LITERATURE REVIEW

Wellbeing in a Digital World: online-facilitated interventions to support wellbeing in Childhood and Adolescence

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April 2025

cite this document
Zhou, W., Taylor, L., Boyle, L., DeBorst, L., & De Neve, J-E. (2025). *Wellbeing in a Digital World: online-facilitated interventions to support wellbeing in Childhood and Adolescence: Literature Review.* International Baccalaureate Organization.

Wellbeing in a Digital World: online-facilitated interventions to support wellbeing in Childhood and Adolescence

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With special thanks to Dr. Magdalena Balica, Dr. Jennifer Merriman, Dr. Jose Marquez, and the Wellbeing Research Centre team at the University of Oxford.

Executive Summary

This report explores the role that digital technology plays in the lives of children and adolescents in our world today, and presents schools with various ways in which digital technologies can be harnessed to improve student wellbeing while acknowledging the potential drawbacks of technology use. Moreover, a set of online-facilitated interventions which were evaluated through a RCT design are also reviewed for their promise of impact on improving various aspects relating to adolescents' wellbeing.

The report provides an initial context of the breadth of the digital world for children today and how the use of digital technologies and their content can have varying impact on young people depending on a multitude of factors such as content, perception, engagement, frequency, and individual factors such as age. It should be noted at the outset that the current evidence on the effect of digital technology on the lives of students is mixed, with evidence generally showing positive effects on education, self-expression, and access to resources, though also, in some contexts and with some populations, showing evidence of digital technologies posing a risk to students. Online behaviours vary considerably, and schools should be aware of the different benefits and risks relevant to their student body. The online interventions that are presented are focused on improving wellbeing for young people, but as context for these interventions, it is crucial to also understand the wider digital world of the child and its impact.

Due to the profound impact of digital technology today, digital ecosystems have become an integral part of young people's lives and daily experiences. Therefore, it is important to consider the potential impact of online modes for delivering wellbeing interventions on young people. The importance of digital literacy and wellbeing has only grown following the COVID-19 pandemic, which not only heightened public attention on the wellbeing of children and young people but also accelerated the shift towards digitally-facilitated learning. These two trends have facilitated the development of online-facilitated wellbeing interventions. With the growing body of research on online-facilitated interventions, this report examines their potential to enhance adolescents' wellbeing.

Research also provides schools with a potential framework when considering this online approach. It involves considering various complexities, such as constrained resources, the expenses associated with certain online interventions, inconsistent student engagement, and the variable empirical support for different interventions. Despite these challenges, it is important to evaluate the benefits of online interventions, which include their ability to reach a large number of students, their accessibility at all times to fit into students' lives, their potential preference over in-person interventions for some students, and their ability to provide support when other support services, such as school counsellors, are in high demand. It seems online-facilitated interventions are more likely to be successful when the content is engaging to students, sessions are short and frequent, those delivering the intervention (such as teachers) are supported, and additional face-to-face elements are included.

Although growing attention is being paid to this topic, it remains a relatively new and evolving field of study, marked by a lack of large scale samples, objective measures of digital technology use, and clear definition. It is essential for readers to critically evaluate findings, recognizing the ongoing development of theoretical frameworks and the contextual factors that shape outcomes. While debates persist regarding whether digital technology use is beneficial or harmful for adolescents, as noted throughout our reports, adopting a one-size-fits-all approach oversimplifies the issue and can lead to ineffective strategies. Digital technology presents both opportunities and challenges; the key lies in schools understanding the available options and tailoring their use to align with their unique contexts and the diverse needs of their students.

Introduction

The IB and the Wellbeing Research Centre at the University of Oxford have worked together on a series of reports focused on wellbeing in schools. Two foundational reports, 'Wellbeing in Education in Childhood and Adolescence' and 'Wellbeing for Schoolteachers', have been published and give detailed information about the IB's approach to wellbeing. We suggest that readers first explore these foundational reports to gain a detailed understanding of wellbeing in schools before reading this series of brief reports on the drivers of wellbeing.

For this report, it is important to highlight what we mean by wellbeing. In our published reports (exploring the wellbeing of young people and schoolteachers), we focus on subjective wellbeing, which refers to the individual's perception of their own wellbeing. In schools, wellbeing is often used as a catch-all term for anything that sits outside academic attainment. This makes it difficult for schools to measure and implement changes, because the parameters are so broad and intangible. Wellbeing science is an established area of academic research, and we employ insights from the empirical science of wellbeing to inform these reports.

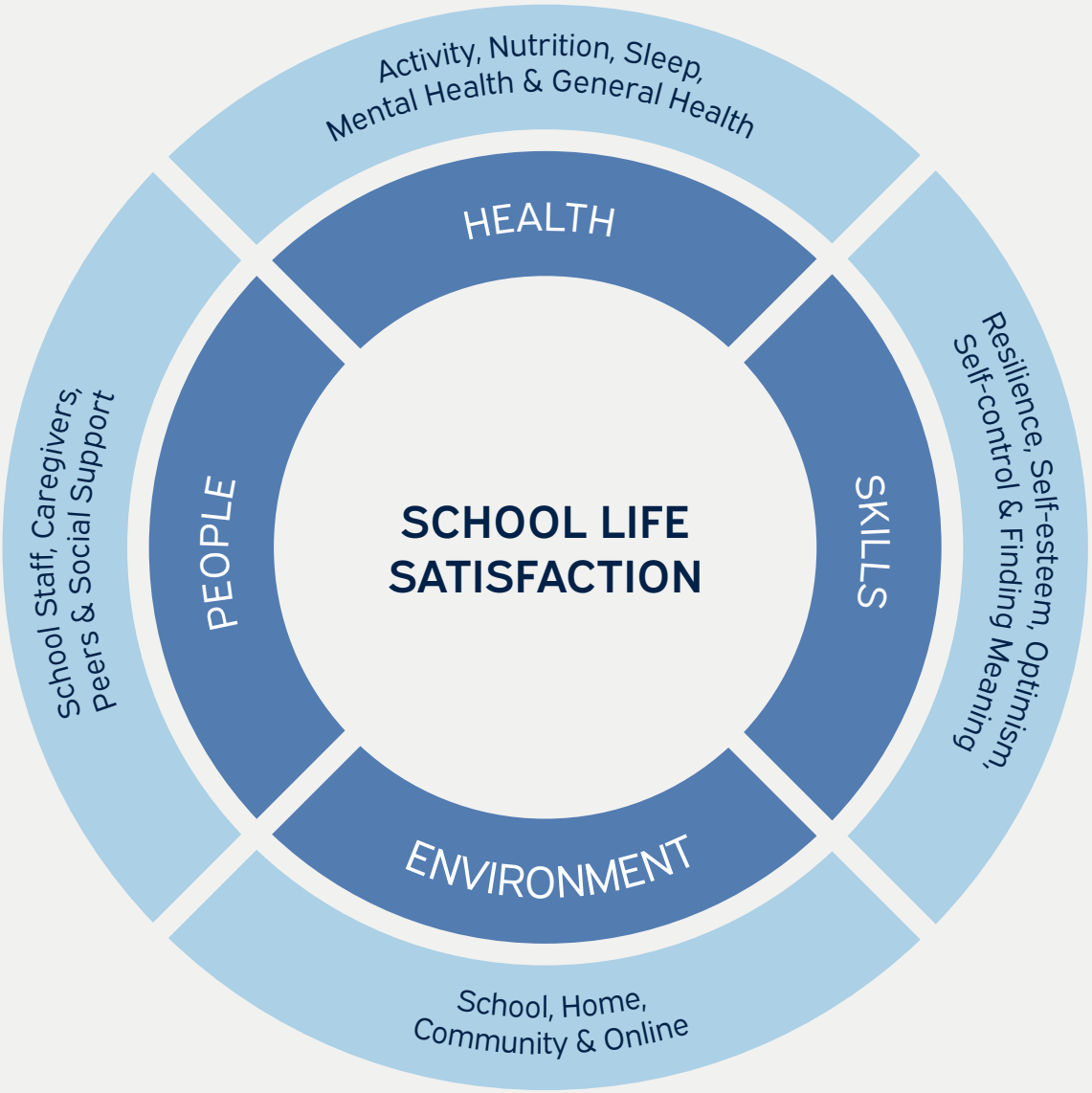
In school settings, wellbeing is often misunderstood as simply the opposite of mental ill health or happiness. However, in the 'Wellbeing in Education in Childhood and Adolescence' report, we clarify the differences between these concepts and how schools can use these definitions to decide which aspects of wellbeing to measure and impact. The definitions we recommend in the report remove the drivers of wellbeing (like resilience, mental health, family, peers, teachers, etc.) from the definition and focus on the three key areas of subjective wellbeing: life satisfaction; affect; and eudaimonia.

FIGURE 1: COMPONENTS OF WELLBEING

LIFE SATISFACTION	This element captures people's satisfaction with their lives, their perception, and experience.
AFFECT	The feelings, emotions, and states of a person at a particular timepoint, including both positive affect (e.g., joy, happiness, pride) and negative affect (e.g., sadness, depression, anxiety).
EUDAIMONIA	Whether people feel their life is worthwhile or has purpose and meaning (this can include autonomy, capabilities, competencies, and other areas of psychological functioning).

The core outcome of the wellbeing framework for young people for this project is satisfaction with school life. We focus on the life satisfaction area of subjective wellbeing as the key outcome for the frameworks for practical reasons, but we also emphasise the importance of affect and eudaimonia. These outcomes were selected as they represent the areas that schools can most influence. The framework is presented in Figure 2. The framework has the key performance indicator (KPI) or outcome variable in the middle, and all the drivers that research evidence has suggested influence pupil wellbeing around the outside. It is important to note that this framework only focuses on the evidence for wellbeing and, as such, there may be other research that schools may wish to consider, beyond the scope of these reports, which focus on other positive outcomes for young people.

FIGURE 2: THE SCHOOL LIFE SATISFACTION FRAMEWORK



Each driver has varying degrees of influence on the wellbeing of individuals depending on factors such as the age of the individual and their environment. For example, we know that peers are very important to the wellbeing of adolescents, but to a lesser extent for younger children. This framework gives ultimate flexibility and can be adapted over time to incorporate new insights.

In the 'Wellbeing in Education in Childhood and Adolescence' report we give examples of definitions that schools can use. For young people, we suggest that a school-specific definition, including all three areas, is most appropriate:

> *"This school promotes the wellbeing of all pupils. We define wellbeing as our pupils being satisfied with their school lives, having positive experiences at, and feelings about, school, and believing that what they do at school gives them some purpose and meaning."*
>
> [Edited extract from the 'Wellbeing in Schools in Childhood and Adolescence' Report; Taylor et al., 2022]

Purpose and Scope of the Focused Report

This series of intervention reports is intended to give the IB and schools a more nuanced understanding of the drivers of wellbeing for young people. Each report contains scientific research, interventions, measurement, and discussion around a specific driver of wellbeing. Each of the topics within these reports has differing levels of scientific evidence, and one of the main aims of these reports is to summarise what we know now about a topic and what further work needs to be done. Ultimately, we aim for these reports to become part of a digital, evidence-based repository which schools can use to measure, monitor, and support, the wellbeing of young people.

The Importance of Wellbeing Interventions for Children

An in-depth discussion of this topic can be found in the report 'Wellbeing in Education in Childhood and Adolescence'. The report discusses three important reasons why schools should seek to improve the wellbeing of their pupils: firstly, childhood and adolescence are important periods in their own right, and every young person has the right to have a positive experience in this critical formative period; secondly, higher wellbeing in childhood and adolescence is associated with other benefits for young people, such as higher attainment, better mental health, and positive pro-social behaviour. Finally, it is important to maximise wellbeing in childhood and adolescence because of the long-lasting impact this has on their future, including their adult levels of wellbeing and job prospects.

The report emphasises that there is value in using school time, money, and resources to improve pupil wellbeing. These improvements will likely not only have immediate benefits for students but will have a driving effect on other positive outcomes (individually, socially, and academically) and have a positive impact on the future lives of young people as they mature into adulthood. Importantly, there is seemingly no trade-off between wellbeing and academic performance. Put simply; happier children make better learners. Schools can feel confident to use time and resources to improve pupil wellbeing in the knowledge that it will likely also lead to improvements in their core business of academic attainment.

The Current State of Digital Use Globally

The current youth generation has grown up immersed in digital and technological environments, especially in middle-to-upper income countries (UNICEF, 2017; Eurostat,2023). To better situate the potential power of digital interventions, it is important to first understand the role that technology plays in the lives of students today. An understanding of both the advantages and disadvantages of digital technologies, and the various levels of research that surround this topic, is vital to harnessing the capability of technology whilst also mitigating the potential risks brought about by such devices.

Digital Use Amongst the Youth

Children and adolescents today have been brought up in a society which has been shaped by technology and digital media (Bitto Urbanova et al., 2022). The digital landscape is dynamic, changing dramatically and at differing rates, and as such, the experience of young people today, compared with previous generations, has changed dramatically too. Though it is difficult to provide global estimates for digital use (given that digital use can vary in form, and has considerable disparities; Chinn & Farlie, 2007; Hoehe & Thibaut, 2020; Singh et al., 2020; Su et al., 2019), the use of technology amongst young people, and addiction to technology, is increasing (Lozano-Blasco et al., 2022; Olson et al., 2022). In UNICEF's 'The State of the World's Children' 2017 report, several key messages are emphasised. Notably, 71% of 15–24-year-olds engage in online activity compared to 48% of the general population (UNICEF, 2017). One of the most salient findings from this report was individuals under the age of 18 comprised of a third of all internet users (UNICEF, 2017). Moreover, in high income countries, European data revealed that in 2023, 97% of young people aged 19-26 used the internet everyday (Eurostat, 2023) Indeed, the widespread prevalence of digital use among youth underscores the pressing need to improve regulation and safeguarding for these rapidly developing technologies.

Benefits of Technology to Children and Adolescents

The internet, in particular, has allowed children and adolescents to access a wealth of resources, information, support networks and opportunities (Bitto Urbanova et al., 2022; Greenfield & Yan, 2006). Greenfield and Yan (2006) emphasise the co-construction of knowledge and experiences between the adolescents and technology, and also stress the active role that young people can play in their interaction with technology. Based on their qualitative study exploring 15 Slovak adolescent perceptions of the benefits of technology, Bitto Urbanová et al. (2022) found that adolescents perceive technology as a valuable resource for accessing information, facilitating both formal and non-formal education, enabling social interactions, serving as a useful tool, providing a comfortable space, and supporting self-development. Similarly, a review of 24 qualitative studies found that social media can support wellbeing through online connection and support. (Popat & Tarrant , 2022).

Online resources and media can also serve as a source of enjoyment and positivity for many children and adolescents, providing them access to games, enabling connections with friends and family, as well as the means to create and curate their own content (UNICEF, 2019; Haleem et al., 2022). The educational benefits associated with digital technologies are extensive and will be discussed in later sections of this report. Another important aspect of online media is the opportunity for young people to become more civically engaged and be better informed on discussions surrounding their civic rights (UNICEF, 2019). Nonetheless, it is important to reiterate that these digital technologies are not implicitly beneficial to children and adolescents, but they can be harnessed in a manner which offers opportunities for positive development.

Risks of Technology to Adolescents

The increasing role that digital technology plays in the lives of young people also brings with it a multitude of risks, depending on how the medium is utilised (Mascheroni & Ólafsson, 2014; Smahel et al., 2020). Here, we will outline a non-exhaustive list of risks associated with digital technology and encourage schools to consider the risks which might be most relevant to their contexts. Technology can bring digitally-based risk and harm to young people, with the literature often recognising cyberbullying, inappropriate sexual content, and stranger danger as salient risks posed to children (Livingstone & Smith, 2014). Access to the internet can also result in exposure to upsetting content, with an average of 25% of children in Europe aged 9-16 reporting a negative experience online within the last year (Smahel et al., 2020). Other potentially harmful content which children have been exposed to includes hate speech, violence, self-harm and suicide content (UNICEF, 2019). Furthermore, the pervasiveness of social media in the lives of young people can have detrimental effects on their mental health. Social comparisons on social media can ignite feelings of inadequacy and exclusion, and have been associated with anxiety and depressive symptoms (Abrahamsson, 2024; Fardouly & Vartanian, 2016; Nesi & Prinstein, 2015; McCarthy & Morina, 2020).

A recent, rising prevalence risk faced by children and adolescents in a digital society today is the use of AI and deep-fake technology, which can be used in a bullying and exploitative manner or harm children through inappropriate responses (Kurian, 2024; Alanazi & Asif,

2024). Such risks can have adverse influences on child and adolescent wellbeing and mental health (Carvalho et al., 2020; Koletić, 2017; Nixon, 2014). There has also been recent attention to the digital footprint left by adolescents and the implications the storage of their personal details within 'Big Data' on their future opportunities as they progress into the workplace (Buchanan et al., 2017; Marinelli & Parisi, 2022). In light of such risks, debates regarding the extent to which regulations should and could be placed on digital media continue to be developed (Benedetto & Ingrassia, 2021; Cammaerts & Mansell, 2020; Rochefort, 2020).

Global Perspectives

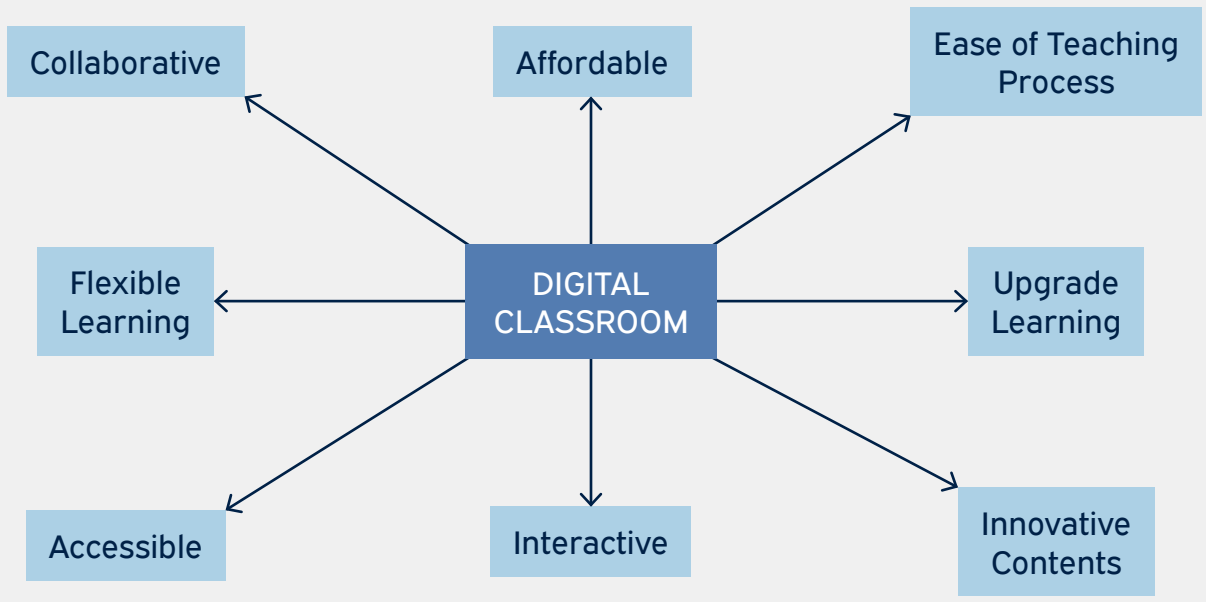
Much of the literature exploring behaviour and psychology is biased towards Western, Educated, Industrialised, Rich, and Democratic countries (WEIRD; Henrich et al., 2010). This is also the case for research exploring the role of technology in childhood and adolescence (Livingstone et al., 2017; Lund et al., 2021; Selwyn, 2016; Singh et al., 2012). In particular, the use of technology by children and adolescents in the Global South has often been overlooked in the literature, and there is an urgent need for more contextualised understandings of digital use by children and young people (Ghai et al., 2022; UNICEF, 2021).

Therefore, the rapid expansion of technology presents both risks and opportunities for children and adolescents across the globe. Understanding the associated benefits and challenges helps us maintain an unbiased attitude towards technology and recognise that its impact on adolescents can vary significantly across different settings and groups of adolescents. Inevitably, with its widespread prevalence, technology is also becoming an integral part of education.

Digital Use in Education

The world is continuously adapting to the paradigmatic shift that technology has brought, and with it, the educational landscape has also changed (Haleem et al., 2022; Raja & Nagasubramani, 2018). Taking the example of the United Kingdom (UK), the Department for Education (2023) saw an increase in the proportion of schools implementing a digital strategy from 2020/21 to 2023 (38% to 55% in primary schools; 54% to 68% in secondary schools). This highlights the trend of schools' growing interest in digital technology and the ways in which it can be incorporated into educational settings, particularly following the COVID-19 pandemic. The influence of technology has extended widely across the various domains of education, including but not limited to pedagogy, access to education, skill development, and curriculum content (Department for Education, 2023; Raja & Nagasubramani, 2018). An example of technological integration within pedagogy is the use of digital classrooms, which are educational spaces whereby learning is supported through technology. One example of the features of a digital classroom is outlined in Figure 3. By recognising the various ways in which digital technology can be harnessed to enhance experiences within the classroom, schools are able to highlight areas of potential development. For example, digital classrooms can allow for interactive elements, such as through the use of a game-based student response system, to encourage the active engagement of all students within the classroom. In their literature review of 93 qualitative and quantitative studies examining the impact of Kahoot! in educational settings, Wang & Tehir (2020) found the system to have a generally positive effect on learning outcomes, student experience, and classroom dynamics (Wang & Tehir, 2020).

FIGURE 3: FEATURES OF DIGITAL CLASSROOM



[Haleem et al. (2022)]

Digital Literacy for Students and Teachers

Understanding what 'digital literacy' entails is crucial in the promotion of wellbeing in schools through digital use. While many definitions of digital literacy exist, most definitions focus on the elements pertaining to the development of a skillset to enable an individual to critically engage with the digital world (Nascimbeni & Vosloo, 2019). Given that this report focuses primarily on digital interventions aimed at students, we refer to the UNICEF child-centred working definition of digital literacy:

> *"Digital literacy refers to the knowledge, skills and attitudes that allow children to flourish and thrive in an increasingly global digital world, being both safe and empowered, in ways that are appropriate to their age and local cultures and contexts."*
>
> [Nascimbeni & Vosloo, 2019, p.31]

As the primary institutions where young people gain the skills and knowledge necessary for adulthood, schools play a critical role in equipping students with the digital skills essential in the modern world. Today, the ability to recognise and navigate misinformation on digital platforms is increasingly vital (Dame Adjin-Tettey, 2022; Casal-Otero et al., 2023). This importance is emphasized in a systematic review conducted by Vissenberg et al. (2022) who identify digital literacy as a protective factor which safeguards young people's wellbeing against negative online experiences.

Despite the above focus on student digital literacy, this report also recognises the importance of teachers' digital competencies. Teachers require digital literacy not only as functioning members of global society, but also to effectively understand and harness digital tools in their teaching practice, which, when applied successfully, can enhance pedagogy. Hence, a teacher's ability to successfully engage with technology can influence how and what they teach (see Taylor et al., 2024 for further details).

Given the rapid development and advancement of new technologies, the skillsets required to constructively engage with technology are consequently multifaceted and continually evolving. As a result, schools must be mindful of the different ways students and teachers can be supported in their digital literacy journeys to cultivate a more critically engaged population in our global society.

Digital Use During COVID-19 in Education

Further technological advancements have been made in education as a result of the global COVID-19 pandemic, which saw many schools transition to a blended, digital-based approach to education (OECD, 2020; Tadesse & Muluye, 2020). Estimates suggest that 1.37 billion children and adolescents experienced school closures during the COVID-19 pandemic (UNESCO, 2020). Teachers and schools had to undergo emergency remote education (ERE), whereby sudden adaptations had to be made, often with an attempt at simulating in-person learning within a digital context (Bozkurt et al., 2022). In a rapid systematic review, Bond (2020) found that the most frequently used applications for remote teaching following the onset of the COVID-19 pandemic were Zoom and Google Classroom (32.5% and 23.75% of the studies with explicitly named technology tools, respectively). However, the use of digital technology for remote teaching was not universal. The sudden pivot to digitalised learning during the COVID-19 pandemic highlighted the considerable global disparities in the access to, and quality of, digital education within and across nations (Meinck et al., 2022; Mathrani et al., 2021; UNESCO, 2020). Both structural and cultural conditions are argued to have contributed to the inequalities observed within countries (Mathrani et al., 2021). In an exploration of how different countries implemented remote learning, Barron Rodriguez et al. (2021) outlined the different innovations, such as radio lessons and TV lessons, which were adopted to overcome the barrier of limited connectivity (e.g., 4% with internet access in Haiti, and 15% in Guatemala).

As a consequence of the rapid deployment of ERE, digital education strategies employed during the pandemic might not reflect the evidence and theories which support digital education. Thus, the potential benefits of digital education were not fully realised (Bozkurt et al., 2022). Moving forwards, schools should be encouraged to learn from their experiences of adapting to ERE and incorporate empirical evidence from the field to strengthen the integration of digital technologies into the classroom. As highlighted during the COVID-19 pandemic, and its aftermath, technology has greatly impacted childhood and adolescent outcomes and experiences, within which education also plays a crucial role.

Accessibility and Technology

An often undervalued feature of digital use in education is the opportunity for support for students with additional needs. Global estimates suggest that 240 million children around the world have a disability, and in comparison, to their peers without disabilities, children with disabilities are 49% more likely to have never attended school (UNICEF, 2021). Online technology could thus be used to bridge access gaps in educational resources, as well as support students with special educational needs within mainstream schools. Assistive technology is a broad term, pertaining to any tool which can be used to improve the functional abilities of individual with disabilities (Fernández-Batanero et al., 2022; WHO 2024). Such technology can also be applied within the education setting to help a student better engage in their curriculum (Ahmad, 2015). Just one example of digital assistive technology is text-to-speech scanners, which convert digital text to audio output to support students who are

blind, have low vision, or a visual impairment, who would otherwise struggle to read independently (Taylor, 2016). Additionally, in the meta-analysis conducted by Wood et al., (2017), the researchers found text-to-speech technology significantly improve the reading comprehension of students with reading difficulties. Hence, incorporating the use of assistive technology within the classroom has the potential to improve the accessibility and enhance the quality of life of those with additional needs (Lancioni & Singh, 2014).

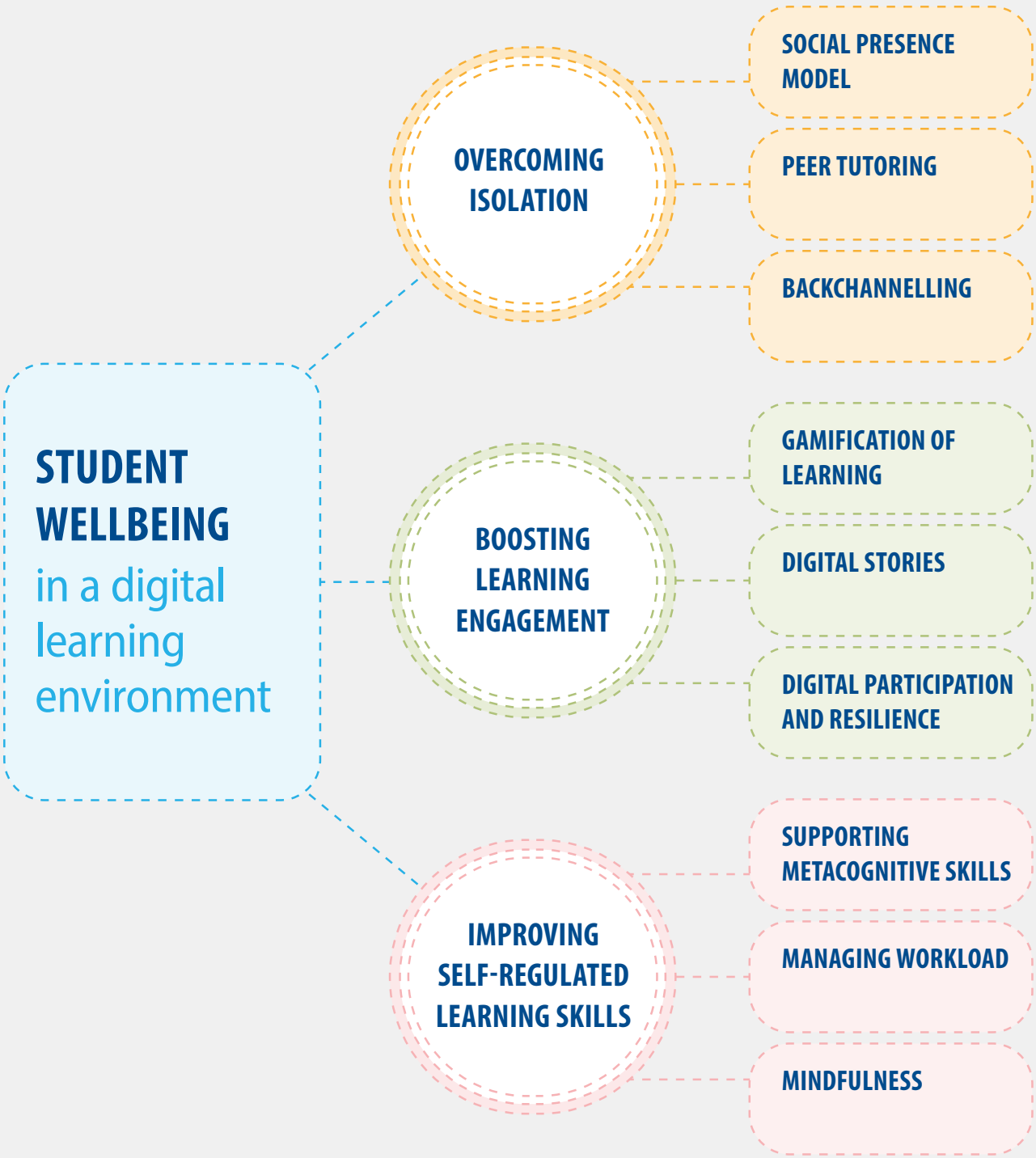
Nonetheless, technology is not in itself a solution to making schools more accessible institutions. It is essential that schools remain mindful that the quality of digital assistance, the way that pedagogy incorporates such technologies, and the other accessibility protocols and supports in place within a school, are each of great importance in promoting the wellbeing of students with additional needs (Botelho, 2021; Boyle & Kennedy, 2019; Taylor, 2016).

Wellbeing and Technology

Recent evidence has shown declines in child and adolescent wellbeing in many countries (Marquez et al., 2024), which in turn raises the question as to how children and young people can be better supported during this period of life. In a systematic review of screen time and adolescent mental health, Santos et al. (2023) found that general screen time is associated with poorer wellbeing and mental health related outcomes, with stronger associations among girls. In addition, Abrahamsson's (2024) study conducted in Norway found that implementing a smartphone ban during school hours reduces bullying, and among girls, improves academic outcomes, and reduces mental health and wellbeing problems, with the effect being greater particularly for those from low socio-economic backgrounds. Though empirical literature often looks into the negative influence of technology on wellbeing, a deeper understanding of the field recognises that the relationship between technology and adolescent wellbeing might be nonlinear, and context-dependent (Orben & Przybylski, 2019; Dienlin & Johannes, 2020). Specific contextual factors, such as socioeconomic status, cultural attitudes towards technology, or differences in urban and rural access, can shape the relationship between technology and adolescent wellbeing. Again, it emphasizes the need for schools to critically evaluate findings and tailor strategies to their unique contexts and diverse student needs.

There is much that can be done, however, to mitigate against the adverse effects of technology. Online behaviours can vary widely across students (Savoia et al., 2021; Valkenberg & Peter, 2011), and, as such, a multitude of components must be considered in order to promote student wellbeing in a digital world. As outlined in the International Baccalaureate's 'Supporting Student Wellbeing in a Digital Learning Environment' report, student wellbeing in a digital learning environment can be supported through three strategies: improving self-regulated learning skills, boosting learning engagement, and overcoming isolation (see Figure 5; Balica, 2021). Therefore, to support student wellbeing in a digital learning environment, the school as an ecosystem should be engaged with the intention to improve wellbeing holistically and extend the provision of wellbeing support to school staff and teachers, in addition to the students (Balica, 2021; Taylor et al., 2023).

FIGURE 4: NINE TEACHING AND LEARNING STRATEGIES TO SUPPORT STUDENT WELLBEING IN A DIGITAL ENVIRONMENT



[From *Supporting Student Wellbeing in a Digital Learning Environment*, International Baccalaureate Organization]

Online Wellbeing Interventions

Existing Evidence

The field of online wellbeing intervention research has gained increasing prominence, with several systematic reviews published in recent years (Fisher-Grote, 2024; Francis et al., 2021; Zhou et al., 2021). In general, the evidence finds digital-based interventions to have a universal, small, non-significant positive effect on wellbeing and mental health outcomes in adolescents (Francis et al., 2021). It should be noted that other interventions which target wellbeing as an outcome have been previously explored in this series of reports, examining specific approaches to wellbeing such as physical activity and teacher wellbeing (Boyle et al., 2024; Zhou et al., 2024). This section will consider the empirical evidence of a variety of online interventions for children and adolescents, highlighting different theoretical approaches as well as different wellbeing intervention formats.

Theoretical Approach

Most online interventions addressing wellbeing and wellbeing related outcomes in young people draw from Cognitive Behavioural Therapy (CBT) theory (Francis et al., 2021; Stasiak et al., 2016; Zhou et al., 2021), whereby participants are guided to better understand their cognitive processes in order to address maladaptive behavioural and cognitive patterns (Fenn & Byrne, 2013). The literature pertaining to children and young people finds CBT approaches to have positive effect on wellbeing, and other wellbeing-related outcomes including, but not limited to, depressive symptoms and anxiety (Ip et al., 2016; Khanna & Kendall, 2010; Merry et al., 2012; Nicol et al., 2022; Shabahang et al., 2021; Stallard et al., 2011; Stasiak et al., 2014; Tillfors et al., 2011; Wuthrick et al., 2012).

Online wellbeing intervention research is also frequently grounded in positive psychology and mindfulness theories, whereby positive and present psychological traits and states are encouraged (Kabat-Zinn, 1994; Park et al., 2014). Again, there is a large body of evidence supporting the finding that positive psychology and mindfulness based online interventions can improve wellbeing and wellbeing-related outcomes (Kriffa et al., 2021; Osborn et al., 2020; Sun et al., 2022).

Acceptance and Commitment Therapy (ACT) is another theoretical approach underpinning many digital wellbeing interventions. ACT encourages participants to recognise and accept the range of human emotions and adapt to different emotional experiences (Dindo et al., 2017). Though positive intervention effects are found for wellbeing and its related outcomes, it should be noted that these studies have primarily been conducted with college students (Eustis et al., 2018; Levin et al., 2020).

Online interventions can also combine different theoretical approaches, as with El Morr et al. (2022), who designed an 8-week online mindfulness and CBT program. Their randomised control trial, conducted among undergraduate students in Canada, demonstrated that the online mindfulness and CBT-based program significantly reduced depression and anxiety. Though many significant intervention effects have been found, it is important to note that other research has found non-significant effects of online interventions (Calear et al., 2016; Lapalleinan et al. 2021).

Table of Interventions

A synthesis of the extensive online wellbeing intervention literature is outlined in the table below. Named interventions which were frequently referenced in the literature and of high academic rigour were selected to present a non-exhaustive list of effective interventions which might be of interest to schools. The studies and interventions listed below were all identified as having school-aged participants. In addition to the information provided below, we encourage schools to read reviews and meta-analyses which have been conducted in this field that provide a broader selection of interventions with empirical support which might be of interest and relevant to their unique contexts (Fischer-Grote et al., 2024; Francis et al., 2021; Stasiak et al., 2016; Zhou et al., 2021).

TABLE 1: EXAMPLES OF ONLINE WELLBEING INTERVENTIONS

Intervention	Content	Age/Setting	Results	Evidence Level	Access
MoodGYM Calear et al. (2009) Calear et al. (2013)	Based in CBT theory, uses characters in five interactive modules, covering: feelings, thoughts, unwarping, destressing, relationships. Each module included reading resources, animated demonstrations, homework tasks, and quizzes. There are 29 exercises in MoodGYM. MoodGYM provides anonymity and confidentiality across all resources.	30 secondary schools (aged 12-17 years) *n*= 1,477 Australia	Intervention effects were stronger for males than females, and higher adherence to the intervention saw greater effects than lower adherence. Intervention effects for females were non-significant.	Stratified randomized controlled design	MoodGYM individual access (12 months) is available for £21.00 (plus local taxes of £4.20) with subscription options.
SPARX Merry et al. (2012)	7 x 30-minute modules of a CBT-based computer game, including interactive and narrative elements whereby participants use skills to 'shield against depression'.	Adolescents (aged 12-19 years) *n*= 187 New Zealand	At post-test, the control group saw a mean 7.59 reduction in depression scores (non-significant), whereas the SPARX group saw a mean reduction of 10.32. Differences between SPARX and control groups in depression score reduction were non -significant, suggesting that SPARX is not inferior to face-to-face counselling treatment.	RCT	Free
BRAVE ONLINE Spence et al. (2011)	10 x 1-hour weekly sessions based on CBT, includes reading and interactive materials, quizzes, animations. The program also includes 5 x 1-hour support sessions for parents.	Adolescents (aged 12-18 years) *n*= 115 Australia	The online intervention is found to be as effective as traditional (face-to-face) CBT. Adolescents reported high satisfaction with BRAVE ONLINE.	RCT	Currently, only available for young people and parents living in Australia.

E-health4Uth Bannink et al. (2014)	Online questionnaire which prompted tailored information based on the individual's questionnaire responses (of which a score is tallied). The intervention also links to relevant online resources, as well as a Facebook page for E-health4Uth.	12 secondary schools (3rd and 4th years; mean age 15.9 years) *n*= 1,256 Netherlands	The E-health4Uth with a consultation with a nurse can improve mental health and health-related quality of life for adolescents with mental health risk. The E-health4Uth can be a tool which identifies at risk youth.	RCT	Unable to find in public domain.
Youth COMPASS Lappalainen et al. (2021)	5-week online program based in ACT theory, with five modules ('Direction for Life', 'Me And My Mind', 'Stalking Myself', 'My Myself' and 'Me And Other People') with three levels at each module. The modules include videos, text, comic strips, and interactive elements.	15 secondary schools (Grade 9, aged 15-16 years) *n*= 249 Finland	Youth COMPASS was more successful when at least three of the five modules were completed. Involvement with at least three of the Youth COMPASS modules was found to significantly reduce adolescent depression symptoms and increase life satisfaction.	RCT	Part of the broader STAIRWAY longitudinal research project.
Bite Back Manicavasagar et al. (2014)	A website with interactive reading resources and exercises, focussing on 9 positive psychology domains (character strengths, gratitude, optimism, healthy lifestyle, flow, meaning, hope, mindfulness, and positive relationships).	Adolescents (aged 12-18 years) *n*= 235 Australia	Significant post-intervention reductions in depression and stress were found in participants that spent more than 30 minutes a week on Bite Back. Participants who visited Bite Back three or more times a week were also associated with lower levels of depression and higher levels of wellbeing.	RCT	Free

WeClick O'Dea et al. (2020)	A digital application where participants identify with a character and complete skill development activities within a story. The duration of the intervention was four weeks.	Adolescents (aged 12-16 years) *n*= 193 Australia	There were no significant differences in social support, anxiety, and social self-efficacy. Over 90% of the participants found WeClick easy to use, and 96.4% stated that they enjoyed using the app.	RCT	Free to download
Uplift Peer Support Training Pavarini et al. (2023)	The intervention involved 5 x 4-hour sessions delivered via Zoom and WhatsApp, whereby a facilitator guided participants through training on: establishing rapport, making a difference to the community, active listening, grief and trauma, crisis management, confidentiality, self-care, coping strategies, and signposting and referrals.	Adolescents (aged 16-18 years) *n*= 100 United Kingdom	The Uplift Peer Support Training program improves support-giving skills (and frequency of support), compassion, and peer connectedness. Such improvements were visible at four weeks post-intervention.	RCT	Refer to upliftpeers.com for latest information.

Importance of Online Interventions

The evidence suggests that for many children and young people around the world, there is high access to regular use of digital resources. Consequently, the high levels of digital familiarity in society today could be leveraged upon to implement interventions supporting the wellbeing of children and young people (Liverpool et al., 2020; Stasiak et al., 2016; Zhou et al., 2021). Within the adult literature, the majority of online wellbeing interventions have been found to effectively improve wellbeing (Davies et al., 2014; Lattie et al., 2019). Building on the previously mentioned studies, we further explore the advantages and challenges associated with delivering wellbeing interventions online.

Advantages of Delivering Wellbeing Interventions Online

A considerable amount of research has found that digitally facilitated interventions can help to disseminate wellbeing interventions to children and adolescents (Stasiak et al., 2016; World Health Organisation, 2019; Francis et al., 2021; Zhou et al., 2021). These advantages include:

- **Meet demand:** Online interventions can help meet the demand for psychological support. The current availability of in-person support programmes falls short of adolescents' and children's existing needs. (Stasiak et al., 2016).
- **Preference:** Online intervention delivery has also been found to be the preferred mode of intervention for a small percentage of students (Among a nonclinical sample of 231 students aged 15-19 in Australia, 16% expressed a preference for online help, 58.9% had a preference for face-to-face, and 23.8% had preference for no help; Bradford & Rickwood, 2014).
- **Convenience:** An online intervention can be convenient for some and allow for participation in the privacy and comfort of their preferred spaces (Stasiak et al., 2016). It can be especially beneficial for young people dealing with anxiety, particularly social anxiety, as it offers a more psychologically and practically accessible approach for them (Bonetti, Campbell & Gilmore, 2010).
- **Reach:** Online interventions can allow for more access and equitable dissemination across many different domains. For example, online interventions can reach geographically or economically restrictive areas (WHO, 2019). Another advantage of online interventions is that they might appeal to populations who might otherwise be reluctant to participate in in-person interventions, such as adolescent males (Francis et al., 2021; Rice et al., 2018).

In summary, online interventions can provide opportunities for personalization to the needs and preferences of children and adolescents, in a manner which might not be feasible for in-person interventions.

Challenges of Delivering Wellbeing Interventions Online

Despite evidence in favour of online wellbeing interventions, this method of delivery can also pose challenges, some of which are listed below (Baños et al., 2017; Stasiak et al., 2016; Zhou et al., 2021; Tichavsky et al., 2015; Kemp & Grieve, 2014; Haidt, 2024).

- **Costly:** Online interventions can be expensive in their initial development, and also incur recurring costs for regular maintenance, adaptation and digital platform hosting. Moreover, there are some costs for the end users as well, since not all the interventions are free to access.
- **Over-use:** online interventions risk increasing young people's digital use at an age when child development and media experts are already concerned about their over-use and reliance on the internet.
- **Retention:** Online interventions must compete with other available online resources and need to appeal to their target audiences. This is to ensure that that students do not disengage and drop out from the program, which is a common challenge online interventions encounter.
- **Empirical evidence:** Many online wellbeing interventions on the market do not have strong empirical evidence supporting their efficacy. As a result, schools may face difficulty distinguishing between the different online interventions and identifying those with the strongest empirical grounding. Thus, effective interventions should be encouraged to make their empirical evidence clear and accessible to the target audience.

Hence, as with all interventions, schools must be mindful of their capacity to implement online wellbeing interventions. Oftentimes, schools have to make difficult decisions as a consequence of resource limitations. Consequently, a comprehensive understanding of the potential limitations and barriers to implementing different interventions is essential for schools to make informed decisions in selecting interventions.

Implementation

In order for an intervention to be successful, careful consideration must be given to its implementation to ensure its efficacy (Durlak et al., 2011; Francis et al., 2021). Attention must be paid to the implementation of online interventions and how recommendations might change, as, given how rapidly developing the research field of online interventions is, advancements and refinements are continuously being made.

Intervention Format

There is considerable variety in the format of digital wellbeing interventions that have been developed, ranging from AI-chat bots to game-based media, interactive reading materials, and video conference interactions (Davies et al., 2014; Fischer-Grote et al., 2024; Stasiak et al., 2016; Zhou et al., 2021). The literature does not endorse a particular format as being the most effective, however, schools should consider their target populations, and which format of digital intervention would best appeal or be most appropriate for their students within the bounds of their own resources and the desired outcomes.

Factors for Success

The literature exploring online wellbeing intervention efficacy identifies the following characteristics as key features of a successful intervention (Clarke et al., 2015; Francis et al., 2021; Stasiak et al., 2016).

- Pre-planning: Making adaptations to the intervention based on school specific resource limitations
- Multi-level support for the intervention and intervention goals
- Support and training for the agents of intervention delivery: Teacher delivered interventions are often more successful than student-led online interventions
- Short and frequent sessions with core topics being repeated throughout the intervention
- Inclusion of different stakeholders in the design of the online intervention
- Age-, culture- and development-appropriate content
- Engaging and exciting content
- Provision of additional face-to-face intervention elements alongside the online intervention

The evidence would therefore recommend that even in the implementation of online wellbeing and mental health interventions, care should be taken in the involvement of delivery agents, delivery method, intervention dosage, stakeholder motivation and investment, age-appropriateness, and student accessibility.

Important Considerations

Though there is a limited body of empirical evidence exploring online wellbeing interventions in young adults, there remains a knowledge gap in such interventions for younger children aged 12 and below (Francis et al., 2021). Schools should thus take caution when considering the implementation of online wellbeing interventions with younger students.

Another consideration which is necessitated by the limited literature into online-facilitated wellbeing interventions for children and adolescents, is that much of the existing research has been conducted in developed countries and English-speaking contexts, where there is often an assumed level of digital access, economic resources, and proficiency (Stasiak et al., 2016; Zhou et al., 2021). Schools should be vigilant and considerate to the skillset and accessibility needs of their population and make informed intervention decisions based on their specific context. As pupils may face a digital divide, children from lower socio-economic backgrounds might lack access to reliable Wi-Fi or mobile data services at home or live in households that cannot afford to provide equal internet access to all members (Livingstone & Helsper, 2007). Other factors such as the technological readiness of the school, digital literacy of students, suitability of the intervention's content for the particular student groups and their needs, and existing support infrastructure are all critical points of consideration.

Though much of the explored literature in this report has cited evidence which supports online wellbeing interventions for children and adolescents, the concerns surrounding the digital lives of this population are still of relevance (UNICEF, 2017). The debate in research continues over whether digital technology use is harmful, beneficial, or insignificant for wellbeing (Orben & Przybylski, 2019; Twenge, Haidt, Joiner & Campbell, 2020). In response to such concerns, some governments have implemented strict measures, such as Australia's recent approval of one of the strictest social media bans for under-16s (Ritchie, 2024).

Throughout the report we emphasise the need for schools to contextualise their own population and their specific needs when engaging with digital intervention literature, because many of the interventions discussed in the literature were conducted within specific populations

and in particular school and societal contexts. As such, findings may not universally apply across diverse settings. Digital approaches that might work in one context may not be most appropriate in another. Within school settings, digital interventions may be most effective as part of a broader, multifaceted wellbeing strategy rather than as a standalone solution. For example, an over-reliance on digital approaches to wellbeing interventions might detract from other forms of intervention (such as physical activity wellbeing interventions, see Taylor et al., 2024 for further detail).

Summary

The role of digital technologies in the lives of children and adolescents is a topic which currently occupies considerable global attention. The rate at which digital technology has influenced our society and radically changed the experience of childhood raises the question as to what institutions, such as schools, can do to protect against negative outcomes of digital immersion in childhood and adolescence.

The report acknowledges that while the use of digital media by young people is often viewed negatively, the reality is far more complex. It is crucial for schools to understand current trends in digital usage and the impact of online interventions on wellbeing. The goal is to inform schools of these dynamics and present potential strategies for intervention. By recognising the complexities of digital engagement, schools can better leverage technology to enhance student wellbeing.

The existing evidence pertaining to online interventions provides a base through which schools can explore intervention elements and characteristics which are most applicable to their contexts and individual systems. It is crucial to approach technology with an unbiased perspective and make decisions that are informed by the specific needs and circumstances of each educational environment and its population.

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For a full list of references used in this report and access to additional supplementary materials, visit wellbeing.hmc.ox.ac.uk/schools.

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