem to be one of the main goals that learners seek to obtain through ubiquitous connectivity. However, technologies also play an active role in disrupting learners' well-being by increasing their level of stress due to difficulties in accessing resources, info overload or unorganised online materials.*

*Keywords: Ubiquitous Connectivity, Students' Well-being, Technology-mediated Learning*

Higher Education has seen a dramatic increase in the use of Information and Communication Technologies (ICT) in recent years. Universities around the world have built complex Information System infrastructures implementing local networks, wireless networks, cloud services and Virtual Learning Environments (VLE).

The 2014 Survey of Technology Enhanced Learning for Higher Education in the UK (Walker et al. 2014) reported that universities are investing heavily in their technologies and services. At the same time, the large and increasing universal use of mobile technologies such as smartphones and tablets (Ofcom 2014) opened up new connectivity possibilities for users. In a recent annual report the New Media Consortium (Johnson et al. 2014) indicated that cloud technology, tablet computing and social media are among the key trends that are currently affecting higher education and will continue to do so in the future.

These technological changes have stretched and expanded the boundaries of traditional campus universities in space and time allowing easy and ubiquitous access to people, information and services. The term "ubiquitous connectivity" is used in this paper to identify this enhanced accessibility to resources due to the development of infrastructures and devices.

Recent research underlined that ubiquitous connectivity puts in doubt the conventional distinction between "face-to-face" and "e-learning". As suggested by Gourlay and Oliver (2012, 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 challenged and modified by the adoption of new technologies. Therefore, the implementation of these technological innovations has large consequences on how students, academics and other staff members live, work and interact in in higher education settings.

This paper will present a qualitative study where rich data were collected from students and staff members involved in a psychology degree in a British university. The aim of the research is to take a close look at the complex nature of these hybrid environments to investigate how

## JOURNAL TITLE

ubiquitous connectivity is impacting on students' daily university lives and consequent well-being.

To date, the link between the use of new technologies in educational settings and learners' well-being has not been investigated with adequate depth. Some studies focused on analysing positive and negative aspects of students' experiences with ICTs while others examined specific issues such as students' acceptance of technology, students' stress or students' satisfaction. However, few studies explored the connection between learners' experiences with new technologies and existing well-being theories and approaches. This research will contribute to fill the gap in the literature by addressing the issue through two different steps. Firstly, learners' experiences with ubiquitous connectivity in their day-to-day life were examined. In this step, the influence of new technologies on the dynamics between learners, academics and other university staff members was explored. A socio-constructivist framework was adopted to highlight how students' experiences with ubiquitous connectivity are socially and discursively constructed. In the second step, the results were discussed in light of the two main well-being approaches existing in literature, hedonic and eudaimonic, to explore if and how students' well-being is affected by ubiquitous connectivity.

### **Approaches to investigate students' experiences with technologies in higher education**

Previous studies have tried to shed light on the impact of new technologies in higher education through the analysis of students' daily experiences, although the literature regarding specifically learners' well-being is very limited.

One approach is to focus on learners' habits and personal experiences with ICT highlighting positive and negative elements. As an example, JISC (Joint Information Systems Committee) conducted in recent years a wide programme where different projects used mainly qualitative methods to examine the nature of learners' experiences with ICT (Sharpe et al. 2005; Conole 2008; Sharpe et al. 2009; Edmunds, Thorpe, and Conole 2012). Some important points emerged in relation to the main aim of this research:

- The use of technology is pervasive among students.
- Students value the efficient and flexible (in time and location) access to online information and resources, social connections and support networks.
- Students try to personalise their experience with technology in learning.
- Learners' experiences are diverse with many individual differences.

Positive elements raised by students in these studies in relation to ICTs include the possibility to access up-to-date materials, sharing links and materials with peers, accessing library catalogues online, accessing information and materials off-campus using the VLE. The main negative aspects underlined regarded accessibility problems, poor design and navigation systems, lack of usability of the library system and the difficulty to personalise the VLE. Another key element regarded students' expectations to receive timely responses from lecturers.

Research such as Edmunds, Thorpe and Conole (2012) applied specific theoretical frameworks to investigate the key elements that encourage people to accept and adopt technology (Venkatesh et al. 2003). The most widely used is the Technology Acceptance Model (TAM) (Davis 1986). This model has been adopted to identify what factors facilitate the acceptance of new technologies among students (Drennan, Kennedy, and Pisarski 2005; Saadé and Bahli 2005; Roca, Chiu, and Martínez 2006; Liu, Liao, and Pratt 2009; Lee, Yoon, and Lee 2009). These studies revealed that perceived usefulness, perceived ease to use, perceived playfulness and cognitive absorption play a key role in facilitating students' acceptance of e-learning.

Other studies focused on specific issues related to the use of new technologies in higher education and well-being such as students' stress (Hara and Kling 2001; Allan and Lawless 2003; Jung, Kudo, and Choi 2012), students' emotions (O'Regan 2003; Lee 2011; Artino 2012) and students' satisfaction (Paechter, Maier, and Macher 2010; Kuo et al. 2013).

From this research, it is possible to identify at least four recurring factors affecting students' quality of day-to-day life in relation to ubiquitous connectivity:

- Quality of peer-to-peer and peer-to-instructor interactions.
- Attitudes towards technology.
- Design and content quality of technology-mediated courses.
- Students' self-efficacy and motivation in using technology.

## **Hedonic, eudaimonic well-being and technology**

Well-being is a very complex construct that has been approached and defined in the literature in many different ways. However, two main paradigms are usually utilised in literature: hedonic and eudaimonic (Deci and Ryan 2008). The hedonic approach describes well-being in terms of looking for positive emotions and avoiding pain. Subjective Well Being (Diener, Sapyta, and Suh 1998) is the main model adopted under this framework and it focuses on two main constructs: happiness and life satisfaction.

The eudaimonic perspective is a more comprehensive approach that conceives well-being as pivoted on pursuit of meaning, personal growth and self-realization. As an example, the Self Determination Theory (SDT) (Ryan and Deci 2000) identifies autonomy, competence and relatedness as the main elements that lead to motivation, to the pursuing of intrinsic goals and to life satisfaction. The Psychological Well-being Theory (Ryff 1989) identifies six different dimensions of well-being: Autonomy, Environmental Mastery, Personal Growth, Positive Relations with Others, Purpose in Life and Self-Acceptance.

Two other models that are important as they incorporate elements of both hedonic and eudaimonic views are Csikszentmihalyi's Theory of Flow (Csikszentmihalyi 1997) and Seligman's (2012) PERMA model. The former affirms that a person can experience a state of complete absorption and engagement (flow) when the perceived challenge of a task matches the person's perceived skills in facing it. Along with the concept of flow, the construct of autotelic personality (or experience) identifies people who experience well-being while performing activities for their own intrinsic value, rather than to achieve some later external goals. This construct shares similarities with the concept of intrinsic motivation introduced by SDT affirming that people tend to experience an increased sense of well-being when internally motivated to pursue goals rather than being motivated by external rewards. The second model is a well-being framework based on five factors: Positive emotions, Engagement, Relationships/social connections, Meaning, and Achievement.

The hedonic perspective has been largely utilised in literature in combination with TAM to explore learners' acceptance of technology (Chun, Lee, and Kim 2012; Lin and Bhattacharjee 2010; Lowe et al. 2013; Gu et al. 2010). The "enjoyment" component along with utilitarian usefulness is well known to play an important role in users' acceptance of new technologies. The eudaimonic perspective has been investigated mostly in terms of the role of ICTs in influencing students' motivation (Chen and Jang 2010). Although not directly concerning students, some interesting studies investigated how the eudaimonic view emerges when people use web technologies for social support and to reach personal goals (Oh, Ozkaya, and LaRose 2014).

## **Situational analysis as theoretical framework and methodology**

The current research aims to contribute to the field by capturing the complex nature of technology-mediated learning environments and the connection between students' experiences with ubiquitous connectivity and well-being.

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

- Support an in-depth analysis of qualitative data.
- Incorporate the analysis of different perspectives and contextual elements.
- Highlight how people's experiences with new technologies are socially constructed.
- Recognise the importance of non-human elements in shaping people's everyday life.

Situational analysis (SA) (Clarke 2005) was chosen as the main framework for this research due its ability to satisfy all these needs. This approach can be considered as an extension of the Grounded Theory (GT) methodology (Glaser and Strauss 1967; Strauss and Corbin 1994; Charmaz 2006) a paradigm largely adopted in research when collecting and analysing qualitative data. Situational analysis shares many similarities with the “constructivist” version of GT (Charmaz 2006) as it is deeply rooted in symbolic interactionism (Mead 2009) and social constructivism (Berger and Luckmann 1991) aiming to shed light on how different actors contribute to the social construction of reality. However, unlike the GT traditions, with SA the final goal is not to generate a theory to explain a “basic social process” (Clarke 2005, 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... (15)”.

Situational analysis utilises and expands the “social worlds” framework (Strauss 1978), common also to the GT tradition and providing a situational matrix that helps to identify the elements that co-constitute the situation of action (fig.1).

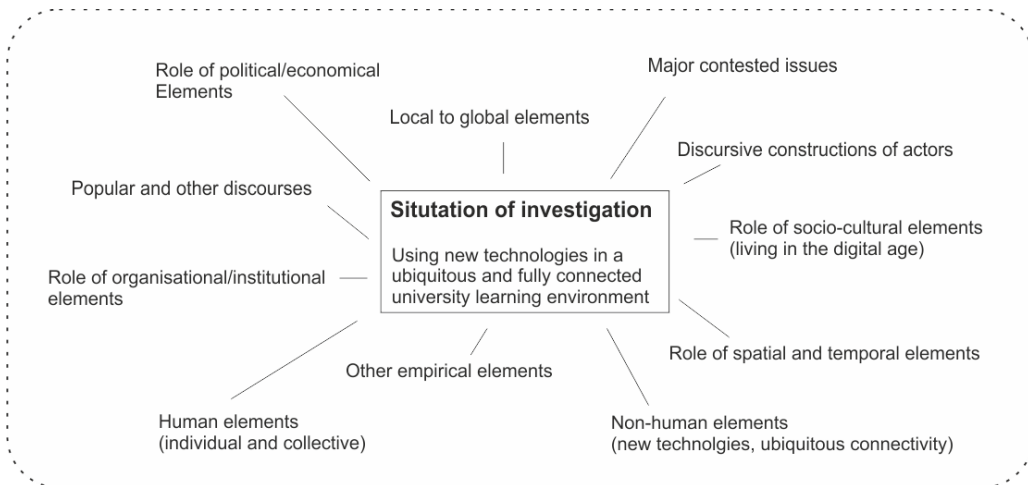


Figure 1 – Situational matrix: the elements of investigation of a situation

Source: adapted from Clarke (2005)

Social worlds have been defined as “universes of discourses” (Mead 1938) 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 and Star 2003). When multiple social worlds are organised around issues of "mutual concern and commitment to action" they become an *arena*.

In this study, the university is therefore considered as an arena where students, academic and technical staff, institutions and other social worlds integrate, overlap and conflict. In this paper, the specific situation of investigation that takes place in this arena concerns the consequences of implementation of ubiquitous connectivity in students' daily lives.

Finally, SA is particularly suitable for this enquiry for its capability to incorporate the non-human element in the analysis, that is, how "human actors (individually and/or collectively as social worlds) discursively construct the non-human actants" (Clarke and Star 2003, 119) from their perspectives. Situational analysis incorporates therefore some principles of the actor-network theory (Callon 1986; Latour 2005). This model has been recently recognised as particularly useful to investigate the impact of ICTs in higher education (Habib and Johannesen 2007; Johannesen, Erstad, and Habib 2012; Habib, Johannesen, and Øgrim 2014; Gourlay 2012). According to this model both humans and non-humans are considered as actants, that is, actors interacting, negotiating and creating alliances within complex networks.

In this situation, infrastructures and devices involved in ubiquitous connectivity are the main non-human elements that are considered as playing an active role in shaping people's life but also as being co-constructed by people's discourses. For this reason, although the focus of the research is on students' experiences, the model allows to integrate different perspectives to provide a view on how reality is collectively constructed.

## Data collection and analysis

The specific sample utilised in this study comes from traditional on-campus psychology undergraduate and postgraduate degrees in a UK university where technology is used to enhance and support various learning-related activities. All the students involved have access to a VLE based on a Blackboard platform. Learners log in on the VLE to access their emails, material provided by lecturers and the library catalogue. Students also need to use the VLE to submit their assignment through an online service (called Turnitin) that checks for plagiarism in assessments. Moreover, the VLE is used by lecturers for general announcements and communications. Lecturers also have the possibility to set up discussion forums about their units. Finally, students can download a phone application to access basic and diverse information such as unit information, buses timetables and the library catalogue. This university has a network system that allows wireless access to internet and to the VLE within the campus. The VLE can also be accessed off campus.

Due to the qualitative nature of the research and to the small sample used, this study does not aim for representativeness of the population. Moreover, females are largely predominant in this sample, therefore the research does not aspire to highlight any similarity or gender difference. The main goal is to explore the complexity of the situation of enquiry and to present findings that could stimulate further reflections in the field.

The data were collected in three different phases. In the first phase, 35 participants (28 females and 7 males) answered an online qualitative survey sent to undergraduate and postgraduate psychology students were initially collected and analysed. The goal of this first phase was to identify the main themes of students' interest and the main issues regarding ubiquitous connectivity and the use of new technologies in learners' daily life. Students were asked to provide examples of positive and negative experiences of using technology in learning and of studying in a ubiquitous and fully connected environment.

The positive and negative elements identified in the analysis regarding the use of new technologies in day-to-day life at university were utilised to formulate some of the questions used

## JOURNAL TITLE

in the second phase of data collection. This consisted of 11 in-depth interviews with psychology undergraduate students (10 females and 1 male) and 8 interviews with staff members who were from the same degree program of the students involved (3 lecturers, 1 librarian, 1 learning technologist, 1 programme administrator and 2 tech support). In the first part of the interview, learners and staff members were asked general questions about positive and negative aspects of students' experiences involving ubiquitous connectivity at the university. In the second part, more specific questions were formulated using the findings of the first phase.

Six additional students (5 females and 1 male) were involved in a third phase using the same principle adopted in the Experience Sampling Method (Hektner, Schmidt, and Csikszentmihalyi 2007; Larson and Csikszentmihalyi 1983). A phone application was installed on their 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 technology in relation to learning. The goal of this final phase was to have a closer look at students' daily engagement with new technologies and ubiquitous connectivity in particular when under pressure due to an imminent assignment deadline. Seventy-eight entries were collected in total in this phase. Each entry consisted in 20-50 seconds of audio recording or a few written sentences.

All the data collected during all phases were initially coded using Charmaz's (2006) open coding and focused coding grounded theory techniques. At a later stage, these were further elaborated using the tools proposed by SA: situational map, social world map and positional maps. A situational map stems from the framework provided in fig. 1 and is first used to organise and then put in relation all the elements identified in a specific situation. A social world map is used to give the researcher a broad picture of the arena of investigation and of the intersection of the different social worlds. Finally, positional maps can be used to represent different positions regarding a specific issue in the situation of concern.

## General findings

The four following sections present the findings that showed a specific connection between students' experiences with ubiquitous connectivity and their well-being.

### *Looking for an easy experience*

Figure 2 summarises all the positive aspects of using new technologies considered important by the students to simplify their lives.

The qualitative data analysis evidenced complex interactions between people and technology in students' day-to-day life. The integration of new technologies appeared to have many implications, ramifications and individual variability regarding how students organise their learning, how they communicate, how they look for support from peers and staff members, how they organise their learning spaces, how they access and manage information and how technology is involved in managing their emotions. Nonetheless, learners' narratives show that all these elements seem to be pivoted around one main discourse: making life easier.

...it makes life a lot easier in a sense of educational, because if I got... if I need to check my timetable... I just click a button on my phone and it's just there... so yeah, it just makes life a lot easier... (Student 9 - Interview)

...it is just that... I don't know... It is just... simpler and quicker it just makes things easier... (Student 11 - Interview)

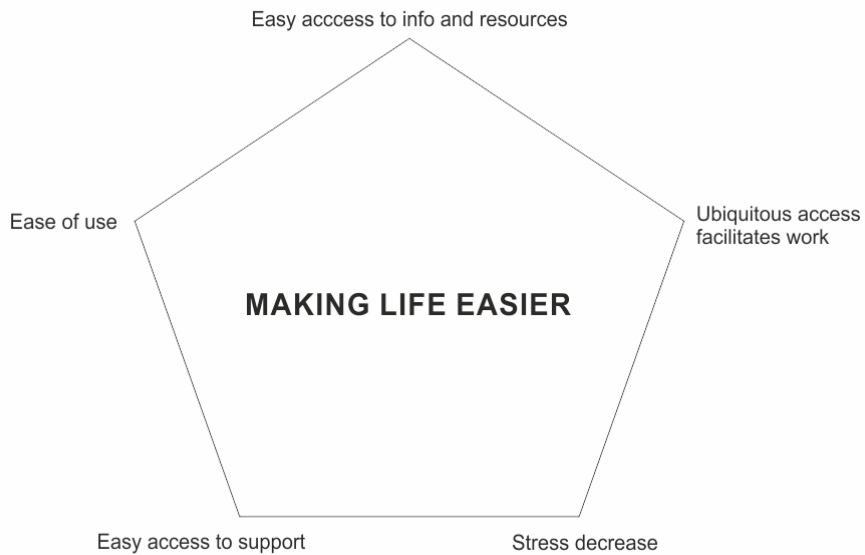


Figure 2 – How new technologies make life easier: diagram of elements identified by students

The data suggest that the current digital age culture, characterised by a constant drive to make the access to resources increasingly quick and ubiquitous, is very integrated in students' narratives. Consequently, learners developed high expectations in terms of ease of use of technology, easy access to support and resources.

### ***Individual variability in using and conceiving technology***

Another important element emerged from students' and staff members' interviews concerns the large individual variability in how students approach and use ubiquitous technologies. As an example, technology seems very integrated in student 1 life. She clearly constructs mobile devices as useful tools to enhance the quality of her learning experience:

...sometimes I take that (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..." (Student 1 - Interview)

She seems so comfortable with technology that she requires more features to be available:

...to be more interactive with your phone a bit more... so you could actually write notes or highlight or manipulate certain things or put things in a different positions, maybe the lecture notes you feel you may sense in a different order... (Student 1 - Interview)

Student 4 is a 44 years old mature student that developed an opposite relation with new technologies, constructing them as a scary entity. He discursively constructs his relationship with technology as "non-natural" to emphasise the difficulty to integrate new technologies in his life.

...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

## JOURNAL TITLE

come natural to me, the all concept if you know... but since I have started University, as I said earlier it was nerve wrecking... (Student 4 - Interview)

However, these difficulties are not just attributable to mature students but seem to be rather independent of students' age. For example, student 11 is 19 years old but clearly constructs technology as an external entity to use only when she "needs to".

...I use it when I have to and I don't when I don't... it's always...I am now very technical (interviewer: do you struggle with it?) No for the basic stuff that we need for the university but I can't do advanced stuff... (Student 11 - Interview)

An important emerging element regarding the relationship between students and new technologies is that this relationship does not seem to regard only people's expertise but also the way students' conceptualise new technologies through their discourses. As an example, some students clearly express in their interviews the dichotomy "virtual vs. real" world. Independently from their expertise, this way of constructing their relationship with technology affects their daily learning experience.

...it's like the difference between a real book and e-book reader, just sort of having the, I don't know it just feels more real if you have a hard copy there..." (Student 6 - Interview)

This dichotomy is clearly evident also in lecturers' interviews and it obviously brings consequences in how they use and incorporate technology in their teaching:

...it is about the tangibility of something it is about... when you complete something online and save it to a folder it is disappeared you don't know where it is... I mean you know where it is but you don't have an image of it... (Lecturer 1 - Interview)

These examples suggest that students' digital literacies and relationships with technologies are dependent on situations and from people's personal histories. Therefore, this eludes dichotomous categorisations such as the popular distinction between digital natives and digital immigrants (Gourlay 2012).

### *Accessing and managing resources*

How to access and manage information is one of the main topics that students and staff members explored in the interviews. Figure 3 summarises the expectations of the interviewed students towards accessing information through technology.

As mentioned in the first section, some of these expectations can clearly be considered as part of the digital age culture and narrative. Students' expect access to be easy, instant, unlimited and free. The last element seems to be both related to the "internet" culture that claims free access to resources (and therefore creating expectations among students) and learners' typical financial struggles.

Another interesting reflection can be made regarding the use of the VLE. Students seem to appreciate having a single all-in-one portal where they can access all the information and resources:

... very useful... umm, it got everything you need on there... it's got all the information to contact people, if you need more help, it's got the library, library app, or library tab... (Student 1 - Interview)



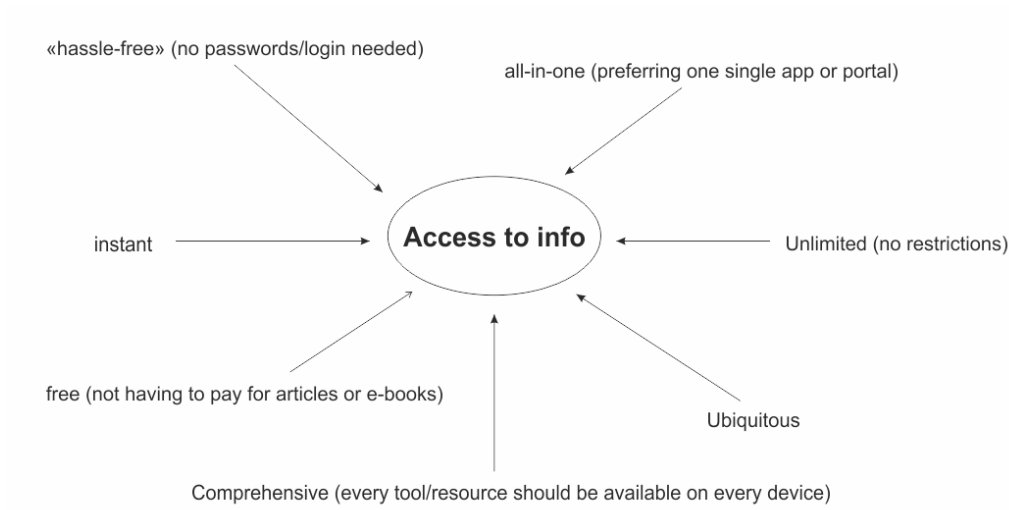


Figure 3 - Students' preferences on accessing online information

However, being the VLE their main source of information, technical issues and lack of access generates stress among students:

...(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 is there as resource but when something goes wrong with it is major wrong... (Student 2 - Interview)

Although students appreciate in general the potential that the internet gives in terms of accessing information and resources, they also expressed difficulties to manage the amount of information available on the web and also provided by the university through the VLE:

...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... (Student 6 – Online survey)

...the announcements, I like the announcements on there because they're good, but there's a lot of stuff that doesn't seem to be relevant on there, like because there's loads (...) I had like a hundred on there... (Student 8 - Interview)

Important considerations can be also made regarding materials and information provided by lecturers and by other staff members. First, lecturers seem to be aware of the risks of information overload and seek a balance between providing students relevant information without overwhelming them or guiding them too much:

...narrow it down a little bit... Make it manageable for them and not overwhelming..." (Lecturer 1 - Interview)

...I'm worried that sometimes I overwhelm them when I try to put too much up there... so, going back to some level 2 teaching that I was doing last year I remember finding all these journals..." oh God they are all terribly interesting"... Sharing them all... (Lecturer 2 - Interview)

## JOURNAL TITLE

...we need to get the balance as academics in terms of spoon-feeding them... (Lecturer 2 - Interview)

This element is evident also among other staff members regarding for example teaching students how to use the VLE:

...this is the VLE... this is how it works” and all that... but it is right at the start... when they first start... so everything is new to them... and there is an information overload... so they probably don't really remember that... (Tech support 1 - Interview)

Finally, the discrepancies in quality and the lack of homogeneity of online materials provided by lecturers seems to play an important role among students:

...there is a big discrepancy between what some lecturers are doing and some lecturers don't... some reading lists are very detailed and some very vague... (Student 11 - Interview)

...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... (Student 9 - Interview)

Students appeared to appreciate predictability in terms of how materials are organised and displayed in the VLE suggesting a connection between these elements and learners' levels of stress and anxiety. However, as described in the next section, the relation between new technologies and ubiquitous connectivity and students' management of stress and anxiety appears to have many other important ramifications.

### *Managing stress and anxiety*

Technology and students' emotions in the interviews showed an intricate relationships where on one hand students appear to use new technologies as a mean to reduce their stress and anxiety and on the other hand learners' expectations and other discursive elements seem to disrupt students' experience and increase stress, anxiety and frustration (table 1).

Firstly, it is important to underline as in general students' narratives are traditionally telling stories about managing anxiety especially close to exams. From this perspective, ubiquitous connectivity seems to be used as a means by which students to manage their anxiety and to look for stress relief and reassurance.

One way used by learners' to reach this goal is through instant access to peer support via social networks and to lecturers' support through emails. Technology seems to be used in this case to obtain comfort and immediate emotional relief:

...you, you get a lot of comments back of like reassuring that everyone is having the same problem as you...”(Student 9 - Interview)

...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... (Student 3 - Interview)

Table 1 – New technologies and students’ stress

Stress decrease	Stress sources	Stress increase
Proactive behaviour to prevent technical faults	Quality of technology	Technical faults
Technology easy to use		Technology complicate to use
Online peer support (reassurance)	Assignments/Exams preparation	Info unreliability (social networks)
Timely lecturers’ online support (reassurance)		Lack of lecturers’ support
Ubiquitous and easy access to daily practical info (e.g. timetables) (reassurance)	Managing daily duties/activities	
Hard copies give some students a sense of control over learning	Access to materials	Virtual copies/folders/materials give some students a diminished sense of control over learning

Reassurance is also obtained using ubiquitous connectivity to access practical information:

...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...(Student 7 - Interview)

Contrastingly, students’ access to social networks can sometimes generate confusion and increase stress due to unreliability of information:

...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 ... (Student 3 - Interview)

Another potential source of stress concerns students’ struggles in finding the information needed especially when this is due to difficulties in accessing resources or, as mentioned in the previous section, to unorganised materials in the VLE:

## JOURNAL TITLE

...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... (Student 11 - Interview)

...it is stressful and if there is a particular thing I want to revise and its, really hard to find, the information in the first place, just adds more stress to it and yeah, yeah it just adds to something that's already stressful... (Student 9 - interview)

Finally, technical issues appear to increase levels of stress especially when happening close to assignment deadlines:

...I tried to submit my work on Turnitin and.. it wasn't, it wasn't going on to the system it wasn't sending through and I was like "WHAT'S GOING ON?" and I had about half an hour to, send this, send this in (...) one of my other housemates, tried to send in one of his assignments in ten minutes before the deadline, and they suggest you should leave it like, for a couple of hours, isn't it, or something, umm... I don't think it sent in on time... (Student 7 - Interview)

...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... (Student 12 – Experience sampling method)

In summary, ubiquitous technologies appear to play an important role in reassuring students and providing stress relief through quick access to support and information. In addition, a good organisation of online materials in the VLE also appears to be important to provide a positive experience. The downside of the easy access to online resources seems to lie in the high expectations that students put on the reliability of technological apparatuses and in their level of trust in technology in general. Most of the interviewees gave the impression that they expect technology to always work and to consider having a smooth and hassle-free experience as the norm. This level of expectations and confidence seem to find them unprepared when issues occur. Time constrains and lack of perceived alternatives to complete assignments bring students' stress to the highest levels especially when technical faults happen close to assignment deadlines.

## **Hedonic, eudaimonic well-being and students' experiences with ubiquitous connectivity**

The data analysis revealed that learners' discourses tend to be largely influenced by the current cultural narrative surrounding the digital age that conceive the use of technologies as means to simplify life and to provide an easy experience. In terms of well-being, this narrative appears to be consistent with a hedonic view of wellness where the main goal is experiencing positive emotions and avoiding pain. In this case, the hedonic perspective seems to be prominent among students not for the recreational or for the "enjoyment" side of ubiquitous connectivity but for its capability to make day-to-day university experiences easier to manage.

When new technologies and ubiquitous connectivity are used by students to manage their daily learning duties, these actions often seem driven by utilitarian purposes. Students seem focused on short-term goals such as quick completion of assignments in order to save time and to indulge in more interesting activities ("you want to get over and done with it" - student 11). Therefore, learners do not seem to be motivated to use technologies to reach goals for eudaimonic purposes such as self-improvement and personal growth. In this case, a utilitarian view appears to provide a better explanation for students' behaviours. Similarly, the fact that students' rely heavily on ubiquitous connectivity to obtain support by peers and academics seems

to be only partially driven by eudaimonic principles of experiencing connectedness or a sense of community but more for utilitarian reasons of obtaining key information and reducing their level of stress.

Compatible with the hedonic perspective, stress (pain) avoidance or relief seem to be one of the main goals that learners seek to obtain through ubiquitous connectivity. In this regard, it is important to underline the bidirectional relation between students and technologies. Learners take advantage of ubiquitous connectivity to reduce their stress and to obtain reassurance through an easy access to information, people and resources. However, technologies also play an active role in disrupting learners' well-being by increasing their level of stress due to difficulties in accessing resources, info overload or unorganised online materials. New technologies are therefore a potential source of stress for students when they do not satisfy their expectations or needs.

Finally, the data showed that students' positive or negative experiences with new technologies could be related to how much learners perceive them as naturally integrated in their daily lives. Also, pain avoidance seems to be the main reason that causes some students to be extremely cautious in using technologies, for example when they are experienced as external, and sometimes worrisome, entities that are difficult to handle and use. In this case, the flow theory (Csikszentmihalyi, 1997) can help to provide a possible interpretation of the findings. Students with low confidence regarding the use of ICTs could experience anxiety if the challenges of using new technologies are perceived as too demanding. Instead, for more expert students, ubiquitous connectivity and mobile devices can become an opportunity to increase the flow of their working/learning activities opening to an autotelic experience.

## **Future research**

The data collected in this study and previous research suggest that ubiquitous connectivity also has a strong impact on students' habits in terms of stretching learning spaces and times. The next step of the research will therefore utilise the same qualitative methodology to explore how mobile devices, VLE and Wi-Fi connectivity are changing the boundaries of time and space for learners. Moreover, the same framework presented in this paper will be used to explore the impact of ubiquitous connectivity in distance-online learning settings to explore similarities and differences with on-campus students' experiences.

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## ABOUT THE AUTHORS

**Michele Salvagno:** PhD Researcher, Psychology Department, Faculty of Science & Technology, Bournemouth University, Poole, UK.

**Dr. Jacqui Taylor:** Associate Professor, Psychology Department, Faculty of Science & Technology, Bournemouth University, Poole, UK.



***Dr. Milena Bobeva:*** Principal Academic, MBA Director, Faculty of Management, Bournemouth University, Bournemouth, UK

***Dr. Maggie Hutchings:*** Associate Professor, Faculty of Health & Social Sciences, Bournemouth University, Bournemouth, UK