

Understanding the variation in MBA students' experiences of using Learning Technology in Pakistan

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Abstract

Today, technology is increasingly being viewed as a key resource for enabling innovation within teaching and learning approaches. Social media platforms and applications such as Facebook and Twitter, WhatsApp, Skype and Viber have emerged as one of the most popular mechanisms for developing the social perspective in learning. Some recent studies even refer to this phenomenon as the development of a 'parallel infrastructure' to institutional offerings such as Moodle. However, when any artefact (such as technology), is introduced into a learning environment, there is a possibility that it will be responded to and utilised in different ways. This paper presents the initial analysis from MBA students' experiences of using learning technology within their studies in a Pakistani business school, to see if technology has any impact on the learning approaches, in terms of the way and the purpose for which it is being used. Phenomenographic analysis revealed some initial categories of description, which include 'access to learning materials and other information sources', 'organisation of course-related activities', 'improved communication and connectivity', 'developing cooperation and collaboration' and 'means of overcoming socio-cultural barriers'. The degree of variation within these categories can be related to the established concepts of deep and surface level approach. For example, there were students who preferred to use technology 'as and when required' by their teachers, and within the same environment there were others, who appeared to take a 'deep level' approach that involved some critical thinking about the use of technology and its subsequent influence on learning approaches. Our analysis highlights that students in relatively less developed regions are also making efforts to change themselves from 'passive recipients' of knowledge to active participants, who can support the learning activities of each other, using diverse forms of technology. We argue that while students may be developing an 'alternative or parallel infrastructure to their institutional offerings', there is no disconnect between them. It is this blend in using different forms of technology, which is encouraging the students to develop 'informal networks' among themselves – in an environment, which is majorly instructor-led. However, for addressing a possible 'dis(connect)' in students' use of various forms of technology, there is still a need for educators to 'temper' the enthusiasm of students, to develop a better understanding of how they should interact with technology, as this may provide some new insights for networked learning.

Keywords

Collaboration, Communication, Experiences, Informal Networks, Learning Technology, Pakistan

Introduction

Rapid pace of technological developments – particularly in the past few years- have contributed in reshaping the needs and expectations of learners. New forms of learning technology are paving the way for certain 'possibilities' that can influence the quality of learning experiences within the higher education sector. As Armstrong and Franklin (as cited in Cronin, 2016) stated that "... the historically more certain boundaries – where information and communications were controlled by universities – is being lost" and definitely technology is a contributing factor. Social media platforms such as Facebook and Twitter, and other communication applications like WhatsApp, Skype and Viber have emerged as one of the most popular mechanisms for developing the social perspective in learning. Thomsen, Sorensen and Ryberg (2016), while discussing the students' use of Facebook as a collaborative tool, recently referred to this trend as the development of a 'parallel infrastructure' to institutional offerings such as Moodle. To take a closer look at these changing technological preferences within the learning environments, it is important to explore the way students use such technology in their studies. Henderson, Finger and Selwyn (2013) said "... it makes little sense to presume that all students are making use of the same learning technology, in the same way" (p.236). Such

research can generate interesting insights as students can show variation in the level of acceptance and confidence towards the use of a particular form of technology which can sometimes result in productive initiatives being taken by the students that facilitate their learning.

This paper presents the initial analysis from data that explores the different ways in which MBA students in a Pakistani business school experience the use of learning technology within their studies. The aim is to see if technology has any impact on the learning approaches of these students in terms of the way they use learning technology and the purpose for which it is being used – in a non-western country's context. It is important to understand how different this situation is, when viewed from a developing country's context. The majority of university education is instructor-led in Pakistan (Hodgson & Shah, 2017). By revealing the variation in these students' experiences, we highlight some of the 'informal' initiatives taken by the students that not only facilitate their own learning, but that of other learners as well. Particularly, the use of technology for 'networking purposes' is helping students in developing informal networks that foster better communication, cooperation and collaboration among themselves. This provides us a basis for analysing these student-led initiatives in the light of networked learning principles that stress on establishing 'connections between people and between people and resources' with the mediation of technology.

Existing Literature on Students' Experience and Networked Learning

Networked Learning (NL) as a pedagogical approach has been established and discussed mostly in the context of formal settings. However, the recent literature in this domain has seen a considerable shift, as researchers are now exploring how students in these formal settings are beginning to use informal forms of technology (e.g. social media) for NL (Dalsgaard, 2014; Thomsen et al., 2016). This leads to studies, which try to interpret 'openness in education' from a new perspective by highlighting the overlaps between NL and open educational practices (Cronin, 2016). However, most of these studies have analysed this new developing relationship of NL, in a western (developed) context. From a developing country's perspective, the only notable studies are the ones conducted by Cutajar (2017) and Hodgson and Shah (2017) where phenomenographic analysis was conducted to highlight the variation in the experiences, but the discussion did not specifically segregate between the use of institutional resources (such as LMS) and other informal forms of learning technology. Therefore, in this paper the focus is not only to discuss the different ways in which Pakistani MBA students use learning technology within their studies, but also to highlight how these learners are using the latest tools and applications for establishing 'connections' between themselves, other learners (and also lecturers) and their learning resources.

Within the very definition of NL, undoubtedly the most important word is 'connections', as Jones (2012) stated that it is the interaction that connectivity allows, which serves as the key to NL. The definition of NL provided by Goodyear et al. (2004) explains this more clearly:

...learning in which information and communication technology is used to promote connections: between one learner and other learners, between learners and tutors; between a learning community and its learning resources.

This definition of NL takes a relational stance in which learning takes place both in relation to 'others' and in relation to 'learning resources'. Moreover, within these relations, the 'human-human' interaction is a particularly key characteristic of networked learning (Jones, 2012). It is now common to witness that, in the past few years, the literature on NL has increased its focus on exploring students and lecturers experiences. Goodyear et.al (2005) applied it in the context of higher education studying undergraduate students' expectations and experiences with networked technologies but more recently, Cutajar (2017) conducted a phenomenographic analysis to identify qualitative differences in post-secondary Maltese students' accounts of their networked learning experiences. She found that there is variation in the NL experiences of students, as some of them preferred to focus on increasing their personal learning, while others were consciously attempting to facilitate others. The interest of such phenomenographic research does not lie in correctness of what is described by the students, but on highlighting the patterns of variation in their experience, conceptualisation and understanding about the concerned phenomenon – which may lead to improvement in teaching and learning approaches. As Czerniewicz and Brown (2013) concluded in their study about use of technology in the context of South African higher education, that developing an understanding of the 'technological habitus' can help higher education in developing better pedagogical models.

In the last few years, there is a new emergent trend within higher education to pay more attention on understanding ‘what students do as they live their lives’ (Henderson, Selwyn & Aston, 2017). As the university students today become ‘digital residents’ (Wright et al., 2014) i.e. more comfortable and accustomed with the latest tools and applications, it become even more important to explore the ways in which these tools are being used and for what purpose. Czerniewicz and Brown (2013) note that it is important to understand that students across a range of contexts have varied skills, experience, and interest in the use of technology, therefore there is a need to research how these students ‘navigate through’ the complexities of using technology at university. A more recent study by Seaton et al. (2014) analysed 230 million student interactions with various technology tools at Harvard University and MIT and found significant variation in the ‘purpose’ and ‘extent’ of usage. There were students, who were quite comfortable with the use of different software, tools and applications within their academic activities, but on the other hand, within the same learning environment, there were students who had passive, solitary and sporadic experiences of using technology.

Research Study

The initial findings reported in this paper are part of a larger phenomenographic study being conducted in two of the leading business schools in Pakistan. The aim is to present insights from the relatively unexplored context of the higher education sector in Pakistan, where the trend of using learning technology for educational purposes is only beginning to gain momentum. However, the issue has not been able to attract significant attention from researchers, as there are no peer-reviewed publications on management education in Pakistan since 2008. The published research has mostly focused on highlighting the issues and challenges associated with the use of technology, particularly from the distance learning perspective. During the study, it was observed that these business schools in Pakistan are in the process of developing the required infrastructure which can facilitate the learners in using institutional (e.g. Moodle) as well as informal (e.g. social media etc.) technological systems. Therefore, it was interesting to listen to the students’ experiences of using learning technology in an environment that is presently undergoing a revamp. These different, and at times ‘innovative’ ways in which the students were using technology within their studies, gave us the opportunity to understand the influence of technology on their approaches to learning at their institutions.

Methodology

The phenomenographic approach adopted in this study facilitated us in exploring the experiences of students from a ‘second-order’ perspective or ‘from the inside’ i.e. instead of the researchers making statements about the phenomenon in question, it was the students who described their experiences and understandings about it (Marton, 1981). This analysis enabled us to reveal patterns of variation in the relationship of these students (subject) with a certain aspect of the world around them (object) i.e. learning technology. As common with phenomenographic studies, semi-structured interviews were used for collecting data. All the interviewed students were enrolled in the MBA program and majority of them were in the final year – working on their projects. During the interview, the students were not only asked to ‘describe’ but also to ‘demonstrate’ their use of technology within their studies. This facilitated us in understanding the kind of technology-supported initiatives taken by these students and which have an influence on their learning approaches. The initial reflections presented in this paper are based on the interview and field notes data collected from 23 MBA students. Presently, the audio-recordings are being transcribed and translated (in some cases), after which further analysis will be conducted, as phenomenography involves an iterative and comparative process of data analysis, with the aim to identify the different meanings and the structure associated with experiences of the phenomenon.

Initial Categories of Description

Within phenomenographic analysis, the categories of description emerge from the data after repetitive interactions and engagements with the data. We are using the word ‘initial’, because the categories of description presented below, have emerged from the preliminary analysis of the data. More iterations and interactions with the data, will further clarify these aspects as Marton (1988) stated that “... phenomenography entails the continual sorting of data... definitions of categories are tested against the data, adjusted, retested and adjusted again”, therefore those will be discussed and followed up in a future publication. These categories have been identified keeping in view the criteria suggested by Marton (1988) and describe the different ways in which students are using learning technology within their studies. Therefore, it is pertinent to mention that, this study does not claim that one category is better than the other, as each category presents a way in which learning technology is being used by the students. However, some of the categories (particularly those related with communication, cooperation and collaboration) are relatively more complex than the others in terms of their

influence on the teaching and learning approaches. As Cutajar (2017) explains that, some ways of experiencing, conceptualizing, understanding or perceiving are contemplated as more powerful than others.

Following are the initial categories of description:

- 1 Access to learning materials and other information sources
- 2 Organisation of course-related activities
- 3 Improved Communication and Connectivity
- 4 Developing Cooperation and Collaboration
- 5 Means of overcoming socio-cultural barriers

Each of these categories will now be discussed with reference to the existing literature to highlight how students in a non-western and relatively less developed region use learning technology in their studies.

1. Access to Learning Materials and Other Information Sources

The most popular use of learning technology reported by students was for accessing learning materials and other information, to 'complete their assignments and projects'. Undoubtedly, 'Google' was the most popular source for information search. Similarly, some of the students shared their experiences of using digital libraries, financial databases and other websites for collecting data for their course projects and for most of them, this was the first time of accessing such learning resources through the mediation of technology. As one student described:

... it was the first time I used databases and libraries like 'JStore', 'bookfi' and 'Libgen' to search for relevant content and was amazed to see how easy it was for me to gather the required material ... there are several websites and blogs...from where I get information and ideas about my thesis...(NB-06)

Henderson et al. (2017) also reported in the context of Australian undergraduate students that 'researching information' was one of the prominent uses of digital technology. However, they termed the use of Google as a 'crude approach' for information search.

The use of institutional systems such as LMS (e.g. Moodle) was equally popular. Students shared about their experiences with the university-managed LMS, using it to access learning material, upload assignments, perform plagiarism checks and above all keep a track of their academic activities, particularly assessment deadlines. Such trends however are quite different from the ones reported by Thomsen et al. (2016) where students (in a western context) 'either try to avoid using LMS' or 'only use it if they have to'. They further go on to state that "Facebook not only replaces Moodle but completely eliminates it". While we do agree with their statements that LMS is mostly being used as a medium for downloading lecture notes, but with reference to this study and in the context of Pakistani MBA students, it surely has not been 'replaced' by any other latest tool. A possible reason for this can be that LMS is relatively a new phenomenon for Pakistani universities and as stated earlier the trend of deploying institutional learning management systems is only beginning to gain momentum, so for many students this is a phase where they are still experimenting with the features of LMS that can support their academic activities. But, these trends are similar to the ones witnessed in a developed country's context (Australia), as Henderson et al. (2017) reported that for students in Australia, LMS is still the 'one place' using which they can successfully interact with their course requirements. These students felt that university systems help them in keeping their work 'organised, regulated and focused'. This points to the discussion in literature, about people responding and utilising learning technology in different manners.

Some of the students have also shared their experiences about how having access to unlimited information (e.g. blogs, videos, tutorials, social media platforms) through internet helped them in developing their language skills.

... I would audio record the lecture [delivered in English] and would then listen to it several times at home, noting down the difficult words... I have used online dictionaries and 'Google Translate' to find the Urdu meanings for those words. Sometimes I watch videos on YouTube to understand a particular topic... this has helped me in overcoming the language barrier (NB-10)

2. Organisation of course-related activities

Another popular use of learning technology among the students was the regular use of some basic Microsoft software for completing academic tasks such as preparation of reports, presentations and sometimes spreadsheets for financial analysis. Henderson et al. (2017) refer to such usage as ‘mundane set of digital practises’ by which students use various tools for note taking, editing, and drafting assignments. As one of the students stated:

... I have been using the Microsoft software like Word, PowerPoint and Excel ... because we need them for almost all assignments and projects, for example for reports, presentations and now our teachers ask to prepare financial statements in Excel as well. (NB-13)

There are other recent studies (Selwyn, 2014; Wu et al. 2017) conducted in different contexts, which also report similar use of technology by students. However, irrespective of how ‘mundane’ such practises may be, they continue to be one of the most significant uses of technology for students in Pakistan. But, it is equally important to also think about the concluding remarks given by Henderson et al. (2017) that many of the educational benefits of technology as seen by students today, are mostly concerned with the ‘logistics’ of the university study rather than with issues directly related to learning. Therefore, it is the need for completing the prescribed academic work and ‘dutifully performing well’ (Denovan & Macaskill, 2013 as cited in Henderson et al. 2017) that drives the enthusiasm of students about the educational potential of learning technology. Therefore, what needs to be further explored is how such trends translate and ultimately influence the learning approaches of students in a relatively less developed and traditional (instructor-led) educational setting.

3. Improved Communication and Connectivity

With access to latest smartphones, tables and other gadgets, use of modern technology for improved communication and connectivity was cited as the most useful purpose of technology in their studies. Experiences of using social media platforms and other chatting applications such as ‘WhatsApp’, ‘Viber’, ‘iMessage’ and ‘Skype’ were common. Students were actively using the ‘group-chat’ features in these applications and were discovering ways in which these tools can assist them during their project work. These groups are mostly used for sharing information about academic activities and sending files and other materials (in a variety of formats) to each other. According to one student:

... through our chat groups and study groups on Facebook, we usually talk about our projects, classroom activities, there is progress reporting on some tasks...we are constantly updating each other on assignments and other activities happening in the university. (NB-04)

Due to the popularity of such applications, students were already using them for non-academic purposes, but they described how gradually they have started to use them for educational purposes as well. Zhang and Li (2017) have also highlighted the development of a ‘new learning style’ in China supported by mobile phones and other wireless network applications. According to them, students are developing the habit of using such latest applications to discuss topics, download and share various type of media resources such as text, pictures and videos and more importantly communicate with other learners, answer questions, evaluate and improve each other’s work.

In contrast to earlier studies (White et al., 2014) which report scepticism on part of teachers about use of such informal applications for educational purposes, these students shared that it was their teachers who supported such initiatives and encouraged them to communicate with each other, even outside classrooms. There were examples, where teachers actively interacted with the students on Facebook and WhatsApp groups and responded to student queries. As one student said:

... the best part is our teachers are also on the group and we can ask them lot of things about the course activities (...) you don’t have to be in their friend list but can still interact with them through these common pages and groups (NB-12)

And also:

... for one of the courses we had an official Facebook page, where all the students and even our instructor were added... course insights, lecture notes , latest research and trends about the topic

were discussed. For some tasks, we would actually be marked for our participation in group discussions. (NB-04)

In fact, the department head asked one of the students to make an official page on Facebook to share latest announcements and updates, as he believed it was a faster way of communication than the LMS. There have been recent studies that have discussed Facebook and other social media platforms as the most frequently used tool for communication and information dissemination between students (Deng & Tavares, 2015, Wang et al., 2012). Thomsen et al. (2016) also report that Facebook is used for academic purposes such as sharing information, helping each other by sharing files and academic literature, information about classes, exams etc. This was also reported by Vivian et al. (2014) and Dalsgaard (2014). Undoubtedly, at times it was felt that such latest tools are beginning to 'replace' (referring to Thomsen et al.) formal institutional systems, in terms of popularity and frequency of use. However, students also shared that the purpose of using an institutional system and other informal tools was quite different, as the LMS supported them with a range of activities such as plagiarism check, online quizzes and timetable management. These findings are consistent with the study by Wang et al. (2012), in which the authors experimented using Facebook as LMS for some courses. The study reports that students faced difficulty in using Facebook as an alternative platform for course management as there were issues about uploading files in multiple formats and also certain safety and privacy concerns. Facebook was however, better for sharing of announcements, ideas and resources.

In addition, in the context of another developing country Alshammari, Parkes and Adlington (2017) highlight the effectiveness of using WhatsApp for English language learning in Saudi Arabian universities. They argue that such communication applications can support autonomous peer learning and lead to the development of a learning community, however such informal learning must be, they claim, be 'tempered' with proper guidelines and facilitation from the faculty.

4. Developing Cooperation and Collaboration

As a direct consequence of improved communication and connectivity, the students reported the use of technology for cooperation and collaboration during various academic activities. There are instances where use of technology has resulted in better cooperation, as students were working with their friends to 'enable' them to do a certain task, either by providing them instant feedback on their work, or by sharing information or resources they wouldn't otherwise have. For example "... it is amazing when so many minds communicate with each other on WhatsApp... we often come up with interesting ideas to complete our assignments and projects" (NB-10). Similarly, such cooperation was particularly helpful for those students, who were also working part-time and could not regularly attend their classes. As one of the students said:

... sometimes I am unable to attend a class, so I request for notes on the WhatsApp or Facebook group of the class and usually someone either provides me guidance or sometimes send me the required materials" (NB-08)

Also, there were some other interesting experiences of 'inter-departmental' cooperation, where students from the Human Resource department sought help from Finance students, to complete some course work.

Similarly, there were indications that students are gradually beginning to see each other as 'collaborators'. By collaboration, we refer to the use of technology to work alongside each other to achieve some common goal. Such collaboration was mostly evident during the course projects, where the tasks were distributed and each member was required to regularly share updates and progress. As one student said "... so instead of the hassle of arranging physical meetings for group work, we use our WhatsApp group and shared folder on Dropbox to coordinate with each other" (NB-07). Students shared examples of using latest tools such as Facebook, WhatsApp and Skype for sharing information and other project related materials with each other. A student said:

... last semester we tried to use a closed Facebook group for project collaboration... we created a group and added all members in it, who regularly posted all the updates, discussed any issues and also shared different versions of the report. I think we all felt that we were more aware about the progress and somehow ... avoided the usual confusion near the submission deadline (NB-12)

Thomsen et al. (2016) also reported that for the students at Alborg University (Denmark), Facebook is the most frequently used tool for group-work activities, file sharing and online communication. Similarly, there is an increasing trend of using services such as Google Docs, Skype and Dropbox etc. for communication and

collaboration in many ways. In the context of Pakistan, such examples of ‘collaborative and cooperative learning’ and ‘group work’ (Hodgson et al., 2012) seem to indicate the formation of ‘informal networks’ between these students, through which they are supporting each other’s learning activities. We use the word informal, because it is the students who are using various forms of technology for networking with others, outside the formal settings of their university. However, what is interesting is that these students are using a blend of formal (institutional systems) and informal tools for this purpose. Although, these might seem as very small initiatives taken by the students to work with each other on various academic issues, but with growing awareness and some proper guidance about use of learning technology, these initiatives could eventually result into development of networked learning approaches - in a traditional learning environment of Pakistan.

5. Means of overcoming Socio-Cultural barriers

Despite the fact that the two business schools, where this study was conducted have a co-education system there were visible influences of gender-specific socio-cultural factors on students’ experiences. For example, there were female students who expressed their reservations about using chat applications and online groups due to the presence of male class fellows. On the other hand, some students shared their experiences where certain web-based tools and the university’s LMS has allowed them to do their academic work at ease and without any restriction because ‘they were not permitted to be in the campus after evening’.

We believe that, this aspect requires more analysis of the data and will be followed up in a future publication, as this paper focuses more on highlighting the various ways in which these students use learning technology.

Discussion

One of the most notable observations during the fieldwork was to see how advances in technology, particularly in the domain of personal computing have encouraged universities – even in a relatively less developed part of the world like Pakistan to build the required infrastructure that can support integration of technology in education. It was quite common to see students having their own laptops, smartphones and high-speed internet devices. However, when any artefact (such as technology), is introduced into a learning environment, there is a possibility that it will be responded to and utilised in different ways. Across our categories of description, the most apparent degree of variation in the use of learning technology links closely to the established phenomenographic concepts of ‘deep and surface level’ approaches as presented by Marton and Saljo (1984). For example, there were students who preferred to use technology ‘as and when required’ either by their teachers or due to certain assignment/project requirements. As per Marton and Saljo (1984), students taking a surface level approach focus on memorising facts and figures and do not attempt to ‘establish any connection with the intended outcome’. As one of the student explicitly stated that:

... I feel I have the basic skills to use [Microsoft] Word, PowerPoint and Excel...as mostly all assignments and projects revolve around them ... as long as my assignments get completed, I am happy with this basic knowledge about these tools. (NB-14)

Such student experiences seem aligned with what Biggs (2003, p.14) had stated about the surface level approach that the intent of the students is ‘to get the task out of the way with minimum trouble while appearing to meet course requirements’. While there can be several reasons for this, but such variation seems aligned with the current discussion in the literature about the widening gap in students’ digital skills and the argument that not all ‘net generation’ students are digital natives.

On the other hand, there were students, who appeared to take a ‘deep level’ approach involving some critical thinking about the use of technology i.e. consciously attempting to examine the rationale behind the use of technology in education and subsequently its influence on their learning approaches. These students made the effort to relate their use of learning technology with their previous knowledge and expertise. As one of the student shared:

... these days we are not only expected to prepare a simple report or presentation about a topic, instead it is expected that we would use certain tools to make our work more informative and dynamic, for example by adding images, videos, animations, graphics etc. ... and for this you have to continuously learn new tools and experiment with their features. (NB-10)

It is through this approach that the students try to understand the bigger picture and seek detailed information, as they make a real effort to connect with and understand what they are learning (Biggs, 2003). There is a growing awareness about the use of technology, particularly to stay 'connected' within a network of learners. Our analysis of students' experiences also highlights that students in relatively less developed regions, are also making efforts to change themselves from 'passive recipients' of knowledge to active participants, who can support the learning activities of each other, using diverse forms of information and communication technology. As Harasim et al. (1995, p.273) had stated in the context of networked learning that "... the network learner [of future] will be an active participant ... learning with and from experts and peers wherever they are located".

The variation found in the ways students are using learning technology in Pakistan leads us to slightly disagree with the findings of Thomsen et al. (2016) and Hannon, Riddle & Ryberg (2014) about a 'disconnect' being present between the institutional systems such as Moodle (LMS) and the digital technologies preferred by the students. Our findings suggest that while students may be developing an 'alternative or parallel infrastructure to their institutional offerings' (Thomsen et al., 2016), there is no disconnect between them. In fact, students in Pakistan are using both types of systems in conjunction with each other to better support their studies. Interestingly, it is this blend in using different forms of technology, which is encouraging the students to develop 'informal networks', which are beginning to have an influence on their learning approaches. It is equally encouraging to see that the teachers in these business schools are not only motivating their students to use any preferred platform for interaction, but at times are also participating with them in such initiatives. As Cronin (2016) suggests that students should be given the option to choose when, where and to what extent they wish to connect their learning practices with the formal institutional approaches. It is important for institutions as well as the teachers to understand that learning can take place both within and beyond the classroom therefore such student initiatives need to be encouraged and properly 'guided' i.e. students may be educated to use these tools critically in an attempt to strengthen their learning practices. As Thomsen et al. (2016) suggest that students today require support, inspiration and education to develop a critical and reflexive approach when choosing a particular form of technology to use within their studies.

Conclusion

This paper discussed the students' experiences of using learning technology, within a non-western and relatively less developed country- Pakistan. Our initial categories of description not only highlight the different ways of understanding, conceptualising and using technology, but also reveals the deep and surface level approaches taken by these students. Students taking a deep-level approach were using both formal (e.g. Moodle) and informal (e.g. social media and other apps) forms of technology to consciously support each other's learning. Particularly, the use of technology for communication, cooperation and collaboration purposes has resulted in development of informal networks in the relatively traditional learning environment of Pakistan-, which is mostly instructor-led. Also encouraging is the instructor support that these students are getting in some of their initiatives. There have been recent studies (Tang & Hew, 2017) – in the context of developed countries-, which report instances where teachers have offered opportunities to their students to integrate their informal and formal learning practices through use of latest tools and applications. For example, Tang and Hew (2017) report how Twitter is being used as a push technology by teachers for sending important course-related information to their students and as a viable platform for peer interaction. However, they also suggest that such initiatives requires more involvement from students and teachers, in order to become more useful. Moving forward, for addressing a possible 'dis (connect)' in students' use of various forms of technology, there is still a need for educators to 'temper' the enthusiasm of students (Henderson et al., 2017) to develop a better understanding of how they should interact with digital technology. Moreover, exploring such 'networks in the wild' (Haxell, 2012), particularly in a non-western context, may provide some new insights for networked learning.

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