



SACOSS

*South Australian Council
of Social Service*

Is Digital Capability in Young People a Protective Factor Against Development of Problematic Online Gambling?

A Systematic Scoping Review

Final Report
February 2024

About SACOSS

The South Australian Council of Social Service (SACOSS) is the peak non-government representative body for health and community services in South Australia, and has a vision of justice, opportunity and shared wealth for all South Australians.

Our mission is to be a powerful and representative voice that leads and supports our community to take actions that achieve our vision, and to hold to account governments, businesses, and communities for actions that disadvantage vulnerable South Australians.

SACOSS aims to influence public policy in a way that promotes fair and just access to the goods and services required to live a decent life. We undertake research to help inform community service practice, advocacy and campaigning. We have 75 years' experience of social and economic policy and advocacy work that addresses issues impacting people experiencing poverty and disadvantage.

Acknowledgement

We acknowledge the traditional lands of the Kurna people, and pay our respects and acknowledge the Kurna people as the custodians of the Adelaide region and the Greater Adelaide Plains. We acknowledge and pay our respects to the cultural authority of Aboriginal and Torres Strait Islander communities and organisations, and appreciate the cultural knowledge that is held and shared.

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Executive Summary

Overview of the issue

Adolescents are regarded as one of the highest users of digital media, typically spending more time online than older generations. While digital technologies offer many opportunities and benefits for young people, as key users they are also particularly vulnerable to the harms that such media pose, including compromised privacy, harmful content and exposure to exploitative marketing that promotes engagement with potentially risky activities. For example, increasingly, children and young people are participating in online gambling at problematic levels. In comparison with land-based environments, the online environment poses unique risks, given the wider availability of gambling products, targeted marketing, and sociocultural practices that normalise gambling and gaming behaviours. The gambling help sector is struggling to understand and engage with the threat posed by online gambling, as the problem is less visible and therefore more challenging to prevent than land-based gambling. There is also evidence to suggest that young people participate in unregulated online gambling and gambling-like activities through online games.

This review sought to explore whether effective evidence-based programs that build young people's digital literacies (e.g. around harmful online marketing, cyber-safety awareness and critical thinking), could be beneficial in creating a more capable and digitally included citizenry that is better prepared to tackle emerging threats in a rapidly advancing online world, including those related to gambling.

Summary of the review process

This scoping review adopted systematic search methods to map the evidence regarding digital capabilities, young people and gambling. The search was conducted in November 2023 in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) guidelines, spanning five international research databases and several grey literature repositories. Full text screening yielded a total of 20 research articles that were included in the final review. In addition, we examined seven Australian youth gambling educational initiatives to ascertain whether they included any content related to digital capabilities. Data were extracted into pre-designed data extraction tables and results were narratively synthesised.

Summary of what we learned

Given the dearth of literature that specifically examines the intersection between digital literacy and gambling, we were unable to observe whether investment in young people's digital skills is likely to function as a protective factor for minimising online gaming and/or gambling harm. Only one study found that children and adolescents who were more digitally competent were less likely to develop gaming addiction, which may have implications for gambling. However, the review uncovered compelling evidence that better digital skills may support youth to navigate exposure to other online harms (e.g. related to cyberbullying, alcohol and tobacco use and internet addiction). Across numerous studies, those with better digital skills were better able to respond to online risks in a number of ways, for example, by seeking advice from a trusted friend or family member, or deleting unwanted content. In this way, digital capabilities may support young people's online resilience and safeguard their psychological wellbeing.

In examining educational initiatives, three studies focused on the evaluation of general digital literacy/citizenship educational programs for adolescents in school settings. These studies indicated potentially beneficial outcomes (e.g. reduced risks online, improved knowledge, healthier online communication practices), although the evidence was mixed and further research on effectiveness is needed. Current gambling educational initiatives for young people tend to focus on building gambling awareness, developing gambling literacy and shifting attitudes towards gambling, with no significant effects on gambling-related behaviours. Further, the review did not locate any Australian harm reduction educational interventions that explicitly focus on digital capabilities, with respect to youth gambling.

Summary of implications

While the state of the current literature regarding digital capabilities and gambling is sparse, digital skills appear to provide young people with opportunities for wellbeing and the ability cope with other online risks. As such, further investigation in this area may be warranted given the potential for digital capability skill development to have several positive outcomes for young people, including the development of online resilience. Future research should focus on the effectiveness of digital citizenship programming for adolescents and young people in an Australian context, and how these initiatives can best align to different groups, including those who are most vulnerable.

Online gambling must be prioritised as a public health issue on multiple levels, in order to minimise gambling-related harm for young people. While upstream structural changes and regulatory measures are essential to limit the pervasive influence of industry and denormalise online gambling practices, this review also suggests that young people may benefit from education and self-reflective learning that focuses not only on gambling literacy, but that seeks to facilitate broader cognitive and socio-emotional abilities in digital spaces. Finally, this review points to young people experiencing poverty and disadvantage as a group of interest that may warrant particular support in future gambling prevention efforts. Future preventive initiatives should adopt a child-youth-centred approach, by actively integrating young people's voices and their collectively identified solutions, to ensure more targeted and comprehensive program and policy responses.

Introduction

Online gambling

Rapid technological developments in recent years mean that young people are immersed in digital environments across various aspects of their lives. Adolescents are regarded as one of the highest users of digital media, typically spending more time online than older generations.¹ While digital technologies offer many opportunities and benefits for young people, as key users they are also particularly vulnerable to the harms that such media pose, including compromised privacy, harmful content and exposure to exploitative marketing that promotes engagement with potentially risky activities including pornography and gambling.¹

Although gambling on poker machines leads to the most gambling harm in South Australia², online gambling including sports-betting, has been growing significantly. Given the widespread use and availability of personal telecommunications devices among teens, young people may be especially vulnerable to the development of problematic online gambling.^{3,4} Increasingly, young people, especially those aged 18 to 24, are participating in online gambling at problematic and/or harmful levels.⁵ A longitudinal study in the UK demonstrated that by age 17 more than 50% of young people had gambled in the previous year. Not surprisingly, this rose with increasing age, to two thirds of 24-year olds.³ While the most common forms of gambling reported were playing scratch cards, the lottery, and private betting between friends, a marked increase in online gambling between the ages of 17 and 24 was observed. By 24 years of age more than 50% of gambling activities amongst males were online.³

A recent systematic review of the development of online gambling in adolescents concluded that prevalence ranged between 6% and 15% when representative samples of the adolescent population were used.⁶ Australian research has found that almost one in three secondary school students had gambled, and among those who had gambled, almost 40% had participated in sports-betting.⁷ A separate Australian study found 6% of 16-17 years reported betting on sport in the past 12 months.⁸ While gambling in adolescence can be episodic,⁹ recent epidemiological evidence also demonstrates an association between earlier onset of first gambling and later severity of problematic gambling¹⁰. A meta-analysis also revealed that internet forms of gambling had the highest odds ratio (i.e. the largest effect size) for the risk of gambling-related problems.¹¹ As such, Duffy posits that gambling during adolescence might constitute short-term temporal risk taking for some young people, whereas “for others it may lead to a lifetime of problems (p.14)”.⁵ Irrespective of future outcomes, youth gambling is associated with a number of problems for young people, including decreased psychological wellbeing, antisocial behaviour, and other forms of risk-taking.⁹

Risks of online gambling for young people are not evenly distributed. There is a wide range of individual-level risk factors that have been identified through the literature, spanning socio-demographic, psychosocial or substance-related factors. An international metanalysis identified young age and male gender as clear risk factors for problem gambling, suggesting that men and younger gamblers (younger than 35) remain the most vulnerable groups, particularly with respect to continuous play formats including online gambling.¹¹ Riley et al.’s review also identified adolescent immigrants as a vulnerable group with higher levels of problem and at-risk gambling.¹² Other research highlights a range of risk factors for general youth problem gambling, including substance use (alcohol, tobacco, cannabis and illicit drug use), involvement in multiple gambling

activities, depression, poor social connectedness, sensation seeking and poor academic performance.^{9,12} Given the nature of research design, however, it is not simple to ascertain whether issues such as substance misuse or mental health problems are necessarily caused by gambling problems, or present before they develop, although it is likely such issues are also worsened by problem gambling.⁵ Beyond individual-level factors, Duffy situates youth gambling in the broader sociocultural environment, highlighting the influential role of families' and friends' attitudes and behaviours related to gambling, alongside the pervasive effect of gambling advertising and gambling availability on young people's behaviours.⁵

The digital gaming and gambling landscape

The gambling help sector is struggling to understand and engage with the threat posed by online gambling, as the problem is less visible and therefore more challenging to prevent than land-based gambling.¹³ In many instances this form of gambling will have a low level of visibility simply because of the relative invisibility of interface and the ease of placing bets. Online gambling also encompasses unique characteristics that are harmful. These include the high speed of potentially continuous play, interactive features, bonuses, complex data-driven marketing that results in higher levels of personalisation of marketing messages, and the ease of accessibility in mobile environments, for example through app availability.¹⁴

The power of the gambling industry to normalise gambling, especially sports-betting, in part through the ubiquity of advertising during matches and in targeted online contexts, should also be noted.⁴ For example, Australian research^{4,9} demonstrates that children and young people are familiar with and exposed to a wide range of digital marketing from the gambling industry including from branded sites, third-party websites, social media sharing, influencers, online gaming channels and marketing seen outside the home. The industry's use of high-profile sporting identities as ambassadors, and the introduction of betting options that encourage groups of friends to bet collectively, also seek to normalise gambling. Indeed, there is evidence that young people now regard betting on sports as a normal part of a sporting event.¹⁵

There is also evidence to suggest that young people participate in unregulated online gambling and gambling-like activities.⁹ This includes engaging in pseudo-gambling through online games (for example through the use of free virtual 'loot-boxes' that are opened to reveal a random pick of in-game items or currency) that further normalise gambling as part of youth culture, and most of which have no age restrictions.⁵ A recent review that examined the association between videogame microtransactions and problem gaming and gambling demonstrated a clear correlational relationship between loot-box purchasing and problem gambling, and highlighted a need for more longitudinal research in this area.¹⁶

It is therefore not surprising that studies exploring young people's awareness of and attitudes to the marketing of gambling products^{4,6,17} clearly underline the need for the development of educational and awareness raising programs about gambling harm for young people, and are matters that have been the subject of a number of reviews.^{2,12,18,19} International research which included children from 27 countries also highlights young people's overwhelming preference for protections against commercial exploitation and exposure to harm.²⁰

Digital capability development in young people

In response to the aforementioned risks and harms posed by digital environments, including young people's exposure to gambling-like content, policy-makers have shifted attention to children's online safety, and the potential mediating effect of digital skills. The European Commission report on digital literacy underscores the importance of educating young people about digital technologies,²¹ noting that:

“Dynamic and accelerating advancements in the world of digital technologies (e.g. bots, virtual environments, holograms, digital assistants and AI augmented reality), as well as increased internet use, [highlight the] importance of preparing young people to access, use, understand and critically assess all forms of media” (p.14).

Beyond the need for digital skills to manage online risks and safety, digital literacies are central to young people's life chances, given their ever increasing reliance on digital technologies for learning, socialisation, employment and participation in civic life.^{1,21}

Digital capability is the term used to describe the skills and attitudes that equip individuals to live, learn and work in a digital society.²² Digital capability differs depending on an individual's context, however, it is conceptualised by the Joint Information Systems Committee (JISC) as consisting of six related elements:

1. Digital proficiency and productivity
2. Critical use of information and data and media literacies
3. Digital creation, problem solving and innovation
4. Digital communication, collaboration and participation
5. Digital learning and development
6. Digital identity and wellbeing.

The Australian digital capability framework, which describes the capabilities required by the Australian workforce, incorporates similar focus areas: *information and data literacy, communication and collaboration, digital content creation, protection and safety, technical proficiency and problem solving*.²³ The European Commission's *Digital Competence Framework for Citizens*, referred to as *DigComp*, also refers to the same key areas of digital competence required for citizens to engage confidently, critically and safely with digital technologies,²⁴ with only minor differences in wording.

In thinking about the digital skills required by young Australians, the Australian school curriculum (v9.0) positions digital literacy as a learning continuum consisting of four elements: *practising digital safety and wellbeing, investigating, creating and exchanging, and managing and operating*. Digital literacy is mainly promoted through the Digital Technologies and Media Arts curriculum areas, but also across other curriculum areas including English, Humanities and Social Sciences, and Health and Physical Education,²⁵ The Australian Curriculum Assessment and Reporting Authority notes that:

“Digital literacy involves students critically identifying and appropriately selecting and using digital devices or systems, and learning to make the most of the technologies available to them. Students adapt to new ways of doing things as technologies evolve, and protect the safety of themselves and others in digital environments.”²⁶

Digital literacy and digital inclusion

When examining youth digital literacy, it is also important to consider the impacts of digital inclusion, and those groups who are at heightened risk of inequities. While a discussion of digital inclusion undoubtedly encompasses digital literacy and people's ability to use and navigate the internet and necessary programs confidently, it also prompts consideration of the availability of the internet and connected devices, and the affordability of digital access. An intersectional lens draws attention to the ways in which poverty and other overlapping mechanisms of marginalisation are often reproduced in digital environments, and this is important to consider with respect to youth digital capabilities. In Australia, some community members are more likely to be digitally excluded, including low-income people, First Nations people, and those living in regional and remote areas.²⁷

Recent Australian research comprehensively outlined the digital inclusion impacts on children's and families' experiences.²⁸ In their report, the researchers highlight the intersecting dimensions of disadvantage, where income serves as a significant determinant of digital inclusion. Low-income families experience digital exclusion by means of the precarious economic circumstances they experience, in addition to experiencing technological challenges and skill shortages. An international review also found that children from higher socioeconomic status households were found to have better digital skills in approximately half of the studies that examined this relationship, which is likely attributable to differential ICT access and use. Not surprisingly, those with earlier or broader access to ICT, including at home, are likely to have better digital skills.²⁹

A note on language

A wide range of scholars and other stakeholders have adopted the terms 'digital skills', 'digital literacy', 'digital competence' and 'digital citizenship' in their work. While these terms are sometimes used interchangeably, it is important to note they can encompass different components and can be associated with diverse frameworks. For example, in conceptualising these nuances, Vissenberg et al. make an important distinction between digital skills and digital literacy, whereby the latter term is often a broader, more comprehensive concept that also comprises critical, evaluative skills akin to media literacy capabilities, rather than pure technical abilities.³⁰ Haddon et al.'s review of children's digital skills also highlights differences in the ways in which youth digital skills can be conceptualised by scholars, with the authors noting both broad and narrow conceptions apparent in the literature, with some researchers referring specifically to information literacy skills, and others conceiving multiple interrelated dimensions.²⁹ By contrast, the more recent concept of digital citizenship+(plus) draws attention to the skills needed for young people to "fully participate academically, socially, ethically, politically, and economically in [the] rapidly evolving digital world (p. 28)", thereby encompassing online safety, wellbeing, identity formation, and civic and political engagement.³¹

In this report, we tend to refer to the broader concept of 'digital capabilities'²³ which encompasses the complex competencies that are required for young people to ethically, safely and productively navigate the challenges and embrace digital opportunities. However, the purpose of this report is not to define and distinguish between the aforementioned concepts, and where specific studies explicitly refer to digital literacy or digital skills, we will adopt those terms verbatim to describe the relevant research. We also acknowledge the great deal of overlap between concepts, and their collective focus on young people's ability to navigate the digital world. Finally, we draw readers'

attention to other resources should they seek a more nuanced discussion on this topic (e.g. see Cortesi et al.).³¹

Youth digital capability development and harm prevention

Despite the promise of digital capability development for youth, research on this topic is relatively sparse. Haddon and colleagues infer that this might be linked to the prominent misconception that young people, as digital natives, are automatically equipped with the necessary skills to navigate digital media.²⁹ Not surprisingly, then, the relationship between digital capabilities and development of problematic online gambling has received extremely limited attention. However, a recent study suggests that there may be a relationship between digital capabilities and gambling harm amongst youth. Tso et al.³² found that digital competence acts as a protective factor against gaming addiction in children and adolescents in Hong Kong, where children and young people with better digital competence were less likely to develop gaming addiction and experienced less cyberbullying (both as perpetrators and victims). Given the association between online gaming and gambling,⁵ building digital capability might reasonably act as a protective factor against gambling harm.

In light of these relationships, it is worth exploring whether effective evidence-based programs that build children's digital literacies (e.g. around harmful online marketing, cyber-safety awareness and critical thinking), could be beneficial in creating a more capable and digitally included citizenry that is better prepared to tackle new and emerging threats in a rapidly advancing online world, including those related to gambling. It is this question that ultimately served as the basis for the review.

Objective and review questions:

The overarching objective of this scoping review was to explore the relationship between a young person's digital capabilities and their risk of engaging in online problematic gambling. As such, this review aimed to identify whether investment in young peoples' digital skills is likely to function as a protective factor for minimising online gaming and/or gambling harm. In order to fulfil this objective, we sought to address the following research questions:

Research questions:

1. What is the relationship (if any) between young people's digital literacy and online gaming and gambling behaviours?
2. What is the extent of any demographic difference evident in the literature about young people, problematic online gambling and digital capability?
3. To what extent do digital capabilities programs for young people incorporate education about the risks of online gaming and/or gambling, and incorporate strategies to promote help-seeking?
4. To what extent do current gambling harm reduction educational interventions for young people consider and/or seek to develop digital capabilities?
5. What is the interaction between digital inclusion, digital capabilities and problematic gambling among young people?

Methodology

The review consisted of three key stages: (1) *systematic search*; (2) *selection of included studies*; and (3) *data extraction and analysis*.

1. Systematic search

This scoping review adopted systematic search methods to map the evidence regarding digital capabilities and young people. The search was conducted in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) guidelines.³³ Searches were conducted in November 2023 across five international research databases (OvidPsych Articles; Ovid Medline; Web of Science; Proquest; Scopus) and relevant grey literature repositories (e.g. Greo Evidence Centre; Gamble Aware). We also conducted a Google search to examine the grey literature, and any relevant Australian child and youth gambling prevention initiatives. In doing so, we did not seek to examine isolated lessons nor one-off sessions delivered in schools, but rather more comprehensive gambling educational initiatives. Accordingly, the Google search uncovered seven programs which were also reviewed in relation to research question #4. Finally, a snowball method was adopted by hand searching the reference lists of all relevant documents in order to identify any potential new articles that could be incorporated into the analysis.

To conduct the initial database search, we selected combinations of relevant search terms, drawing on results from relevant papers and test searches of several databases. We applied a range of combinations of the following search queries to elicit relevant results, as depicted in Table 1. The search was applied to titles, keywords and abstracts and limited to English language publications in the decade from January 2013 to November 2023, to assure relevancy.

1.	gambl* OR betting OR wager*
2.	child* OR youth OR "young people" OR "young person" OR "young adult*" OR adolesce* OR teen* OR juvenile OR student* OR university OR school OR "emerging adult*" OR "early adult*"
3.	(digital or media or internet or information) AND (skills or knowledge or capabilit* or abilit* or literac* or competenc* or citizenship or resilience or safety or wellness)
4.	prevent* or school or educati* or train* or workshop or university or "health program" or "health promotion" or "public health" or program* or "health campaign" or communit* or "non-profit" or "not-for-profit"
5.	"video gam*" or "internet gam*" or "online gam*" or "problem* internet use" or "gaming disorder" or "gaming addiction" or "disordered gaming" or "disordered video gaming" or "problem* gaming" or "problem* video gaming" or "gaming"
6.	((risk) OR (protect*)) AND (factor) OR vulnerabil*

Table 1: Search terms

The search queries across five databases yielded a total of 1,111 articles and an additional 23 articles were acquired through grey literature repositories and handsearching. Papers were then exported into an EndNote library to identify and remove duplicates.

2. Selection of included studies

The lead researcher manually and systematically screened the article titles and abstracts to confirm whether they were suitable for the purpose of the study, in accordance with pre-defined inclusion and exclusion criteria. Where they were unsure, a second researcher also screened titles and abstracts to determine inclusion. Studies that did not meet the inclusion criteria were excluded from further analyses.

Papers needed to be relevant to the topic, and explicitly concerned with children and/or young people. For the purpose of this review, we defined young people as those aged 10-25 years. Where possible, we have recounted specific age ranges reported through the relevant studies, though we were limited in presenting age disaggregated data. Studies that exclusively focused on older cohorts of young adults (18-24 years) were only included where the focus was on digital capabilities.

Given the extremely limited literature on youth digital capabilities and online gambling, we actively sought to include studies that situated digital capability development as a risk or protective factor in the development of other problematic behaviours amongst children and young people. Gaming serves as one such example. For example, recent research demonstrates a significant link between playing simulated gambling games during adolescent and gambling as a young adult,³⁴ largely attributed to gambling-like elements including loot boxes,³⁵ skin betting and token wagering.³⁶ Other relevant behaviours that are positively associated with adolescent online gambling, and were hence included, are problematic drug or alcohol use,³⁷ being a victim of cyberbullying,³⁸ and internet addiction.³⁹

Despite including papers that focused on these behaviours, it was still necessary to limit the scope of the review by preferencing systematic, scoping and other review studies over individual studies. Primary studies that had already been captured in broader reviews were only included if they directly explored digital capabilities amongst young people or youth gambling harm prevention, otherwise they were excluded to prevent duplication.

Studies were also excluded if they:

- were published prior to 2013 or in a language other than English
- focused exclusively on digital health literacy or e-health literacy
- focused exclusively on the prevalence of gambling among young people, on problematic gambling behaviours or on treatment of problematic gambling
- focused on the development of digital skills development, including pedagogical approaches and educational design
- were editorials and/or commentaries.

After removing duplicates and initial screening, 29 articles were subjected to full text review to assess eligibility and relevance. We also sought to extract data related to conflicts of interest and funding sources, given the influence of industry on the sponsorship of academic research. These data are listed in the *supplementary file* (separate document). Full text screening yielded a total of 20 research articles to be included in the final review. A summary of the search results and search process is presented in a flow chart in Figure 1. In addition, we reviewed seven Australian youth gambling educational initiatives, and report on these in response to research question #4.

3. Data extraction and analysis

Data from the 20 research articles were extracted into pre-designed data extraction tables by one reviewer and checked by a second (see *supplementary file* for detailed extraction). Results were narratively synthesised to enable a flexible approach that allowed for consideration of context to match the evidence that emerged in line with the research questions.⁴⁰ Narrative synthesis was deemed appropriate for this scoping review, given the diverse and heterogeneous data that emerged from the search.

4. Reference group

To support the review, SACOSS also established an expert reference group to provide advice, guidance and support, particularly with regards to the interpretation of results and providing context for the findings. The group comprised of the following members: the SACOSS CEO, a representative of the South Australian Financial Counsellors Association, a gambling advocacy expert, and a representative from gambling help services. This group reviewed the initial summary of results and supported the research team in interpreting and providing context for the data, and provided insights into the relationship between the research findings and on-the-ground practices.

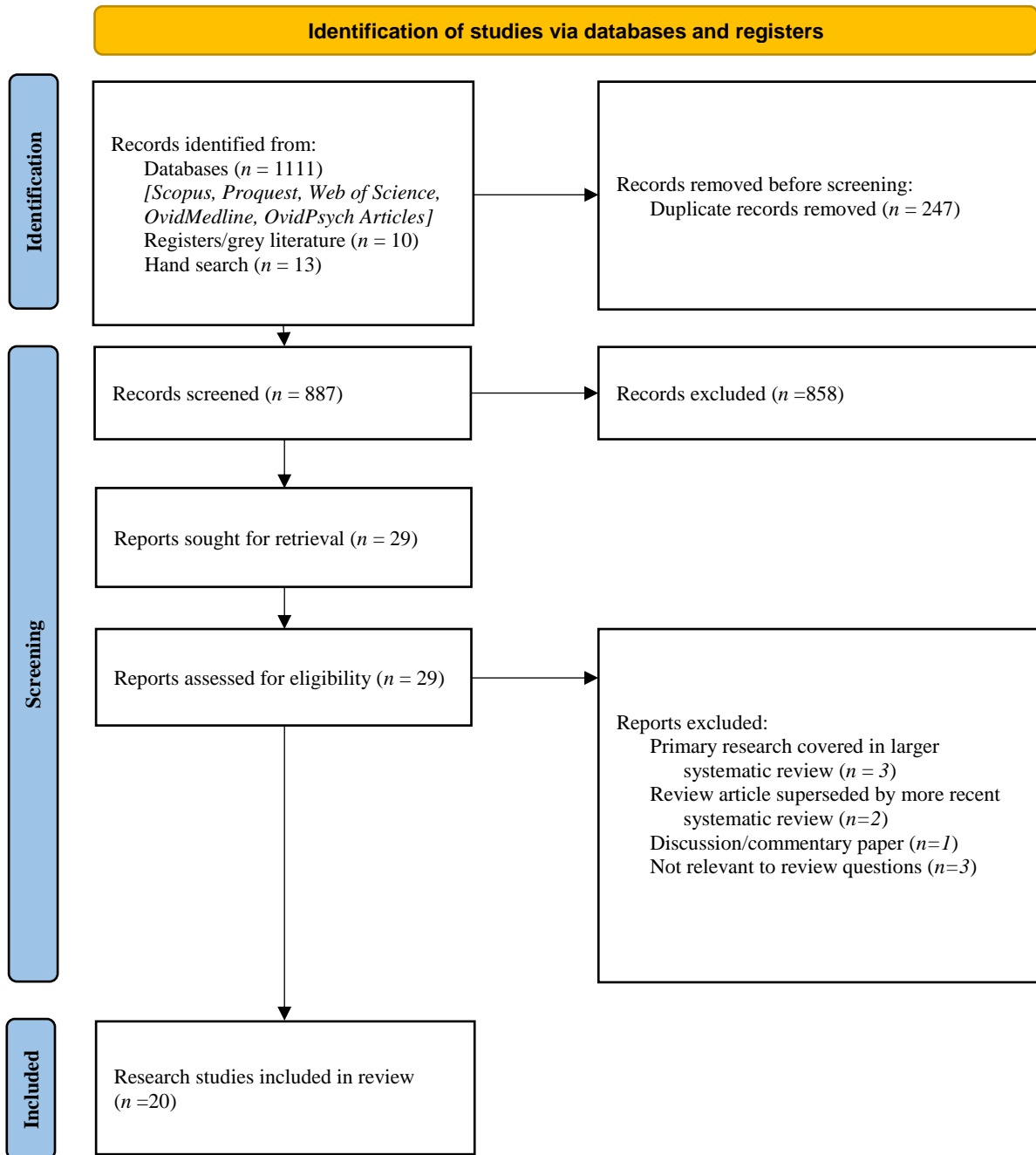


Figure 1: Flow chart of the search strategy and research study selection
(November 2023 search)

Results

Characteristics of included studies

The characteristics and key results of the included papers are presented in detail in the *supplementary file*. The 20 papers included in this review were published between 2013 and 2023. Nine studies reported on primary research, one study encompassed a secondary analysis of a national data set, and the remaining ten papers were review articles. Of the review articles, five were systematic reviews, three were general literature reviews, and one adopted both systematic and meta-analytic methods.

Of the primary research studies (n=9), six had a cross sectional survey design and three adopted a quasi-experimental design. Study samples ranged from 163 to 1,956 and where reported participant ages ranged from seven to 30 years. Most samples were recruited from Asia (50%), followed by Europe (28%), USA (11%), and South America (11%). Within these studies, all primary data were collected via self-report questionnaires, and survey tools varied considerably depending on the outcomes measured.

As previously outlined, given the limitations in literature, the research team deemed it necessary to explore the common ground among a multitude of risky behaviours relevant to youth and their relationship with digital capabilities. Consequently, 12 papers focused on the relationship between youth digital capabilities and other behaviours including gaming, alcohol and tobacco use, problematic media use/internet addiction, cyberbullying and online risk taking. Seven additional papers focused on more generalised evidence related to child and youth gambling prevention, and another three studies specifically sought to determine the effectiveness of educational programs focused on improving youth digital literacy/citizenship. Separately, and based on the results of our general Google search, we also reviewed seven Australian educational initiatives focused on youth gambling to ascertain whether they included any content related to digital capabilities.

Based on the heterogeneity of included studies, in the section that follows we offer a more global examination of the trends that emerged from our analysis of youth digital capabilities, in line with the five research questions. We then conclude with a discussion of key areas for consideration and implications for policy and practice.

1. What is the relationship (if any) between young people's digital literacy and online gaming and gambling behaviours?

Digital capabilities and gaming addiction

The state of the current literature regarding digital capabilities and gambling is sparse. However, one study did investigate the effects of digital competence on young people's risk of gaming addiction. Tso et al.³² conducted a cross-sectional analysis to understand whether digital competence was linked to young people's risk of gaming addiction in Hong Kong. 1,956 children aged 7-18 completed surveys, with digital competence measured via an assessment scale based on the five domains within the European Commission's Digital Competence Framework.²⁴ Young people also completed self-report questionnaires measuring mental health status, use of digital devices, and cyberbullying experiences. Results indicated that children and adolescents who were

more digitally competent were less likely to exhibit gaming addiction and were likely to experience less cyberbullying behaviour, both as perpetrators and victims. The association between digital competence and gaming addiction was stronger amongst school-aged children less than 12 years old, compared to adolescents, although the authors did not offer an explanation as to why this might be the case. Digital competence was also associated with better collaborative problem-solving skills, and mediated the relationship between digital device usage time and gaming addiction. Overall, this study suggests that digital literacy competencies may empower young people to use digital devices more safely and appropriately. However, given the nature of this standalone study, more longitudinal research is needed to better understand whether digital literacy influences young people's engagement with gaming.

Early protective factors for youth gambling

None of the literature related to gambling explicitly referred to digital capabilities. However, some studies summarised other factors that may support youth's social, behavioural and cognitive processes to protect them from problem gambling. While there is limited longitudinal research evidence regarding the protective factors that reduce the development of problem gambling amongst children and young people over time,⁴¹ three studies provided some indication of factors that could be influential.

In summarising early protective factors for children, adolescents and young adults, Dowling and colleagues' meta-analysis found higher parental supervision, higher socio-economic status, and the presence of 'social problems' (not defined by the authors) were longitudinally associated with less problem gambling, with small to medium effect sizes.⁴¹ The authors posit that social problems may actually be protective because peers serve as a significant social influence for gambling initiation, and youth who get along with their peers could thereby be more at risk of problematic gambling. However, the authors also caution that the evidence base is limited in terms of longitudinal studies that outline protective factors that reduce the development of problem gambling amongst young people.

King's review⁹ sought to address several research questions, one of which was to summarise the protective factors associated with exposure to gambling-like experiences through gaming. As expected, there was some overlap with the findings presented by Dowling et al.,⁴¹ with King categorising these factors as either personal characteristics (e.g. high self-esteem), parental factors (e.g. parenting monitoring), peer influences (e.g. real-world friends who are not interested in gambling), or environmental factors (e.g. limited early exposure).⁹ Again, the review did not cite digital skills/literacy as protective factors, nor broader cognitive skills including problem solving or critical thinking skills. Similarly, Sharman et al.'s 2019 systematic review of risk factors related to disordered gambling amongst young people and adolescents did not cite digital capabilities as an influential factor. However, like other research, this review did find that playing video games with simulated gambling serves as a noteworthy risk factor for young people.⁴²

Digital capabilities and other risky behaviours

Given the limitations in accessing literature related to digital literacy and gambling, this review actively sought to include studies that situated digital capability development as a risk or protective factor in the development of other problematic behaviours that have been associated with youth gambling. These include alcohol and tobacco use, problematic media use/internet addiction, and cyberbullying.

Dowling et al.⁴¹ demonstrated quite clearly that the longitudinal risk factors for problem gambling are similar to those for other problem behaviours amongst youth, namely alcohol, tobacco and illicit drug use. Sharman et al. similarly showed that engagement in other risky behaviours like tobacco and alcohol use, predict gambling disorder amongst young people.⁴² Hence, the study by Bai and colleagues⁴³ is of particular interest, given it sought to examine the correlations between “deviant” peer affiliation (a term used by the authors), tobacco and alcohol information exposure on social networking sites and adolescent tobacco and alcohol use, as well as the potential protective role of digital literacy. Using self-report questionnaires with 725 Chinese adolescents, including a 20-item digital literacy scale, the authors found that those with deviant peers were more likely to be exposed to SNS tobacco and alcohol information and subsequently more likely to use tobacco and alcohol. Digital literacy was shown to be a moderating factor in exposure to tobacco and alcohol information on social networking sites, and tobacco and alcohol use; that is, the relationship between exposure to information and tobacco and alcohol use was weaker for those with higher digital literacy. As such, for those with higher digital literacy, exposure to tobacco and alcohol information on social networking sites was less impactful on subsequent behaviour. In analysing these results, the authors suggest that digital literacy might possibly be protective against tobacco and alcohol use because of its potential to equip young people with skills to critique online information and advertising.

Other studies indicated that elements of digital literacy may also be protective against problematic internet use (PIU) for young people. Problematic internet use, sometimes referred to as internet addiction, is characterized by the existence of negative consequences arising from inadequate self-regulation (e.g. compulsive use of the internet and uneasiness when not connected), preference for online social interaction, and using the internet to modify one’s state of mind. However, classification of internet addiction is contentious, with conceptualisations varying considerably.⁴⁴ Notwithstanding classification debates, which are beyond the scope of the present review, we deem youth PIU of interest, given the link between internet addiction and adolescent online gambling.³⁹ At the same time, we interpret these links with caution, given that PIU and online gambling share common indicators.⁴⁵

Si and Lee⁴⁶ conducted a secondary analysis of national data from the 11th Panel Study on Korean Children 2018 to investigate whether digital citizenship had a moderating effect on a range of factors, including problematic digital media use. In this study, digital citizenship significantly moderated the paths from problematic digital media use to happiness; that is, for Korean children who reported high digital citizenship, problematic digital media use was less likely to make them feel happy. By contrast, for students with low digital citizenship, problematic digital media use was shown to increase happiness levels. In examining this link, the authors concluded that children with higher digital citizenship “can likely recognise problematic digital media use as unhealthy behaviour and not as a means to enhance happiness” whereas for other children overuse of media more likely facilitates “instantaneous gratification of [their] needs” (p. 491).

Three further studies examined the links between internet literacy and internet addiction amongst young people. Stodt, Wegmann and Brand,⁴⁷ in their cross-sectional study with 631 German adolescents and young adults, discussed the complex relationship between internet literacy and internet addiction, whereby only certain dimensions of internet literacy were linked to dysfunctional internet use. The elements of internet literacy that were linked to internet addiction included lower self-regulative skills and higher self-rated expertise in online content creation and

social interaction. A later study by Stodt et al.⁴⁸ included a cross cultural comparison of both German and Chinese samples, to examine whether specific internet literacy competencies influenced internet use disorder amongst adolescents and young adults. This study showed mixed results, and similarly concluded that only some internet literacy competencies seem to play a role in the development and maintenance of internet use disorder. For example, people with less self-regulative skills in digital settings (a specific element of internet literacy) were more vulnerable to developing internet use disorder. Having said this, there were also cultural differences in the protective role of internet literacy domains which meant that skills were not consistently correlated with internet use disorder symptoms across samples.

Finally, a more recent study by Jiang and colleagues sought to investigate the links between different dimensions of internet literacy and internet addiction amongst 2,276 Chinese youth.⁴⁹ In this study, the internet literacy scale included multiple sub-dimensions including: technical knowledge and skills; awareness and cognition of the internet; internet interactions; autonomous learning on the internet; and internet self-management. The authors conceptualised *critical internet literacy* as the last two components (i.e. autonomous learning and internet self-management). Like Stodt et al.^{47,48} this study also concluded that the relationship between internet literacy and internet addiction is complex, but they found that different elements of internet literacy were influential. For example, while internet-related knowledge and skills positively and significantly influenced the likelihood of internet addiction, being able to analyse useful information on websites and self-manage time spent online negatively and significantly influenced the likelihood of internet addiction. Consequently, these results suggest that critical digital capabilities may prevent the development of internet addiction among youth and adolescents, while functional abilities seem to increase the risk. However, the variability across these three studies indicate that more research in this space is warranted.

Digital capabilities and online resilience

Other findings suggest that functional digital skills may actually increase one's risk for encountering problems online. It might reasonably be posited that digital literacy should protect young people from exposure to risky online experiences, however, there is some evidence to suggest the contrary. The systematic review by Vissenberg et al.³⁰ showed that digitally literate young people tend to encounter more risks online. The authors suggest this may be because they spend more time engaged in online activities relative to less digitally literate youth. However, despite being exposed to more risks, the review highlighted the ways in which digital skills might build young people's resilience to navigate potentially harmful situations. For example, the authors found a positive though weak link between digital literacy and self-reported wellbeing.³⁰ While digital literacy did not appear to protect young people from encountering risks, it *enabled* them to develop effective coping strategies when faced with risk (e.g. seeking social support, reporting problems, deleting harmful messages). The authors suggest that young people's exposure to risk is actually an important part of developing online resilience so that they can build beneficial coping tools that can prevent future harm. A study by Tao and colleagues conducted with third-grade students residing in Hong Kong also found that children with higher levels of digital literacy were less likely to be victim of cyberbullying. The results suggest that digital literacy may safeguard children's psychological wellbeing by equipping them to avoid situations that might expose them to cyberbullying risks.⁵⁰

Finally, a systematic review by Livingstone, Mascheroni and Stoilova⁵¹ shed light on a number of tangible benefits associated with digital skills for adolescents aged 12-17 years. For example, the review demonstrated a positive association between digital skills and: (1) online opportunities (e.g. social engagement, and gaming); (2) information benefits (e.g. better information seeking skills, and greater evaluation skills); and (3) orientation to technology (e.g. computer competence). Aligned with Vissenberg et al.,³⁰ this review suggests that children with greater digital skills are indeed exposed to more online risks, although this might not necessarily translate to increased harms. However, perhaps more importantly, this review also showed that digital literacy was positively linked to online coping behaviours (e.g. privacy, deleting unwelcome messages, and the ability to cope with cyberbullying), further adding weight to the argument that digital capabilities may possibly reduce harm.

In summary, it is important to note that these particular studies did not relate to gambling, nor exposure to gambling-related risks. However, despite increasing one's *exposure* to other types of harmful situations on the internet (e.g. related to cyberbullying), there is some compelling evidence that better digital skills may actually support youth to navigate these circumstances. For example, across numerous studies, those with better digital skills were better able to cope with online risks in a number of ways, for example, by seeking advice from a trusted friend or family member, or deleting unwanted content. Although the evidence base regarding risks and harm is in its infancy, and does not relate to gambling specifically, these findings are nonetheless promising.

2. What is the extent of any demographic difference evident in the literature about young people, problematic online gambling and digital capability?

Given the dearth of literature that specifically examines the intersection between digital capabilities and gambling, we were unable to observe or report on demographic differences. Further, we noted that the data within isolated studies were not necessarily nuanced with respect to 'at risk' groups, with most tending to treat children and youth as homogenous populations. Still, in reflecting on this question, it is useful to examine the broader literature on groups of young people who are vulnerable to greater gambling-related harms in order to draw potential inferences.

For example, the systematic review conducted by Sharman, Butler and Roberts⁴² sought to provide an overview of risk factors for disordered gambling related to several vulnerable groups, including young people and adolescents. The authors reported that a range of personal, interpersonal and environmental factors are shown to increase young people's susceptibility to gambling disorder, explicitly identifying young males, young migrants and young people experiencing socioeconomic deprivation as vulnerable populations of interest. In fact, high deprivation and poverty were consistent risk factors for disordered gambling across a range of vulnerable population groups. The review by Dowling et al.⁴¹ also identified socio-economic status as a protective factor that can reduce the development of problem gambling amongst children and young people. As such, the findings of our review point to young people experiencing poverty and disadvantage (or alternatively living on low incomes) as a group of interest that may warrant particular support in future preventive efforts.

3. To what extent do digital capabilities programs for young people incorporate education about the risks of online gaming and/or gambling, and incorporate strategies to promote help-seeking?

Only three studies focused on the evaluation of digital literacy/citizenship educational programs for adolescents in school settings, each having adopted quasi-experimental designs and self-report questionnaires. These studies collectively indicated such programs may be a promising avenue for intervention, with several positive outcomes, although further research on effectiveness is needed.

Of the three intervention-based studies, only one made specific reference to video games and online gambling in their delivery. Ortega-Barón, González-Cabrera, Machimbarrena & Montiel⁵² sought to assess the effectiveness of the *Safety.net* program in a pilot sample of Spanish adolescents aged 11-14 years. The sample included students from five Spanish educational centres across three Spanish regions. The program comprised 16 sessions which sought to prevent eight internet risks, including cyberbullying, sexting, online grooming, cyber dating abuse, problematic internet use, nomophobia (fear of not having access to a mobile phone), internet gaming disorder and online gambling disorder. Specifically, the outcome measure for online gambling disorder included the 11-item online gambling disorder questionnaire (OGD-Q).⁵³

The pilot demonstrated promising results, suggesting that the *Safety.net* program is effective in preventing the increase of most internet risks, and may reduce other internet risks. Specifically, the intervention group demonstrated improvements compared to the control group concerning online grooming, problematic internet use, internet gaming disorder, and nomophobia. Problematic gambling behaviours were assessed pre-test and post-test using the 11-item *Online Gambling Disorder Questionnaire* (OGD-Q). While no program effects were found concerning online gambling disorder, the authors hypothesise this may be linked to participant age (primarily under 14 years of age), when gambling prevalence is minimal. Although online gambling rates were not affected, the program buffered adolescents' problematic internet use and internet gaming disorder,⁵² behaviours which are both linked to online gambling, and are hence of interest.

The two remaining intervention studies sought to evaluate broader digital citizenship school programs in American and Peruvian adolescent samples, respectively. However, in these programs there was no explicit focus on online gaming or gambling and the evaluations demonstrated quite mixed results. Bickham and colleagues⁵⁴ sought to determine the effectiveness of the *Screenshots* program delivered through the school curriculum for seventh grade public school students in the US. Specifically, the authors were interested in whether the program could increase participants' knowledge about key concepts of digital citizenship and shift beliefs and behaviours to align with pro-social and safe online interactions. They also sought to understand whether the program could influence young people's conflict and bullying resolution strategies. *Screenshots* was indeed successful at improving participants' knowledge of online behaviours and healthy communication practices consistent with digital citizenship, however, there was limited evidence that participants changed their beliefs related to digital citizenship and pro-social/ safe online interactions. Conversely, there was no evidence that participants changed their pro-social online behaviours. Overall, despite their small sample size, the program demonstrated potential to improve participants' knowledge of online behaviours and possibly their beliefs related to safe online interactions, with further investigation needed.

By contrast, the preliminary evaluation by Magis-Weinberg and colleagues showed limited effectiveness of a cultural and language adaptation of a digital citizenship curriculum for young adolescents in Peru.⁵⁵ The curriculum was based on the *Common Sense DC curriculum*⁵⁶ originally designed for North American students, and consisting of six core topics. The adaptation by Magis-Weinberg et al. also included additional in-house topics related to emotional regulation, conflict resolution, and sleep and technology. It is important to note that the evaluation of the parent curriculum is yet to be completed and published, with results forthcoming.⁵⁷ In Magis-Weinberg and colleagues' study, while the intervention group reported a slightly larger increase in the frequency of positive online experiences relative to the control group, overall there was limited evidence that the curriculum can promote online conflict resolution skills, or increase knowledge regarding key digital citizenship concepts.

While there are several examples of generic cyber safety resources that can be adopted in Australian schools⁵⁸ our search did not uncover any clear examples of comprehensive digital citizenship programs developed for classroom implementation in Australia. Rather, it appears as though this is currently addressed in an ad hoc manner. While eSafety education is no doubt valuable, as a standalone focus it may fail to capture the other important aspects of digital capabilities, including the ways children can use digital technologies to express themselves, connect with others, enhance wellbeing, and critically engage with social messages. Interestingly, the Australian Research Council Centre of Excellence for the Digital Child is currently trialling digital citizenship learning by implementing the *Common Sense DC curriculum* across Australian early years centres and primary schools. This project seeks to explore how the curriculum can be implemented in Australian schools and adapted for local contexts, with results forthcoming.²⁵

4. To what extent do current gambling harm reduction educational interventions for young people consider and/or seek to develop digital capabilities?

In this review we did not locate any gambling harm reduction educational interventions that explicitly focused on digital capabilities or digital literacy. However, we located three comprehensive systematic reviews that sought to summarise the literature pertaining to existing gambling harm prevention programs for children and young people. These studies collectively examined a total of 68 research studies on educational gambling interventions for children and young people aged between 10-25 years. In addition, we examined seven initiatives focused on youth gambling prevention in Australia, one of which focused on both online gaming and gambling.

Generally speaking, the research into youth gambling prevention demonstrates an overwhelming focus on harm minimisation, conceptualised in terms of 'responsible gambling'. Not surprisingly then, we note many of the cited programs tend to be gambling-specific in nature, with a focus on elements of 'gambling literacy'. This may include increasing awareness and knowledge about gambling and gambling problems, including the nature of gambling, the probabilities and chances of gambling, erroneous cognitions and gambling fallacies, the warning signs of gambling, and the possible negative psychosocial consequences associated with gambling. Not surprisingly, perhaps, many of the programs delivered in the United Kingdom are financially supported by the gambling industry, and emphasise the individual responsibility of young people.⁵⁹ They also tend to demonstrate changes in knowledge or attitudes but no significant effects on specific outcome variables related to behaviour change. This is not surprising, given the complexities and challenges of behaviour change. Health promoters have long known that health education, whilst valuable, is

no panacea; as Van den Brouke aptly states, “changing people’s behaviour is simply not as easy as just informing them of the risks (p. 182)”.⁶⁰

Keen et al.’s systematic review¹⁹ reported on the outcome of studies empirically evaluating school gambling education programs across international jurisdictions. The programs included in the review tended to focus on raising awareness, and/or building knowledge and/or gambling-specific skills, with none focused on digital citizenship capabilities. Across these studies, some programs did demonstrate notable improvements in gambling-specific knowledge and literacies (e.g. related to gambling misconceptions, gambling fallacies, odds etc.). While the literature did not include any focus on digital literacies, we note that some gambling education programs demonstrated improvements in broader skillsets (e.g. coping, self-monitoring, problem-solving) that are more akin to digital capability competencies including *safety*, and *problem solving*.²⁴ Still, it is worth noting that it was less common for these types of skills to be integrated into program design, as compared to gambling literacy components. Not surprisingly, Keen et al. found that more comprehensive and sustained programs tended to perform better in terms of outcomes, versus brief interventions. However, program effects on gambling behaviour were less clear.¹⁹ In the interest of transparency, and in response to some stakeholders’ concerns about the potential role of industry involvement in research⁶¹, we draw the reader’s attention to the cited funding source for the Keen et al. study which was Dooleys Lindcombe, an Australian hospitality/social and entertainment club.

In a separate review of effective educational-based programs for adolescent gambling, Oh, Ong & Loo also found programs which focused on elements of gambling literacy that showed consistent program effects in increasing knowledge and correcting misconceptions about gambling⁶². However, as with Keen et al.,¹⁹ these effects did not translate to behavioural change. A recent review by Monreal-Bartolomé et al.¹⁰ further extends the prevention literature base, by citing best practice recommendations for the prevention of disordered gambling in adolescents and young adults aged 12-25 years. Again, the authors demonstrated that youth gambling prevention programs tend to be successful in the short-term by improving gambling-related knowledge, and shifting attitudes related to gambling, or improving skills related to self-awareness of problem-solving. However, limited studies demonstrated changes in the frequency and severity of gambling behaviours, and in most studies follow-up assessments were not performed. As such, the authors call for better designed research to understand whether youth prevention programs have sustained effects that effectively reduce problematic behaviours over the long term, given the difficulty of assessing program efficacy, and the high variability across studies to date.¹⁰

Our review also uncovered additional studies that examined prevention in the context of other noteworthy risky behaviours, namely internet gaming disorder⁶³ and internet addictive behaviours amongst young people.⁶⁴ Similarly, we found limited evidence pertaining to digital capabilities but some reference to potentially overlapping skillsets. For example, King and colleagues’ review summarised prevention strategies for internet gaming disorder and related health conditions (e.g. internet addiction) across international jurisdictions. They found that psycho-education prevention approaches tended to focus on building students’ understanding of problematic internet use and/or developing skills related to stress management, self-control, social relationships, and time management. In their discussion of policy implications for universal prevention programs, they cited digital literacy courses as a potential universal prevention strategy to “increase productive or goal-directed internet use” although there was no discussion of program effectiveness. They also suggested that selective school based educational programs should include a focus on teaching

healthy internet use. While the review demonstrated some signs of effectiveness, the empirical findings pertaining to selective prevention are somewhat mixed and warrant further investigation.⁶³ As such, more research is needed to evaluate policies in order to identify nuanced best practice approaches.

Throuvala et al. also examined school-based prevention programs for adolescents aged 11-17 years in their systematic review that focused on internet addiction.⁶⁴ However, they described mixed outcomes with regards to program effectiveness for adolescent internet use and gaming, and difficulties comparing studies due to the diversity of internet addiction/gaming assessment tools used and methodological limitations. It is interesting to note, however, that there were some psychosocial competencies that emerged as protective factors when integrated into programs, which were likely to reduce the likelihood of internet addiction. These skills included self-control, critical evaluation skills and problem-solving skills; skills akin to DigComp competence areas including *information and data literacy* (critically assessing the credibility and reliability of sources of information), *safety* (protecting health and wellbeing) and *problem solving*.²⁴

In examining Australian youth gambling prevention programs outside of the academic literature, on the ground initiatives also tend to focus on building gambling awareness, developing gambling literacy and shifting attitudes towards gambling. In reviewing several programs and websites we did not uncover substantial content regarding digital capabilities. Primarily focused on developing young people's understanding of the harms and risks associated with online gambling, and their financial and gambling literacy, The Victorian Responsible Gambling Foundation's updated *Be Ahead of the Game* program, which is aligned to the Australian curriculum, included one senior unit of work related to online safety. The unit focused on scrutinising screen time habits and identifying possible cyber safety issues associated with 'fake' gambling apps.⁶⁵ Other programs aligned with the Australian Curriculum, including the *Life Ready Gambling Modules (NSW)*,⁶⁶ which are mandatory for Year 11 and 12 school students, more exclusively focus on developing young people's understanding of gambling and its potential harms, and also direct students to resources around seeking help, whereas the *Know Your Odds*⁶⁷ initiative in Tasmania focuses on gambling literacy by developing secondary school students' understanding of how games of chance operate. A range of other gambling education initiatives delivered through sporting club settings for young Australians, like *Reclaim the Game (NSW)*,⁶⁸ *Here for the Game (SA)*,⁶⁹ and *Love the Game, Not the Odds*⁷⁰ (Victoria) similarly tend to focus on raising young people's awareness of the risks and harms associated with gambling on sports, and aim to counter the normalisation of sports betting by reducing the amount of advertising.

Finally, in reviewing the grey literature, we noted the South Australian *Unplugged* psycho-education program delivered in partnership through Uniting Care Wesley Bowden and the Office for Problem Gambling.⁷¹ This program targeted both secondary school students (aged 12 and over) and their parents about risky gaming behaviours and the link between gaming and online gambling. Developed in 2018, the program involved a free 2-hour school prevention workshop for parents and young people, and sought to increase participants' understanding of gaming and gambling activities and provide participants with strategies for managing online activities. While initially designed to focus on gaming, the program was revised to also focus on digital gambling activities and their intersection with gaming. Although the content was mainly gaming/gambling specific, two of the 11 topics did focus on "healthy internet/online use" and "creating healthy boundaries with gaming/gambling", and another topic sought to build critical understanding of the functions of the

gaming/gambling industries; hence there was arguably some but limited overlap with the general digital capabilities framework.

5. What is the interaction between digital inclusion, digital capabilities and problematic gambling among young people?

None of the studies in this review examined the interaction between digital inclusion, digital capabilities and problematic gambling among young people. However, as cited earlier, greater digital capabilities do increase the likelihood that a young people will be exposed to online risks.^{30,51} Scholars hypothesise this is likely because digitally literate youth spend more time online and are hence likely to encounter more digital risks.²⁹ However, importantly, digital literacy is shown to be beneficial by equipping young people with the ability to navigate and respond to online risks.^{30,51}

As cited earlier, some groups of children and young people may be at greater risk of problematic online gambling (e.g. those from low-income households).⁴¹ In addition to young people experiencing socio-economic deprivation, Sharman et al. also identified young males and young migrants as groups who are more vulnerable to disordered gambling.⁴² Within the digital capabilities literature, other research outside of this review also draws attention to the ways in which low-income families experience digital exclusion and how this may impact on digital literacy. For example, in Haddon's review of the antecedents of digital skills for adolescents, across several studies, youth from higher socio-economic status households were not surprisingly found to have more pronounced digital skills.²⁹ However, the literature in this space is weak and limited, and, more research is needed to better understand how digital inequalities can be mitigated amongst children from different backgrounds. Future research might also extend to explore the potential implications of limited digital capabilities for problematic gambling and other risky online behaviours.

Implications and areas for consideration

This review summarises the literature on youth digital capabilities and online gambling and gaming, in order to outline areas of consideration and potential implications for policy and practice. However, the literature in this specific area is extremely sparse, and hence we have drawn on other relevant literature to in order to develop useful policy recommendations. The only study to explicitly examine digital competence and gaming found that children and adolescents who were more digitally competent were less likely to develop gaming addiction, which may certainly have implications for gambling.³² This study suggested that digital competence may enhance wellbeing by protecting young people against the adverse risks and effects of gaming addiction, although further research is clearly warranted to better explore this relationship.

Despite substantial knowledge regarding risks for youth gambling harm, less research has been concerned with understanding the factors that might protect young people from gambling harms. Beyond consistent calls for upstream structural change/regulatory measures that can limit the pervasive influence of industry⁷² - changes which we agree are absolutely necessary - there is limited work that examines primary prevention in the context of young people's agency and general abilities. Beyond digital literacy, there is also limited evidence on how broader cognitive or socio-emotional skillsets might influence online gambling, suggesting that these skills may have not been the focus of much previous research.

At the outset of this discussion, we feel it important to acknowledge that we do not wish to exacerbate or add to the high burden of responsibility already placed on children, young people and their caregivers to understand the digital environment and apply recommended controls. Nor do we wish to ignore or downplay the importance of regulatory measures that actively protect young people from exposure to gambling related harms.⁷² However, it may be that these skills may offer some promise, and that these are areas worthy of further attention in future research.

The promise of digital capabilities

Digital capabilities clearly provide young people with opportunities for wellbeing and a range of information benefits, allowing them to exercise their agency in a digital world, and satisfying their needs for connection, learning and expression.¹ Based on the literature to date, which is rapidly expanding, this review has also uncovered the ways in which digital capabilities may equip young people with the ability to navigate exposure to harms online. For example, digital capabilities have been shown to be somewhat effective in relation to alcohol and tobacco use, problematic media use/internet addiction, and online coping behaviours including cyberbullying. Across numerous studies, those with better digital skills were better able to cope with online risks in a number of ways, for example, by seeking advice from a trusted friend or family member, or deleting unwanted content.³⁰

Despite the vast harms associated with online gambling, we also acknowledge the potential benefits associated with young people's digital engagement more broadly, including with video gaming. Gaming itself is not inherently problematic and may in fact enhance young people's lives in various ways,⁹ for example though building certain skillsets (e.g. problem solving) and enhancing social connections.⁷³ In a South Australian context, work by the Commissioner for Children and Young People also points to the value of recreational gaming for young people's fun and relaxation⁷⁴, and the use of collaborative gaming as a youth engagement strategy.⁷³ Internationally,

the *United Nations Convention for the Rights of the Child* stipulates children's right to leisure, play and culture (Article 31), which relates strongly to online gaming. The Convention also asserts that children's views on matters affecting them should be prioritised (Article 12), however children are rarely consulted on policies related to gaming activities, which means that their needs and views are rarely acknowledged.⁷⁵ Talking to children in different contexts about which online activities they most value and why, and the skills and resources that are required for them to achieve their goals online, are important next steps to better understand the pathway through which young people's online engagement can be enhanced, protected, and best supported.⁷⁶

Supporting the development of young people's digital skills

The review also uncovered some mixed evidence with regards to effective models to support the development of young people's digital skills, and the potential outcomes of such initiatives. Given the infancy of the literature, further evidence is needed to understand the outcome and impact of investment in young people's digital capabilities, and to comprehend which approaches are most effective.¹ We therefore identify two important questions that might serve as the basis of further research and program evaluation:

- (1) What is the process by which children and young people can develop better digital capabilities? and;
- (2) To what degree does the enhancement of digital capabilities equip young people with the skills to navigate and respond to various online harms (including gambling), and particularly for those groups at heightened risk?

One conclusion of this review is that there is a lack of clarity regarding the realities and needs of different sub-groups of children and young people, based on age, life stage and other socio-demographic variables. As such, it may be useful to extend research efforts focused on the effectiveness of digital citizenship programming for adolescents and young people in an Australian context, and how these initiatives can best align to different groups. The collection of age-disaggregated data and other data pertaining to gender, race, culture, location, and socio-economic status will allow decisionmakers to be more responsive in supporting children and youth, based on their age, needs, and social circumstances. Furthermore, the inclusion of children and young people's own voices can contribute to more targeted and effective co-designed initiatives that are relevant and meaningful to children's lives.

Youth gambling prevention

With respect to youth gambling prevention, Monreal-Bartolome and colleagues' systematic review on preventive programs for young people clearly recommends that future initiatives are universal, implemented over several sessions, adopt engaging technologies, and are inclusive of content related to gambling/mathematical principles (i.e. gambling literacy).¹⁰ Although the literature is generally consistent about the potential for gambling literacy-related content to influence young people's knowledge and potentially their gambling-based beliefs (but not their behaviour), there is much less attention given to the role of broader capabilities or non-gambling skillsets.

If we draw on the literature on school-based gambling education, in conjunction with the limited literature on digital capabilities education, we might cautiously infer that young people may benefit from gambling education and self-reflective learning that focuses not only on gambling literacy, but that seeks to facilitate broader cognitive and socio-emotional abilities in digital spaces, akin to digital capabilities. Having digital capabilities means being able to apply digital skills to gathering,

evaluating, arranging, and utilizing mass data in both the virtual and real world, and to produce knowledge in a creative way. It also means the person is equipped with analytical skills, such as those related to critical thinking and critical judgment.^{21,23,24}

While no studies have explicitly explored digital capabilities in relation to gambling, we might posit that digital capabilities related to gambling might include an ability to discuss and interpret gambling-related content and gambling-related influences, critically analyse messages portrayed in gambling advertisements, fact check and verify-refute claims, and understanding the importance of screen time limits so as to achieve a balance with healthy offline activities. King⁹ suggests that it is important that young people understand that gaming and gambling industries are primarily a business designed to make profits. To further encourage critical thinking, he suggests that young people might be prompted to reflect on the nature of social media promotions and online celebrities that seek to promote and normalise youth gambling.⁹ As Montiel et al. explain, the modern child has grown up “in a society where gambling is generally accepted, heavily available, and widely promoted through the internet (p. 568)”.⁶ As such, it is likely that young people and their families might not view youth gambling with the same concern that they harbour for other risky behaviours including alcohol and other drug use, or unsafe sexual practices. Hence, we emphasize these factors as important aspects to consider in future program delivery and evaluation.

In thinking about the problems associated with internet gaming disorder and related health conditions, King et al. also call for collaborative preventive efforts that operate across numerous settings and sectors, alongside investment in the teaching of internet skills to facilitate healthier internet use habits.⁶³ Oh, Ong and Loo similarly cite the importance of comprehensive programs that concurrently address the social and environmental factors that influence youth gambling and the social context in which gambling takes place, in conjunction with more rigorous long-term program evaluation to better determine program efficacy.⁶² There is also a need to direct attention to vulnerable populations of children and youth who have an increased risk of developing gambling-related problems, and examine more closely how they can be supported and equipped with the necessary skills to navigate harmful digital environments.

At the same time, we are cautious in overstating the potential for personal skills to mitigate the effects of a pervasive industry, and extend others’ criticisms of personal responsibility paradigms that overwhelmingly stress the role of individuals to undertake “responsible gambling”.¹⁵ Perpetuating discourses of personal accountability, the industry, not surprisingly, cites the importance of education programs to build gambling and financial literacy and “support young people in developing the critical knowledge, skills and attitudes required to make careful choices about their discretionary spending” (p.1).⁵⁸ With these messages in mind, and with respect to the aforementioned increase in incidence of online gambling, and its potential harms, we emphasise the moral imperative for governments to protect young people from gambling-related harm. Early age of onset is shown to impact on increasing the probability of developing gambling disorders in the future,⁷⁷ which highlights the significance of preventive efforts to reduce young people’s exposure in digital environments.

Online gambling amongst young people should be prioritised as a public health issue on multiple levels. Whether targeted or universal, initiatives focused on digital capabilities would be classed as a form of demand reduction, seeking to affect changes in individuals’ knowledge and skills.⁷⁸ As

such, we situate the development of digital capabilities as a potential avenue for prevention that must occur alongside other multidimensional preventive measures, e.g. broader supply reduction regulatory measures to limit young people's exposure to harmful marketing and opportunities for online gambling (e.g. restrictions on gambling marketing in sport; restricted available in online environments; age restrictions). We also acknowledge the value of harm reduction strategies (e.g. design standards and consumer protection measures) that emphasise duty of care and integrity of gambling operators to provide safe environments and products. These include but are not limited to continuous player feedback, predictive monitoring and real-time warnings and personalised pop-ups that respond to indicators of harmful play, and the regulation of online product development to ensure less harmful design.¹⁴

Summary

To the best of our knowledge, this study is a pioneer in investigating the relationship between digital capabilities and gambling-related harm amongst children and young people. In comparison with land-based environments, the online environment poses unique risks to children and youth, given the wider availability of gambling products, targeted marketing, and socio-cultural practices that normalise gambling and gaming behaviours. The state of the current literature regarding digital capabilities and gambling is sparse and has not been the subject of previous research, with only one study focused on young people's digital capabilities and gaming. However, our findings point to the possibility that digital skills may be broadly useful in developing young people's online resilience and their ability to navigate risky situations online. The literature is in its infancy, and not specific to gambling, hence further investigation in this area is warranted given the potential for digital capability skill development to have several positive outcomes for children and young people in a rapidly changing digital world. Future work that adopts a child-youth-centred approach, by actively integrating young people's voices and their collectively identified solutions, will ensure more targeted and comprehensive program and policy responses.

References

- ¹ Holly L, Wong BL, van Kessel R, Awah I, Agrawal A, Ndili N. Optimising adolescent wellbeing in a digital age. *British Medical Journal*. 2023; 380: 1-5.
- ² Delfabbro P, Wallace E. Analysis of South Australian Gambling Data. Summary of a report prepared by Professor Paul Delfabbro and Erica Wallace for the Office of Problem Gambling, Department of Human Services; 2021. Available from <https://www.problemgambling.sa.gov.au/about/research>
- ³ Emond A, Griffiths M, Hollen L. A longitudinal study of gambling in late adolescence and early adulthood: Follow-up assessment at 24 years. Report for Gamble Aware, UK; 2019. Available from <https://www.begambleaware.org/sites/default/files/2020-12/alspac-gambling-study-report-for-gamble-aware-dec-2019.pdf>
- ⁴ VicHealth. Under the radar: Harmful industries' digital marketing to Australian children. A report prepared by the Victorian Health Promotion Foundation, Melbourne; 2020. Available from <https://doi.org/10.37309/2020.CI910>
- ⁵ Duffy L. Gen bet: a plain English summary of research into gambling and young people. Victorian Responsible Gambling Foundation, Melbourne; 2021. Available from <https://responsiblegambling.vic.gov.au/resources/publications/gen-bet-a-plain-english-summary-of-research-into-gambling-and-young-people-990/>
- ⁶ Montiel I, Ortega-Baron J, Basterra-Gonzalez A, Gonzalez-Cabrera J, Machimbarrena J. Problematic online gambling among adolescents: A systematic review about prevalence and related measurement issues. *Journal of Behavioral Addictions*. 2021; 10(3): 566-586.
- ⁷ Freund, M, Noble, N, Hill, D, White, V, Evans, T, Oldmeadow, C, Sanson-Fisher, R. The prevalence and correlates of gambling in secondary school students in Victoria, Australia, 2017. Victorian Responsible Gambling Foundation, Melbourne; 2019. Available from <https://responsiblegambling.vic.gov.au/resources/publications/the-prevalence-and-correlates-of-gambling-in-secondary-school-students-in-victoria-australia-2017-680/>
- ⁸ Warren, D, Yu, M. Chapter 7: Gambling activity among teenagers and their parents in LSAC Annual Statistical Report 2018, Australian Institute of Family Studies, Melbourne. 2018: 69-80.
- ⁹ King, D. Online gaming and gambling in children and adolescents – Normalising gambling in cyber places. Victorian Responsible Gambling Foundation, Melbourne; 2018. Available from <https://responsiblegambling.vic.gov.au/documents/479/Online-gaming-and-gambling-in-children-and-adolescents.pdf>
- ¹⁰ Monreal-Bartolome A, Barcel-Soler A, Carcia-Campayo J, Bartolome-Moreno C, Cortes-Montavez P, Acon E, Huertes M, Lacasa V, Crespo S, Lloret-Irles D, Sordo L, Clotas Bote C, Puigcorbe S, Lopez-Del-Hoyo Y. Preventive gambling programs for adolescents and young adults: a systematic review. *International Journal of Environmental Research and Public Health*. 2023; 20: 4691.
- ¹¹ Allami Y, Hodgins DC, Young M, Brunelle N, Currie S, Dufour M, Flores-Pajot MC, Nadeau L. A meta-analysis of problem gambling risk factors in the general adult population. *Addiction*. 2021; 116(11): 2968-2977.
- ¹² Riley BJ, Oster C, Rahamathulla M, Lawn S. Attitudes, risk factors, and behaviours of gambling among adolescents and young people: A literature review and gap analysis. *International Journal of Environmental Research and Public Health*. 2021; 18(3):984-999.
- ¹³ The Australian Centre for Social Innovation. Minimising gambling harm. A theory of change for the Office for Problem Gambling, SA. TACSI; 2021. Available from <https://www.problemgambling.sa.gov.au/documents/resouces/Development-of-a-Theory-of-Change-for-the-South-Australian-gambling-system-2021-TACSI.pdf>
- ¹⁴ Marionneau V, Ruohio H, Karlsson N. Gambling harm prevention and harm reduction in online environments: A call for action. *Harm Reduction Journal*. 2023; 20(1): 92.
- ¹⁵ Pitt H, Thomas S, Randle M, Cowlishaw S, Arnot G, Kairouz S, Daube M. Young people in Australia discuss strategies for preventing the normalisation of gambling and reducing gambling harm. *BMC Public Health*. 2022; 22:1–13.
- ¹⁶ Gibson E, Griffiths MD, Calado F, Harris A. The relationship between videogame micro-transactions and problem gaming and gambling: A systematic review. *Computers in Human Behavior*. 2022; 131: 1-16.
- ¹⁷ Pitt H, Thomas SL, Bestman A, Stoneham M, Daube M. "It's just everywhere!" Children and parents discuss the marketing of sports wagering in Australia. *Australian and New Zealand Journal of Public Health*. 2016; 40(5): 480–486.
- ¹⁸ van Schalkwyk M, Petticrew M, Cassidy R, Adams P, McKee M, Reynolds J, Orford J. A public health approach to gambling regulation: Countering powerful influences. *Lancet Public Health*. 2021; 6(8): e614-e619
- ¹⁹ Keen B, Blazczynski A, Anjoul F. Systematic review of empirically evaluated school-based gambling education programs. *Journal of Gambling Studies*. 2017; 33: 301-325.

-
- ²⁰ Third, A, Moody, L. Our rights in the digital world: A report on the children’s consultations to inform UNCRC General Comment 25. London and Sydney: 5Rights Foundation and Western Sydney University; 2021. Available from <https://5rightsfoundation.com/uploads/OurRightsinaDigitalWorld-FullReport.pdf>
- ²¹ European Commission, Directorate-General for Education, Youth, Sport and Culture. *Final report of the Commission expert group on tackling disinformation and promoting digital literacy through education and training – Final report*. Publications Office of the European Union; 2022. Available from <https://data.europa.eu/doi/10.2766/283100>
- ²² Jisc data analytics. Building digital capabilities framework. The six elements defined. Jisc; 2022. Available from <https://digitalcapability.jisc.ac.uk/what-is-digital-capability/individual-digital-capabilities/>
- ²³ Department of Employment and Workplace Relations. Australian Digital Capabilities Framework Version 1.0. Commonwealth of Australia; 2023. Available from <https://www.dewr.gov.au/skills-and-training/resources/australian-digital-capability-framework>
- ²⁴ Vuorikari R, Kluzer S, Punie Y. DigComp 2.2: The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes. Publications Office of the European Union, Luxembourg; 2022. Available via <https://publications.jrc.ec.europa.eu/repository/handle/JRC128415>
- ²⁵ Dezzuani M. What is digital citizenship and how can Australian children learn about it? March 2022. Available from <https://digitalchild.org.au/what-is-digital-citizenship-and-how-can-australian-children-learn-about-it/>
- ²⁶ Australian Curriculum Assessment and Reporting Authority (ACARA). The Australian Curriculum Version 9. Digital literacy. 2023. Available from <https://v9.australiancurriculum.edu.au/teacher-resources/understand-this-general-capability/digital-literacy>
- ²⁷ South Australian Council of Social Service. 2024-2025 State Budget Submission: Regional Digital Inclusion. 2023. Available from <https://www.sacoss.org.au/sites/default/files/public/2024-2025%20SACOSS%20State%20Budget%20Submission%20-%20Digital%20Inclusion.pdf>
- ²⁸ Dezuanni M, Osman K, Foth M, Mitchell P, McCosker A, Notley T, Kennedy J, Marshall A, Tucker J, Hourigan A, Mamalipurath J, Mavoia J. Digital inclusion is everybody’s business: Key findings from the ARC Linkage Project Advancing digital inclusion in low-income Australian families. Digital Media Research Centre, Queensland University of Technology; 2023.
- ²⁹ Haddon, L, Cino D, Doyle, M, Livingstone, S, Mascheroni G, Stoilova, M. Children's and young people's digital skills: a systematic evidence review. London School of Economics and Political Science; 2020. Available from <https://zenodo.org/records/4160176>
- ³⁰ Vissenberg J, d’Haenens L, Livingstone S. Digital literacy and online resilience as facilitators of young people’s well-being?. *European Psychologist*. 2022; 27(2): 76-85.
- ³¹ Cortesi, S, Hasse, A, Lombana-Bermudez, A, Kim, S, Gasser, U. Youth and digital citizenship+ (plus): Understanding skills for a digital world. Youth and Media, Berkman Klein Center for Internet & Society; 2022. Available from <https://cyber.harvard.edu/publication/2020/youth-and-digital-citizenship-plus>
- ³² Tso W, Reichert F, Law N, Fu K, de la Torre J, Rao N, Leung L, Wang, Y, Wong W, Ip P. Digital competence as a protective factor against gaming addiction in children and adolescents: A cross-sectional study in Hong Kong. *The Lancet Regional Health – Western Pacific*. 2022; 20:100382
- ³³ Moher D, Liberati A, Tetzlaff J, Altman DG, Prisma Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *International Journal of Surgery*. 2010; 8(5):336-41.
- ³⁴ Sakata K, Jenkinson R. What is the link between video gaming and gambling? Growing Up in Australia Snapshot Series, Issue 7. Australian Institute of Family Studies, Melbourne; 2022.
- ³⁵ Brooks GA, Clark L. The gamblers of the future? Migration from loot boxes to gambling in a longitudinal study of young adults. *Computers in Human Behavior*. 2023; 141: 1-10.
- ³⁶ Kim HS, Leslie RD, Stewart SH, King DL, Demetrovics Z, Andrade AL, Choi JS, Tavares H, Almeida B, Hodgins DC. A scoping review of the association between loot boxes, esports, skin betting, and token wagering with gambling and video gaming behaviors. *Journal of Behavioral Addictions*. 2023; 12(2): 309-351.
- ³⁷ Merkouris SS, Greenwood CJ, Youssef GJ, Letcher P, Vassallo S, Dowling NA, Olsson CA. Adult gambling problems and histories of mental health and substance use: Findings from a prospective multi-wave Australian cohort study. *Journal of Clinical Medicine*. 2021; 10(7); 1-13.
- ³⁸ Escario JJ, Wilkinson AV. Exploring predictors of online gambling in a nationally representative sample of Spanish adolescents. *Computers in Human Behavior*. 2020; 102:287-292.
- ³⁹ Gómez P, Feijóo S, Braña T, Varela J, Rial A. Minors and online gambling: Prevalence and related variables. *Journal of Gambling Studies*. 2020; 36: 735-45.

-
- ⁴⁰ Mays N, Pope C, Popay J. Systematically reviewing qualitative and quantitative evidence to inform management and policy-making in the health field. *Journal of Health Services Research & Policy*. 2005; 10(1): 6-20
- ⁴¹ Dowling NA, Merkouris SS, Greenwood CJ, Oldenhof E, Toumbourou JW, Youssef GJ. Early risk and protective factors for problem gambling: A systematic review and meta-analysis of longitudinal studies. *Clinical Psychology Review*. 2017; 51: 109-24.
- ⁴² Sharman S, Butler K, Roberts A. Psychosocial risk factors in disordered gambling: A descriptive systematic overview of vulnerable populations. *Addictive Behaviors*. 2019; 99: 106071.
- ⁴³ Bai X, Yao L, Duan C, Sun X, Niu G. Deviant peer affiliation and adolescent tobacco and alcohol use: The roles of tobacco and alcohol information exposure on social networking sites and digital literacy. *Behavioral Sciences*. 2022; 12: 478.
- ⁴⁴ Kuss DJ, Lopez-Fernandez O. Internet addiction and problematic Internet use: A systematic review of clinical research. *World Journal of Psychiatry*. 2016; 6(1): 143-176.
- ⁴⁵ Tomczyk Ł, Szyszka M, Stošić L. Problematic internet use among youths. *Education Sciences*. 2020; 10(6):161.
- ⁴⁶ Si E, Lee G. Moderating effects of digital citizenship on problematic digital media use and children's happiness: A cross-sectional study. *Journal of School Health*. 2023; 93(6): 485-493.
- ⁴⁷ Stodt B, Wegmann E, Brand M. Predicting dysfunctional Internet use: The role of age, conscientiousness, and Internet literacy in Internet addiction and cyberbullying. *International Journal of Cyber Behavior, Psychology and Learning*. 2016; 6(4): 28-43.
- ⁴⁸ Stodt B, Brand M, Sindermann C, Wegmann E, Li M, Zhou M, Sha P, Montag C. Investigating the effect of personality, internet literacy, and use expectancies in internet-use disorder: A comparative study between China and Germany. *International Journal of Environmental Research and Public Health*. 2018; 15(4): 579.
- ⁴⁹ Jiang Q, Chen Z, Zhang Z, Zuo C. Investigating links between Internet literacy, Internet use, and Internet addiction among Chinese youth and adolescents in the digital age. *Frontiers in Psychiatry*. 2023; 14: 1-10.
- ⁵⁰ Tao S, Reichert F, Law N, Rao N. Digital technology use and cyberbullying among primary school children: Digital literacy and parental mediation as moderators. *Cyberpsychology, Behavior and Social Networking*. 2022; 25(9): 571-579.
- ⁵¹ Livingstone S, Mascheroni G, Stoilova M. The outcomes of gaining digital skills for young people's lives and wellbeing: A systematic evidence review. *New Media & Society*. 2023; 25(5): 1176-1202.
- ⁵² Ortega-Barón J, González-Cabrera J, Machimbarrena JM, Montiel I. Safety. Net: A pilot study on a multi-risk internet prevention program. *International Journal of Environmental Research and Public Health*. 2021; 18(8): 4249.
- ⁵³ González-Cabrera J, Machimbarrena JM, Beranuy M, Pérez-Rodríguez P, Fernández-González L, Calvete E. Design and Measurement Properties of the Online Gambling Disorder Questionnaire (OGD-Q) in Spanish Adolescents. *Journal of Clinical Medicine*. 2020; 9: 120.
- ⁵⁴ Bickham DS, Moukalled S, Inyart HK, Zlokower R. Evaluating a middle-school digital citizenship curriculum (Screenshots): Quasi-Experimental study. *JMIR Mental Health*. 2021; 8(9): e26197.
- ⁵⁵ Magis-Weinberg L, Muñoz Lopez DE, Gys CL, Berger EL, Dahl RE. Promoting digital citizenship through a school-based intervention in early adolescence in Perú (a pilot quasi-experimental study). *Child and Adolescent Mental Health*. 2023; 28(1): 83-89.
- ⁵⁶ James C, Weinstein E, Mendoza K. Teaching digital citizens in today's world: Research and insights behind the common sense K-12 DC curriculum (Version 2). San Francisco: Common Sense Media; 2021. Available from <https://www.common sense.org/system/files/pdf/2021-08/common-sense-education-digital-citizenship-research-background.pdf>
- ⁵⁷ University of New Hampshire. Evaluation of the Common Sense Education Digital Citizenship Curriculum. Available from <https://www.unh.edu/ccrc/resource/evaluation-common-sense-education-digital-citizenship-curriculum>
- ⁵⁸ Australasian Gaming Council. Responsible Gambling Education: A guide to resources for teachers and parents. 2022. Available from [https://austgamingcouncil.org.au/sites/default/files/2022-05/Education%20Guide 2022 Final 0.pdf](https://austgamingcouncil.org.au/sites/default/files/2022-05/Education%20Guide%202022%20Final%200.pdf)
- ⁵⁹ van Schalkwyk MC, Hawkins B, Petticrew M. The politics and fantasy of the gambling education discourse: An analysis of gambling industry-funded youth education programmes in the United Kingdom. *SSM-Population Health*. 2022; 18 :101122.
- ⁶⁰ Van den Broucke S. Why health promotion matters to the COVID-19 pandemic, and vice versa. *Health Promotion International*. 2020; 35(2): 181-186.
- ⁶¹ Louderback ER, Wohl MJ, LaPlante DA. Integrating open science practices into recommendations for accepting gambling industry research funding. *Addiction Research & Theory*. 2021; 29(1): 79-87.

-
- ⁶² Oh BC, Ong YJ, Loo JM. A review of educational-based gambling prevention programs for adolescents. *Asian Journal of Gambling Issues and Public Health*. 2017; 7: 1-6.
- ⁶³ King DL, Delfabbro PH, Doh YY, Wu AM, Kuss DJ, Pallesen S, Mentzoni R, Carragher N, Sakuma H. Policy and prevention approaches for disordered and hazardous gaming and Internet use: An international perspective. *Prevention Science*. 2018 ;19(2): 233-249.
- ⁶⁴ Throuvala MA, Griffiths MD, Rennoldson M, Kuss DJ. School-based prevention for adolescent internet addiction: Prevention is the key. A systematic literature review. *Current Neuropharmacology*. 2019 ;17(6): 507-525.
- ⁶⁵ Victorian Responsible Gambling Foundation. Be Ahead of the Game: a school education program about gambling and gaming. October 2023. Available from <https://responsiblegambling.vic.gov.au/reducing-harm/schools/>
- ⁶⁶ NSW Department of Education. Life Ready modules Available from <https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/key-learning-areas/pdhpe/life-ready/life-ready-S6-seeking-help-gambling.docx>
- ⁶⁷ Tasmanian Government. Know Your Odds. Available from <https://knowyourodds.net.au/young-people-and-gambling/>
- ⁶⁸ NSW Office of Responsible Gambling. Reclaim the Game. 2022. Available from <https://www.gambleaware.nsw.gov.au/resources-and-education/awareness-campaigns/reclaim-the-game>
- ⁶⁹ Office for Problem Gambling South Australia. Here for the Game. 2021. Available from <https://www.hereforthegame.com.au/take-action>
- ⁷⁰ Victorian Responsible Gambling Foundation. Love the Game not the odds. Available from <https://lovethethegame.vic.gov.au/>
- ⁷¹ King D, Phillips-Hughes A, Anilius E. Evaluation of the Uniting Care Wesley Bowden 2021 ‘Unplugged’ Program for Parents and Young People. August 2021. Available from <https://www.problemgambling.sa.gov.au/documents/resouces/The-Unplugged-Program-Evaluation-Report-2021.docx>
- ⁷² Thomas S, Van Schalkwyk MC, Daube M, Pitt H, McGee D, McKee M. Protecting children and young people from contemporary marketing for gambling. *Health Promotion International*. 2023; 38(2): 1-14.
- ⁷³ Connolly H. Commissioner for Children and Young People, South Australia Community Building in the 21st Century — How to use collaborative gaming to build connection, confidence and creativity. 2020. Available from <https://www.cyp.com.au/wp-content/uploads/2022/03/Community-Building-in-the-21st-Century-How-to-use-collaborative-gaming-to-build-connection-confidence-and-creativity.pdf>
- ⁷⁴ Zomer C, Magee L, Third A. Benefits of recreational gaming and eSports for young people: Literature Review. Sydney: Western Sydney University; 2021. Available from https://www.cyp.com.au/wp-content/uploads/2024/02/Benefits_of_Recreation_Gaming_and_e-Sports.pdf
- ⁷⁵ United Nations Children’s Fund (UNICEF). Child rights and online gaming: Opportunities & challenges for children and the industry. 2019. Available from https://www.unicef-irc.org/files/upload/documents/UNICEF_CRBDigitalWorldSeriesOnline_Gaming.pdf
- ⁷⁶ Livingstone S, Kardefelt-Winther D, Kanchev P, Cabello P, Claro M, Burton P, Phyfer J. Is there a ladder of Children’s Online Participation?: Findings from Three Global Kids Online Countries. UNICEF Innocenti Research Brief; 2019. Available from available via <https://www.unicef-irc.org/publications/1019-ladder-of-childrens-online-participation-findings-from-three-gko-countries.html>
- ⁷⁷ Gómez P, Feijóo S, Braña T, Varela J, Rial A. Minors and online gambling: Prevalence and related variables. *Journal of Gambling Studies*. 2020; 36: 735-745.
- ⁷⁸ Forsström D, Spångberg J, Petterson A, Brolund A, Odeberg J. A systematic review of educational programs and consumer protection measures for gambling: An extension of previous reviews. *Addiction Research & Theory*. 2021; 29(5):398-412.