Mobile phone use within the classroom: are the possible opportunities outweighed by the challenges?

Mobile phone usage has increased dramatically in the last five years (International Conference on Telecommunications, 2015). It is far more than just an update of a landline; a mobile phone allows the user to maintain constant social relationships with family and friends whilst on the move (Wei & Lo, 2006; Surratt, 2006). The new smart phone technologies have extended the basic capabilities of traditional mobile devices which only permitted voice calls and text messaging (Billieux, 2012) and are distinguished from other mobile devices due to their advanced features (Randler et al., 2016; Parashkou et al., 2016). They are a new class of technology likened to handheld personal computers that are equipped with constant network connectivity for wireless communication capabilities such as accessing social media sites and internet browsing (Sarwar & Soomro, 2013; Gutierrez et al., 2016). Further possibilities offered by these new hybrid phones include personal information management applications such as banking, email, gaming, news applications and the possibility of viewing television and films (Lepp et al., 2014; Parashkou et al., 2016).

The smartphone is fast becoming a multipurpose handheld device that can assist people not only when performing their daily activities but also professional activities; they are used by many for instant access to information and knowledge from the internet. (Anshari et al., 2017). They allow students to have discussions on social networks, such as asking peers to share pertinent links to the class (Nakamura et al., 2015). Most students bring their smartphones into classrooms and lecture theatres; this enables them to capture lecture notes from the board via photo, video, and/or audio. Indeed, discussion and idea generation can be enhanced using social networks which are accessible using smartphones to attract more participation form the students (Derounian, 2017). With many higher educational institutions considering embracing the smartphone as a learning aid in the classroom nearly all students own them but are also attached to them. The question this raises is whether embracing smartphones within an educational environment enhances learning or can perhaps cause distraction (Anshari et al., 2017).

Although seemingly advantageous within HE classrooms, the use of smartphones can also create serious disturbance during lectures if students are engaged in other smartphone facilities. Indeed, resulting effects from this increased connectivity and accessibility provided by these devices have not all been positive (Bianchi & Phillips, 2005). Billeux, (2012) defined excessive use of a mobile phone as the individual's inability to regulate their use of the device. This dysfunctional uncontrolled use of the mobile phone has become a public health challenge having adverse consequences on daily life (Billeux, 2014; Elhai, 2016). Potential negative outcomes associated with excessive problematic mobile phone use includes financial problems, medical problems such as damaged fingers and forearms, as well as psychological and physiological disorders including anxiety and sleep disturbances (Billeux, 2014; Randler et al., 2015; Thomee et al., 2011; Ming et al., 2006). It is therefore necessary to understand the behavioural and psychological mechanisms that play a role in defining problematic smartphone behaviour (Bianchi & Phillips, 2005).

Fear of Missing Out

Incoming alerts from texts, instant messaging and social media have the potential of creating considerable pressure to be constantly available and can contribute to a FoMO (Thomee et al., 2011). FoMO is a relatively new personality construct that involves the reluctance to miss out on social information to avoid feelings of anxiety, dissatisfaction, and unworthiness (Elhai & Hall, 2016; Przybylski et al., 2013; Scott et al, 2016.; Miller, 2012). FoMO can result in the need and desire to remain constantly connected to social networks and messaging applications (Riordan et al., 2015; Abel et al., 2016). Sites such as Twitter, Facebook, and Instagram seem especially attractive as they are the tools for seeking social connection that provide additional social involvement (Przybylski et al., 2013). Therefore, people with a high degree of FoMO are likely to overuse their mobile devices in an attempt to satisfy the need to stay connected (Scott et al., 2016).

Przybylski et al. (2013) demonstrated that adolescent males scored higher in FoMO and reported low levels of psychological needs such as competence, autonomy and connectedness with others. The research also identified a relationship between FoMO and social media use. Specifically, a relationship between FoMO and Facebook

use was examined based on individual's engagement with the smartphone application throughout the day. Participants with high FoMO scores were more likely to experience mixed emotions when using Facebook during lectures and were more prone to using their mobile device while driving, due to the urge to check back for social media updates. The authors conclude that in order to soothe their feelings of missing out individuals check their mobile device on a regular basis (JWT, 2011; Przybylski et al., 2013; Lewis & West., 2009).

Oulasvirta et al. (2011) outline the various types of rewards that are associated with checking behaviour: awareness rewards, informational rewards, and interactional rewards. For example, being aware of up to date emails and news would be a type of awareness award, an individual receiving a new notification or a text message would be a type of informational reward, and social networking and checking the latest updates would be considered an interactional reward (Oulasvirta et al., 2011). These rewards can be reinforcing leading to repeated action which can then form a habit, leading to problematic excessive use (Oulasvirta et al., 2011; Lewis & West, 2009). According to Oulasvirta's et al. (2011) research findings, checking behaviours such as looking for Facebook updates, and checking email and news headlines were mostly carried out in between activities, for instance, when travelling, in between lectures or during empty moments at home (Oulasvirta's et al., 2011). These maladaptive smartphone checking behaviours could interfere with daily life. There are societal and legislative controls that attempt to govern aspects of mobile phone use (Bianchi & Phillips, 2005) resulting in the banning of mobile phone devices within a variety of places, such as hospitals, airplanes, petrol stations, and schools. However, although legislation attempts to control these behaviours, individuals still ignore these bans in favour of using their devices.

Nomophobia and Addiction

New phobias are emerging due to the development of recent technologies such as the smartphone that allow virtual communication (Bragazzi & Del Puente, 2014). Nomophobia is a phobia that refers to anxieties or discomforts experienced when an individual is out of contact with a smartphone. It is a collection of symptoms that can be triggered by several circumstances including; the loss of phone signal, a dead battery,

having no remaining minutes or losing the device (King et al., 2010; Bragazzi & Del Puente, 2014). Clinical characteristics of nomophobia include, impulsive use, continually carrying a charger, using the device as a form of protection from social communication, and keeping the device within reach while sleeping. Bragazzi & Del Puente (2014) proposed the inclusion of nomophobia within the Diagnostic and Statistical Manual of Mental Disorders V (DSM 5; American Psychiatric Association, 2013) based on the 'specific phobia' classification within the DSM-IV-TR (APA, 2000) defined as an anxiety disorder that represents an unreasonable or irrational fear prompted by a specific stimulus (Bragazzi & Del Puente, 2014; APA, 2000).

Research by YouGov (2008) revealed that 53% of mobile phone users were considered to suffer from nomophobia with 58% of men and 48% of women indicating feelings of anxiety when unable to use their device. SecurEnvoy (2012) described comparable findings when researching 1000 employees. Sixty six percent suffered from nomophobia. However, in contrast to the 2008 research they found that 70% of women compared to 61% if men expressed feelings of anxiety when unable to access their mobile phone. Siggins and Flood (2014) reported that there was no significant difference in anxiety levels in research on planned device separation. Nevertheless, 60% of the participants were still unwilling to separate from their mobiles and many failed to complete the questionnaires when told that there may be a possibility of separation from their phones. Tran (2016) however, argues that nomophobia is characterised by the absence of a mobile device, yet specific phobias are characterised by introducing a specific object or situation, therefore the concept nomophobia does not entirely fit the definition of specific phobia. This distinction is further supported by Clayton et al. (2015) who investigated iPhone users that were measured on heart rate and blood pressure. The findings demonstrated that participants displayed raised somatic responses both whilst in possession and when separated from their device. Interestingly, participants who were initially separated from their iPhone and then later reissued, reported lower states of anxiety and physical responses compared to the starting group who already possessed their devices without the initial separation (Clayton et al., 2015). This reinforces the idea that smart phone separation is more aptly described as non-substance withdrawal as it

highlights the negative reinforcement phone repossession has over initial possession (Tran, 2016).

Aligning with this proposal, Bianchi and Phillips (2005) maintain that excessive smartphone use is better described in terms of behavioural addiction, with the components of addiction being defined as tolerance, withdrawal, compulsive symptoms and functional impairment (Lin et al., 2014; Griffiths, 1995). Within the DSM 5 pathological gambling is included as the first behavioural addiction, labelled under the category of non-substance abuse (Bhatia, 2010; APA, 2013). While there is a dearth of evidence regarding a true addiction to mobile phone use, data from recent studies suggests that some phone users exhibit serious problematic behaviours similar to the diagnostic criteria for pathological gambling (Billeux, 2012; Bianchi & Phillips, 2005; Merlo et al., 2013). Behavioural addiction, like other substance addictions, is considered to be the habitual drive to continue the behaviour regardless of any negative consequences. Symptoms include excessive time spent on the device, preoccupation with communication, increased frequency and duration of mobile phone communication, and anxiety when separated from the device (Lin et al., 2014). Therefore it seems plausible that the consequences of problematic mobile phone use appear to parallel other behavioural addictions and dependence and therefore it may be important to consider it as a potential diagnostic entity (Merlo et al., 2013).

Tossell et al. (2015) examined smartphone user behaviours in relation to participants self-reported smart phone addiction. Thirty-four participants were given iPhone's that logged all phone use in a yearlong study. On conclusion of the research the participants were asked to rate their level of addiction to the device (Tossell et al., 2015). Sixty two percent admitted feeling addicted to their smartphones. These users showed differences in their smartphone usage compared with those who did not indicate addiction; they spent twice as much time using the device and also launched the phone applications twice as often as the non-addicted users. The logged data revealed that internet use and social media applications drove this practice (Tossell et al., 2015). When applying this research to mobile phone use within a classroom, students with high levels

of addiction may have the urge to use their device for non-teaching purposes, causing distraction and resulting in a difficult teaching environment.

Conclusion

To conclude, it appears that the use of mobile phones within a classroom environment presents opportunities and challenges. Smartphones enable students to access online teaching materials, to solve problems, and to share knowledge and information with their peers, therefore turning it into a powerful learning aid for students. However, although the intended purposes of these devices are to improve educational experiences for the students, the above literature suggests possible mechanisms that can lead to problematic excessive mobile phone use resulting in various health hazards. College faculties should take into account that although mobile phones could be considered a helpful academic tool, for students who have high FoMO and addiction levels, the instant ability to perform multiple tasks easily such as checking emails, surfing the web and social networking render them prone to distraction. This could negatively affect the students using the phones and could also lead to side effects that negatively impact on teaching. Findings from the literature could be used to inform schools and colleges about the most at risk groups of students allowing them to establish the necessary protective interventions.

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