

# Embracing the intersection of pedagogy and technology: A digital mindfulness approach for addressing problematic use of the Internet among tertiary students

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Problematic Use of the Internet (PUI) is characterised by excessive and poorly controlled internet use, and encompasses a multitude of online behaviours including gambling, gaming, social networking, and pornography (Fineberg et al., 2018). PUI is disproportionately prevalent among tertiary students compared to other adults (Fineberg et al., 2018; Ioannidis et al., 2018), and is associated with poorer academic performance and severe symptoms of mental illness (Kitazawa et al., 2018; Tokunaga, 2017). This profile of high prevalence and significant life impairment highlights a pressing need to develop scalable support strategies for PUI in tertiary populations. Particularly, as higher education increasingly integrates technology into pedagogical practices, understanding and mitigating the issues stemming from technology misuse are of paramount importance.

The current study responded to this multifaceted issue by investigating the efficacy of a 30-day digitally delivered mindfulness intervention for reducing PUI severity and mental illness symptoms among Australian tertiary students. Mindfulness meditation cultivates present-focused awareness, attention, and non-judgmental acceptance (Kabat-Zinn, 1994; Schumer et al., 2018), and has demonstrated efficacy in treating comparable mental health conditions (Garland & Howard, 2018). Digital mindfulness interventions are a promising approach due to their scalability, accessibility, and potential for reaching large student populations (Kuss & Lopez-Fernandez, 2016). By utilising online platforms and mobile applications, these interventions can effectively engage students and provide them with the necessary tools to develop healthier internet-use habits (Laurillard et al., 2013; Sarker et al., 2019).

Twenty-six students with PUI (80.70% female; 25.62  $M_{age}$ ,  $\pm$  5.94) participated in weekly online group education sessions and daily app-based meditation. The weekly group sessions were designed to explicitly address common barriers to regular mindfulness practice through the use of a contemporary behaviour change framework, the Behaviour Change Wheel (Michie et al., 2011, 2014). Commonly reported barriers among students include lack of knowledge and skills, low motivation, time constraints, and financial costs (Lyzwinski et al., 2018; Schwind et al., 2017). As the therapeutic potential of digital mindfulness programs is highly dependent upon regular and consistent practice, interventions that address these barriers through application of appropriate and theory-informed behaviour change frameworks are especially valuable and maximise the likelihood of high student engagement and retention (Michie et al., 2011).

Repeated measures ANOVAs revealed significant reductions in PUI severity ( $F(2, 50) = 14.57, p < 0.001, \eta^2 = 0.37$ ), depression ( $F(2, 50) = 21.92, p < .001, \text{partial } \eta^2 = .47$ ), anxiety ( $F(2, 50) = 16.68, p < .001, \text{partial } \eta^2 = .40$ ), and stress ( $F(2, 50) = 41.23, p < .001, \text{partial } \eta^2 = .62$ ) post-intervention and at one-month follow-up, indicating that improvements to internet use behaviours and wellbeing were sustained post-intervention. These findings underscore the potential of digitally delivered mindfulness interventions in promoting mental health and addressing PUI in higher education. By harnessing technology, universities can effectively engage students and provide scalable support. Whether in urban or rural settings, traditional or online learning platforms, these results have far-reaching implications for the integration of digital interventions within higher education settings to foster healthier internet-use habits and enhance student well-being.

Keywords: Digital pedagogy, problematic internet use, proof of concept, digital intervention, behaviour change

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