OFFICE OF RESPONSIBLE GAMBLING WHOLE SCHOOL APPROACH LITERATURE REVIEW

Prepared for the NSW Office of Responsible Gambling

August 2020

GAME CHANGERS

Ipsos

Ipsos reference: 19-107367-01

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This review briefly outlines the key findings relating to recent Australian, Europe, Great Britain and United States (US) studies of youth and gambling. The question 'is adolescent gambling perceived to be a problem?' is answered in relation to parents, teachers and mental health professionals by reviewing surveys in Canada, Finland and Australia with comparisons available between parents and teachers. Based on this literature review it can be concluded that gambling is often stigmatised.

The notion of a 'whole school approach' is defined and explored along with alternative approaches to school-based interventions. Evidence regarding the efficacy of the whole school approach is detailed along with defining critical ingredients for success. The whole school approach is fashionable in the 'health education' arena but all too often its impact is not maximised - owing to the all too frequently documented lack of fidelity in implementation. Details are provided of several evaluated school prevention programs in the areas of resilience, mental health, bullying, physical activity, overweight/obesity, and respectful relationships.

Evidence from school-based gambling education programs is explored for programs pre-2010 and in considerable detail for those post-2010 - none of which were informed by a whole school approach and most of which were able to document positive changes, albeit only limited with respect to behaviour change. A number of 'reviews of reviews'[1] and meta-analysis[2] are covered. The issue of gambling being associated with other risky behaviours is briefly explored and an attempt made to summarise the large evidence base in relation to school-based gambling education.

In considering recommended content for gambling education, the recent literature on the convergence of gaming and gambling is explored given its importance for the development of programs intent on reducing harmful gambling in youth. In analysing the likely recommended content of future school-based approaches the curriculum areas of mathematics and health education are considered along with key principles including moving the focus away from harm and towards challenging adolescents' misconceptions based on the evidence available to date.

Based on this literature review, the following key points should be considered in the development of any gambling education program:

- **Teachers hold the key to success**
  Numerous studies indicate the critical importance of teachers to any school-based prevention approach. However, an increasingly crowded curriculum and perceived low importance of problem gambling against other health related issues may challenge the endorsement of such gambling education programs.
- **Parents: a needed partner**
  School-based prevention programs which include a parent element are more likely to indicate greater positive outcomes.
- **Whole school approach is an ideology, not a panacea**
  It could be suggested that in some cases the 'whole school approach' can be a popular terminology but proves to be more difficult to fully implement. Other alternatives to be considered include tiered or staged approaches.
- **Knowledge, awareness and attitude change rather than behaviour change**
  Knowledge, awareness and attitude change are more likely outcomes of school-based programs than behaviour change.
- **What should be the focus of any program?**

[1] 'Reviews of reviews' correspond to a review which analyses and reports multiple reviews.

[2] Meta-analysis is an analyse which combines results from multiple studies.

Research evidence indicates that comprehensive programs covering both psychoeducation and skills training tend to be more effective for students. As such, a broad scope of topics should be considered including statistical knowledge about gambling, information on the potentially addictive nature of gambling, explaining gambling fallacies. But importantly also building self-esteem, and peer resistance training and self-efficacy to regulate their own behaviour.

Research context

1 Research context

This section of the review presents the background, objectives and methodology of the literature review.

1.1 Background

1.1.1 Education and awareness strategy

The Office of Responsible Gambling (ORG) develops and implements programs and initiatives, funded by the Responsible Gambling Fund, as part of a strategic approach that supports responsible gambling and prevents and minimises the risk of gambling related harm.

The ORG supports the Responsible Gambling Fund Trust to ensure funding recommendations to the Minister of Customer Service are consistent with the objectives of the fund and associated governance documents. One area for funding is community education to support well informed gambling choices, responsible gambling behaviours, reduce gambling harm and resilient communities as well as de-stigmatising help seeking behaviour.

The ORG's three-year Education and Awareness Strategy takes a health promotion approach towards community education. The approach supports the strategic direction of working towards zero gambling harm. Young people (aged 12-24) are identified in this strategy as a priority population group for early intervention. Interventions include targeted education programs to increase awareness of responsible gambling practices.

The ORG is scoping the development of a whole school approach as an early intervention strategy to target young people across all primary and secondary schools in New South Wales (NSW). The approach will assist in raising awareness of gambling harm amongst young people, challenge gambling fallacies and will increase gambling literacy. The whole school environment encompasses all areas of the school, including the school community and the classroom environment.

1.1.2 Young people and gambling

How young people are engaging with gambling is changing. This change is being driven by rapid technological changes, the high-level of engagement of young people with mobile technology and gaming, the increase in online gambling advertising and the expanding scope and variety of video games with monetary gambling opportunities. Adolescents today are increasingly exposed to gambling marketing through social media, online advertising and sports coverage, alongside increased accessibility and opportunities to gamble with the rise of internet and smart phone access.

The current evidence of how Australian young people engage with and are affected by gambling is limited. However, the recently released NSW Gambling Survey 2019 indicates that young people (aged 18-24) experience higher rates of gambling harm compared to the general NSW community. To learn more about the gambling behaviours and attitudes of young people (aged 12-17) the ORG has engaged the Central Queensland University (CQU) to conduct a study, with the results being available in late-2020. The results of this study will also help inform the whole school approach to gambling.

1.1.3 The current project: literature review

This report presents a review of all relevant literature to identify and assess research and programs on addressing gambling and gambling harm within the whole school environment. The review includes other relevant health-related whole school approaches including sex, alcohol and other drugs, mental health, etc. Literature has been sourced from Australia and internationally.

A separate report will be delivered to present the results of a survey conducted among registered NSW teachers of primary and secondary schools. The aim of this survey is to determine how gambling and gambling harm can be potentially addressed within the NSW school environment. As such, a questionnaire will be designed to capture teachers' perceptions and attitudes towards youth gambling and convergence of gambling and gaming. It will also gather information about enablers and barriers to successfully implement a school-based program.

1.2 Objectives

The overarching objective of the literature review, and other scoping stages, is to learn more about how gambling and gambling harm are, and potentially could be addressed in the school environment including identifying the possible benefits of a whole school approach. The specific information objectives guiding the literature review were:

- What is involved in a whole school approach;
- What evidence exists supporting a whole school approach;
- What can be learnt from other relevant health-related whole school approaches, for example those from the alcohol and other drugs, mental health areas and road safety;
- What are teachers' knowledge and attitudes towards gambling including the gaming/gambling convergence versus other risky behaviours; and
- What lessons can be learned from current approaches to gambling education.

1.3 Methodology

1.3.1 Time frame

At the outset, it was agreed that the literature search should be limited to reports and published articles from 2010 to March 2020. Given that most authors/researchers conduct a modified and focussed literature search in preparing their publication, recent publications incorporate the findings of earlier publications. Additionally, given the research objectives of including non-gambling topics, the literature search would likely uncover thousands of possibly relevant articles and reports. The initial search for 'whole school' produced 87,000 citations and only 38,000 in the last 10 years, 'whole school approach' produced 6,700 and only 4,000 in the last 10 years.

1.3.2 Search process

Multiple academic data bases were searched: PubMed, Pub Med Central, MEDLINE, ISI Web of Science, ScienceDirect, A+ Education, Scopus, Medline, PsychINFO, ERIC, BASE, CORE, Semantic Scholar for peer-papers containing the terms 'whole school/approach' combined with any of the terms 'gambling', 'drugs', 'alcohol', 'mental health', 'bullying', 'road safety', 'diet/obesity'. To capture a wider range of sources, the same search terms were used in Google, Google Scholar and Microsoft Academic. Additionally, the 'grey' literature was sourced via Government websites and data bases like science.gov.

Each article collected as potentially useful was interrogated to identify any other likely articles not already captured in the searches. To be included in the literature review; a paper had to be published from 2010 onwards, had to refer to youth populations, had to focus on intervention/prevention programs and ideally mention 'whole school approach'. Additionally, government websites were searched relating to gambling and youth and/or whole school.

2 Recent studies of youth and gambling

This section of the review introduces the latest studies conducted on youth and gambling in Australia, Europe, Great Britain and US. It outlines some of the latest prevalence figures of problem gambling among young people and in some cases compares it to other health related issues (e.g. drinking alcohol, tobacco, illegal drugs) to provide broader context.

2.1 Australia

A search of the published literature reveals that there have been many studies of youth and gambling in Australia. According to a recent unpublished presentation by CQU and Flinders University (Hing et al. 2020) 13 studies of adolescent gambling have been conducted in Australia since 2000, mostly with 12 to 17-year-old students.

More recent studies in Australia in the last decade (from 2010) include:

- Warren, D. and Yu, M. 2019, *Growing up in Australia: The Longitudinal Study of* Australian *Children* (LSAC) Annual Statistical Report 2018, Ch 7 Gambling activities among teenagers, Australian Institute of Family Studies;
- Jenkinson, R., de Lacey-Vawdon, C., and Carroll, M. 2018, *Weighing up the odds: Young men, sports and betting*. Melbourne: Australian Gambling Research Centre, Australian Institute of Family studies;
- Freund, M., Noble, N., Hill, D., White, V., Evans, T., Oldmeadow, C., and Sanson-Fisher, R. 2017, *The prevalence and correlates of gambling in secondary school students in Victoria*, Australia, 2017 Victorian Responsible Gambling Foundation & The University of Newcastle;
- Pitt, H., Thomas, S.L., Bestman, A., Daube, M., and Derevensky, J. 2017, 'Factors that influence children's gambling attitudes and consumption intentions: lessons for gabling harm prevention research, policies and advocacy strategies', *Harm Reduction Journal*, vol. 14, no. 11, pp. 1-12;
- Delfabbro, P. and King, D.L. 2011, 'Adolescent gambling in metropolitan Darwin: Prevalence, correlates and social influences', *Gambling Research*, vol. 23, no. 1, pp. 3-23;

- Purdie, N., Matters, G., Hillman, K., Murphy, M., Ozolins, C., and Millwood, P. 2011, *Gambling and Young People in Australia*, Gambling Research Australia; and
- Splevins, K., Mireskandari, S., Clayton, K., and Blaszczynski, A. 2010, 'Prevalence of adolescent problem gambling, related harms and help-seeking behaviours among an Australian population', *Journal of Gambling Studies*, vol. 26, no. 2, pp. 189-204.

The highlights from these studies can be briefly summarised as follows:

- One in six 16-17-year olds reported to have gambled in the past year. Almost one in three (31%) of students aged 12-17 years reported gambling at some time in the past (Warren and Yu 2019);
- 60-75% report at least one gambling activity in the past year; commonly card games, scratch tickets and sports betting (Purdie et al. 2011);
- 6% of 12-17-year olds reported gambling in the last 30 days (Freund et al. 2017);
- 1-4% report symptoms consistent with problem gambling (Freund et al. 2017);
- A quarter (23%) of male bettors surveyed aged 18-35 reported to be under 18 when they first placed a bet on sports (Jenkinson et al. 2019);
- Advances in technology have led to more diverse offerings in online gambling, and the emergence of new forms (e.g. e-sports betting) resulting in confusion over what is and isn't gambling;
- A convergence of video games and gambling and other forms of simulated gambling including 'loot boxes' and skins; and
- Few adolescents are able to recognise when gambling is problematic or access mental health professionals for assistance.

Two small qualitative studies conducted in Melbourne were identified in this literature search:

- Pitt et al. (2017) – this study included parents and 8-16-year olds in group discussion sessions. Findings from this study are summarised in section 3.8 Australian study of parents and adolescents of this review; and
- Gainsbury et al. (2018) – focus groups were held with one group of 18-24-year olds, one seniors' group (i.e. 60+ years), two groups with no age specification, one with group of weekly gamblers and one with gamblers of skill-based games (e.g. poker, sports betting).

2.2 Europe

According to Andrie et al. (2019), in a cross-sectional school-based study with 14-17-year olds conducted in Germany, Greece, Iceland, The Netherlands, Poland, Romania and Spain,12.5% reported gambling activities in the last year. 3.6% of study participants and 28.1% of gamblers were at risk of or had a gambling problem. Those more at risk or who had a problem were more likely to be male, older, achieve lower grades and were of a younger age when they first used the internet.

Calado, Alexandre and Griffiths (2017) identified 54 studies since 2000 relating to adolescents and problem gambling. The review focussed on Europe (i.e. 44 studies) concluding that the incidence of problem gambling varied between 0.2% and 12.3% across these countries and that problem gamblers are more likely to gamble on the Internet - reflecting its accessibility, affordability, convenience and anonymity. Problem adolescent gamblers report they are motivated by gambling to escape and an inability to resist temptation and, compared to non-problematic gamblers, are less motivated by winning money. Additionally, in Europe there is a clear relationship between adolescent problem gambling and substance abuse. Reflecting other reviews, males were more likely to be problem gamblers, the likelihood of being a problem gambler increases with age of adolescent and parental involvement.

A recent study by Anagnostopoulos et al. (2017) confirmed the patterns found in the studies mentioned above - including a one-year prevalence of problem gambling of 5.6% and similar risk factors for problem gambling and motivations to gamble. Problem gambling was also associated with poor academic performance and parental involvement in gambling.

2.3 Great Britain

Ipsos has conducted a series of annual surveys since 2011 on behalf of the British Gambling Commission. The latest report was the Young People and Gambling Survey (2019). One notable finding has been a decline in gambling participation over the surveys: 11% gambled in the past week in 2019 - versus 14% in 2018, and 23% in 2011. While 36% gambled in the past 12 months in 2019 - versus 39% in 2018. However, internet gambling in the last seven days increased from 1% in 2018 to 3% in 2019. The trend data since 2011 is documented in Trends in Children's Gambling 2011-2017 by Wardle (2018).

Interestingly, based on the same report (i.e. Young People and Gambling Survey, 2019), for the sample of 11-16 year olds, rates of gambling in the past week (11%) were lower than drinking alcohol (16%) but higher than using e-cigarettes (7%), smoking tobacco cigarettes (6%) or taking illegal drugs (5%). As per a review by Calado, Alexandre and Griffiths (2017), there was a relationship between these potentially harmful activities and gambling, with those who used their own money on gambling in past seven days more likely to have drunk alcohol (41%), taken drugs (21%) or smoked (25%) compared with 11-16 year olds who have not gambled. The main reason given for gambling was 'because it's fun'. Two thirds (67%) of young people who gambled indicated parents/guardians were present within the context of gambling when the young person gambled.

2.4 US

A large-scale survey (Zhao et al. 2018) assessing past-year gambling behaviour, gambling problems, perceived risk for gambling, and parental and peer disapproval of gambling was completed by 6,818 junior/senior high school students aged 10 to 19 in Ohio. A descriptive analysis demonstrated a 5% prevalence of mobile gambling, and regular mobile gambling (i.e. at least monthly) was associated with a higher risk of developing a gambling problem and engagement in other forms of gambling. A hierarchical logistic regression revealed that being female, younger, and perceiving higher parental disapproval of gambling was related to less past-year mobile gambling. Although the overall prevalence rate of mobile gambling was low, regular mobile gamblers (i.e. at least once a month) are 13 times more likely than non-regular gamblers to be at risk of experiencing a gambling problem. The adolescents perceived gambling as a slight to moderate risky behaviour and perceived greater disapproval of gambling from their parents than their peers.

3 Is adolescent gambling perceived to be a problem?

This section of the review examines the literature relating to the attitudes of teachers, mental health professionals, and parents to the issue of gambling and their perception of the need for school-based gambling education.

3.1 Introduction

The success of any school-based gambling education program, whether a whole school approach or not, depends on the teachers to deliver the program. Even the best designed curriculum integrated approach will be successful only to the extent teachers implement the program as best they can.

The literature is sparse relating to teachers', mental health professionals' or parents' knowledge and attitudes regarding young people and gambling or any need for gambling education. Accordingly, the search widened the years covered by the search to before 2010.

The importance of teachers cannot be overstated. Lendrum, Humphrey and Wigelsworth (2013) reporting on the failure of the English whole school social and emotional aspects of learning program, concluded:

> *'The 'will and skill' of school staff is fundamental to school-based mental health promotion, and there is a need to develop teachers' understanding and competence in this area.' p.158*

3.2 Gambling: a stigmatised addiction

A review titled Adolescent gambling Twenty-five years of research by Derevensky and Gilbeau (2015) concluded that:

> *'Unlike many other adolescent risky behaviours, most parent, teachers and even mental health professionals do not perceive this (gambling) to be a significant adolescent problem, nor are widespread school-based prevention initiatives available.' p.10*

Gambling at school is probably relatively rare, so from a teacher's perspective it is not on their radar or competes with other wellbeing issues that may or may not be part of their teaching activities.

3.3 Canadian teacher studies

The search process found only five peer reviewed publications relating to teachers' attitudes to youth gambling. Of these, three were Canadian, one was Finnish and one Australian. Additionally, two studies involved administrators of high schools, colleges, universities regarding having policies about gambling; one Canadian (Zhao et al. 2017), and one American (Shaffer et al. 2000). Neither of these policy studies are included but are referenced.

The first study, conducted by LaDouceur, Ferland, Cote and Vitaro (2004), involved a mail survey to 1,500 randomly selected French-speaking primary and secondary teachers in Quebec. Teachers' responses indicated

they are not ready to invest time and energy in the prevention of gambling habits among their students, with only 25% supporting prevention of problem gambling. Nonetheless teachers had a good understanding of gambling and knew the behaviours associated with the presence of problem gambling.

Whilst the incidence of gambling is quite high, as indicated in the section immediately above, a lack of gambling behaviours observed at school may reinforce teachers' perceptions regarding the salience of gambling in their students. Additionally, compared to drug or alcohol use, gambling causes no secondary effects that are immediately observable. Teachers had relatively little time to allocate to any prevention programs and, as a result, tended to favour more apparent problems causing easily identified consequences. On the positive side, half the teachers expressed an interest in receiving training on the psychology of gambling. The authors concluded that in order to get teachers interested in gambling prevention they needed to be made more aware of students' gambling habits and how to recognise gambling problems.

The second study, conducted by Derevensky, St-Pierre, Temcheff and Gupta (2014), looked at gambling as a perceived problem in relation to other high-risk behaviours. Comparisons were also made with parents' perceptions utilising data from Campbell et al. (2011), titled Parents' perception of adolescent gambling: a Canadian national study, to be reviewed later. A total of 390 teachers from Ontario and Quebec, with experience teaching students aged 12 to 18, completed an online survey.

Results suggest that teachers are aware of the fact that youth gamble. Furthermore, they recognised the addictive nature of gambling and their subsequent consequences. Despite overestimating the proportion of youth experiencing gambling problems, gambling was viewed as being the least serious of issues affecting youth, with drug use and school violence topping the list. Almost half of respondents indicated that gambling in school can constitute a good learning activity. In regard to prevention, all other risky behaviours and academic problems were perceived as issues needing greater attention than gambling. These results are largely consistent with findings from the previous study (Campbell et al. 2011) examining parental perceptions of adolescent risky behaviours. Slightly more than one third (38%) suggested schools should be interested in gambling and 32% indicated an interest in obtaining continuing education on issues relating to adolescent gambling and gambling prevention during a 'professional day'.

A third Canadian study by Sansanwal et al. (2015) also studied perceptions of both gambling and other high-risk behaviours. The Canadian comparison used the data cited in study two above (Deverensky et al. 2014). A total of 194 teachers from two regions of Romania, with experience teaching secondary school students, completed an online survey. Results were compared to study two above looking at the same aspects among 390 Canadian teachers. Results suggest that both Romanian and Canadian teachers are knowledgeable about the proportion of underage youth that participate in gambling activities. Despite both groups having high awareness, Romanian teachers perceive gambling as a more serious issue affecting youth and recognise the negative consequences of underage gambling more than Canadian teachers. This is consistent with prevention initiatives, as more Romanian than Canadian teachers believe it is the responsibility of school staff to prevent adolescent gambling and are more open to receiving prevention training in youth gambling. Although international differences were found, gambling, relative to other high-risk adolescent behaviours, remains disregarded as a serious problem behaviour.

3.4 Finnish teacher study

A Finnish study by Castren et al. (2017) assesses middle and high school teachers' awareness and attitudes regarding adolescent gambling and other potentially high-risk behaviours. A convenience sample of teachers (i.e. 157 in total) from 13 provinces participated in the survey. The results suggest that teachers in Finland were more knowledgeable of the age limits of other adolescent high-risk behaviours than the legal age for gambling. Teachers were also somewhat familiar with the behaviours and consequences associated with adolescent gambling. However, all other risk behaviours were perceived as being more important than gambling. Teachers' awareness about gambling prevention materials in Finnish schools was limited.

Only 10.6% of Finnish teachers thought gambling was a serious or very serious adolescent issue - only slightly ahead of drinking and driving (7.2%). At the serious end was everything else: excessive video playing (59.6%), spending too much time online (54.5%), smoking (48.1%), unsafe online activities (43.5%), academic problems (40.8%), depression (37.7%), negative body image (28.8%), eating disorders/obesity (25.0%), alcohol use (20.9%), drug use (16.9%), and unsafe sexual activities (13.2%).

Almost all teachers (98.7%) saw parents, the gambling industry (87.0%), and government (73.4%) as being responsible for preventing gambling versus school staff (41.6%). Only 32.0% thought it to be important or very important for schools to address gambling behaviours compared with between 70-90% for other risk behaviours. Consequently, only 12.3% were very/extremely interested in a professional development day for gambling prevention compared to 49.4% for violent behaviours and 29.2% for substance addictions.

3.5 Australian study of teachers and mental health in schools

This study, titled Supporting children's mental health in schools: teacher views by Graham et al. (2011), is included despite no mention of gambling in the study because it serves as base-line case given that mental health is an integral aspect of Health Promoting Schools (HPS) and usually implemented via a whole school approach.

The aim of this research was to elicit the views of teachers in relation to students' mental health and to identify how confident they are in providing support in this area of education. The study set out to document issues such as:

- The importance teachers attach to mental health education;
- Teachers' confidence in implementing mental health programs;
- Teachers' confidence in dealing with mental health issues in the classroom; and
- Teachers' willingness to be involved in mental health professional development.

The survey, consisting of Likert scale, closed and open response questions related to these issues, was distributed to 2,220 NSW primary and high school teachers from both government and non-government school sectors. A total of 508 surveys were returned representing a return rate of 23%.

The results revealed:

- High levels of viewing mental health as very/extremely important (89%);
- 74% believing their school viewed mental health as important;

- Nonetheless when asked to list specific mental health initiatives in place in their schools 25% either did not respond or stated they were not aware of any;
- Most teachers (71%) were either 'very' or 'quite' confident in implementing mental health programs; and
- 70% indicated a willingness to be involved in targeted mental health programs outside of whole class context.

3.6 Canadian study of mental health professionals

Only one study by Temcheff et al. (2014) was uncovered relating to mental health professionals' perceptions of gambling and other high-risk behaviours. The study, conducted in Canada, explored mental health professionals' awareness of, attitudes towards and beliefs regarding high-risk behaviours in youth, including gambling. Child psychologists, social workers, and psycho-educators (i.e. 649 in total) responded to an online survey.

Findings revealed that problem gambling was viewed by most professionals as the least serious adolescent risk behaviour, and few reported feeling confident in their abilities to deal with youth gambling problems. However, the majority of professionals felt that they have a significant role to play in the prevention of youth gambling problems, and many endorsed strong interests in receiving continuing education in the prevention, identification, and treatment of problem gambling.

3.7 Studies of Canadian parents

A study by Ladouceur, Vitaro and Cote (2001) reported on their initial 1995 study and the follow-up in 2000 among Quebec City parents. The study compares the attitudes, knowledge, and behaviour of parents of 5 to 17-year-old children regarding youth gambling. This information was obtained through two telephone surveys conducted in 1995, and five years later in 2000, in the Quebec City area. Survey one, in 1995, was conducted on 279 respondents, while survey two, in 2000, was carried out with 213 respondents. Results showed a number of changes in parents' attitudes, behaviour, and knowledge concerning youth gambling.

Firstly, it is interesting to note that parents' estimate of the age of onset of gambling behaviour decreased from 11.94 years old in 1995 to 11.16 years in 2000. Although parents became more accurate, they still overestimated the age at which children make their first bet. For instance, Ladouceur et al. (1994) found that 81% of eight and nine year-old children had already bet money.

Furthermore, parents were more satisfied with government limitation of access to gambling, and more accurately informed about legal aspects of the sale of lottery tickets. However, the percentage of parents who failed to associate youth gambling with some of its correlates (e.g. arcade attendance, parental gambling problems, and friendship with gamblers) increased from 1995 to year 2000. The improvements that were observed suggested that parents had benefited from media-transmitted information during this period. However, the deterioration of some parental attitudes, and the stability of other variables, suggest that it is still important to educate parents about youth gambling, and to design interventions adapted to parents' needs.

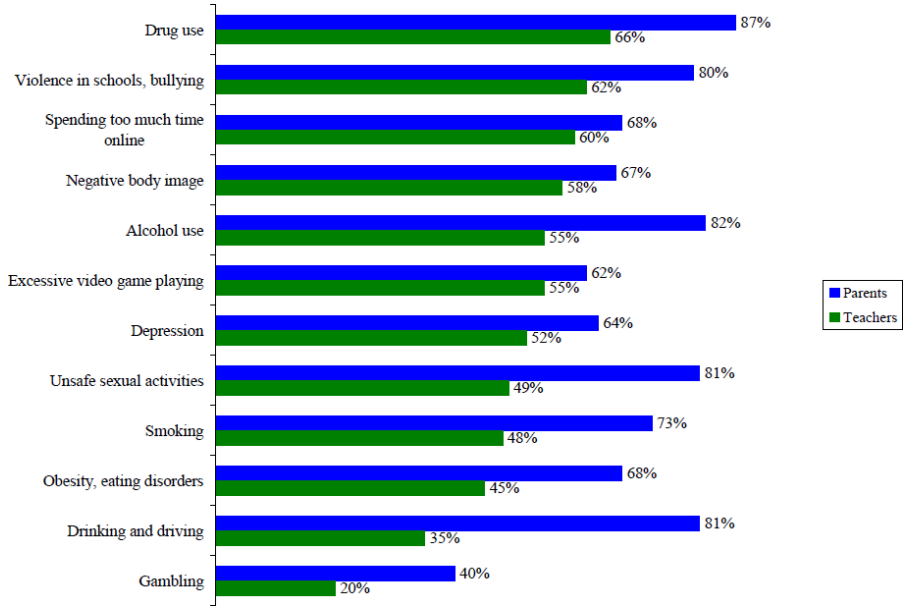
A much larger sample of parents with teens aged 13-18 were surveyed in the study by Campbell et al. (2011). The survey revealed that in general, parents view adolescent gambling as a relatively unimportant issue compared to other potentially risky behaviours. Parental attitudes toward youth gambling, their knowledge and awareness of youth gambling prevention programs, and their gambling behaviours with their children suggest that gambling has become normalised. Gambling, despite being a growing issue, is not perceived by parents to be a serious concern, with few parents being aware of the potential seriousness of youth gambling. The authors

suggest if we are to curtail adolescent gambling, thereby reducing the number of youths that are negatively impacted, parents must become a partner in effective prevention initiatives.

3.7.1 A comparison of parents and teachers in Canada

The following figure summarises the results of two studies mentioned above: teacher data and the Figure 1 from Derevensky et al. (2014), and the parent data from Campbell et al. (2011) immediately above.

Figure 1. A comparison of parents and teachers' perceptions concerning adolescent risky behaviours, Derevensky et al. (2014)



3.8 Australian study of parents and adolescents

Given the strong association of gambling with sport a qualitative Australian study was conducted to understand initiation, influence, and impact. In this study adolescents and parents discuss the marketing of gambling products during Australian sporting matches, authored by Pitt, Thomas and Bestman (2016).

The study was conducted with 59 family groups comprising of at least one parent and one adolescent (i.e. 14–18 years old) in Victoria. Parents and adolescents were interviewed separately and asked questions relating to their gambling attitudes and behaviours. They were then brought together to discuss the marketing of gambling during sport. Three main themes emerged. First was the initiation of sport as a platform for the promotion of gambling. Adolescents perceived that the use of embedded promotions (e.g. during the match) and the use of athletes in gambling promotions were significant mechanisms for creating an alignment between gambling companies and sporting teams and codes. Second was the influence of marketing messages in creating a perception that gambling was always accessible and was an integral part of the sporting experience. Third was the impact of marketing messages on adolescents' discourses about sport. Parents described that they had

noticed that wagering, and 'odds' discussions, had become embedded in adolescents' narratives about sporting matches.

In a follow-up paper, Pitt et al. (2017) concluded that a range of socialisation factors, particularly family and the media (i.e. predominantly via marketing), appear to be shaping children's gambling attitudes, behaviours and consumption intentions.

Three key themes emerged from the study by Pitt et al. (2017). First, children's perceptions of the popularity of different products were shaped by what they had seen or heard about these products, whether through family activities, the media and in particular marketing of gambling products, and/or the alignment of gambling products with sport. Second, children's gambling behaviours were influenced by family members and culturally valued events. Third, many children indicated consumption intentions towards sports betting. This was due to four key factors:

1. The alignment of gambling with culturally valued activities.
2. Their perceived knowledge about sport.
3. The marketing and advertising of gambling products and in particular sports betting.
4. The influence of friends and family.

Finally, a paper on parent problem gambling was unearthed. The paper titled Parent problem gambling: a systematic review of prevention programs for children (Kourgiantakis et al. 2016) set out to systematically review parent problem gambling programs for children of problem gamblers. The authors identified 16 studies examining such programs but concluded all were universal and not targeted at children of parent problem gamblers.

3.9 Stop Press United Kingdom (UK)

The Personal, Social, Health and Economic (PSHE) Association and GambleAware prepared a handbook titled How to address gambling through PSHE education: teacher handbook (2019) (reviewed in section 8.2.2 Health education of this review) to help schools fulfil their requirement to teach about the risks related to online gambling, including the accumulation of debt, as part of statutory Health Education starting September 2020.

In developing How to address gambling through PSHE education: teacher handbook a survey was conducted with teachers to determine their current perceptions and experience of gambling prevention education. The survey revealed that the vast majority (78%) of primary teachers had not addressed gambling as part of PSHE lessons that year, and the same was true for over half of secondary teachers. This is despite 11% of 11-16-year olds having gambled during the previous week according to an annual survey published by the Gambling Commission (compared to 5% who had smoked a cigarette and 3% who had used drugs).

4 What is involved in whole school approaches?

This section of the review explores how the whole school approach model was developed, its objectives and what it involves. It also outlines different terminology used in the literature to describe similar school-based programs. Finally, alternatives to whole school approach such as targeted interventions or after-school programs are presented to provide additional considerations.

4.1 Health Promoting Schools: background to whole school approach

In recognition of the limited success of targeted interventions, a new holistic approach to school health promotion was developed in the late 1980s, influenced and underpinned by the values set out in the World Health Organisation (WHO) Ottawa Charter (1986). This charter marked a significant shift in WHO public health policy, from a focus on individual behaviour to recognition of the wider social, political, and environmental influences on health. The application of these principles to the educational setting led to the idea of HPS whereby health is promoted through the whole school environment and not just through health education in the curriculum.

HPS aim to:

- Promote the adoption of lifestyles conducive to good health;
- Provide an environment that supports and encourages healthy lifestyles; and
- Enable students and staff to take action for a healthier community and healthier living conditions.

A lengthy definition of a Health Promoting School can be found at https://www.who.int/health-topics/health-promoting-schools#tab=tab_1.

HPS require change in three areas of school life:

1. **Formal health curriculum**
   Health education topics are given a specific time allocation within the formal school curriculum in order to help students develop the knowledge, attitudes, and skills needed for healthy choices.
2. **Ethos and environment of the school**
   Health and wellbeing of students and staff are promoted through the 'hidden' or 'informal' curriculum, which encompasses the values and attitudes promoted within the school, and the physical environment and setting of the school.
3. **Engagement with families or communities or both**
   Schools seek to engage with families, outside agencies, and the wider community in recognition of the importance of these other spheres of influence on children's attitudes and behaviours.

4.2 Whole school terminologies

Some researchers refer to 'multi-component' or 'multi-modal' approaches to draw a distinction between curricular, ethos/environment, and family/wider community components.

The terms 'universal' and 'school-wide' are used in the US to highlight the use of interventions that are for all students, regardless of need to draw a distinction with targeted approaches focusing on young people at risk or with a specific health issue.

Most recently the term 'whole school' has been used to mean exclusively the whole school or school-wide referring to the administrators, staff, students, their relationships and climate and the unit under investigation in the school as a whole, in particular the school climate. An example of the whole school terminology is with respect to reducing cyberbullying in schools (Acosta et al. 2019). Incidentally the intervention did not yield significant changes in the schools. The term school-wide and whole school are used interchangeably in the bullying literature to refer to school-wide approaches. Ostrander et al. (2018) proposed a modification of a school-wide bully prevention program to support children. These approaches usually do not involve parents. A recent paper using whole school as school wide refers to the Resilience, rights and respectful relationships program available to Victorian schools, authored by Cahill et al. (2019). One variant of this school-wide/whole school terminology is whole school/community which extends the whole school approach where messages are received from managers, teachers, parents to get messages reinforced in community groups via various clubs, teams and businesses (Minton, Mahoney and Conway-Walsh 2013).

Whole school/community approach is described by Pearce et al. (2011) as:

> *'A whole school approach to reducing bullying usually targets the school level (policy, classroom and school climate, behaviour support, peer support, school yard improvements); the classroom level (curriculum); the home level (engaging and involving parents).' p.3*

The term 'whole school' is used widely in Australia, UK and Europe. This review uncovered a new book devoted to whole school approaches by Quinlan and Hone (2020), titled The educators' guide to whole school wellbeing: a practical guide to getting started, best-practice process and effective implementation.

Very few individual interventions are truly whole school in nature, even when they are universal and multi-componential. This means that the adoption of a whole school approach is likely to involve integrating a number of separate interventions in an overarching framework. A number of whole school projects are presented in detail in section 7 Evidence from school-based gambling education initiatives of this review. For illustrative purposes a few examples of whole school framework follow.

An outstanding attempt at a whole school approach is documented in the final evaluation report of Respectful Relationships Education (RREiS) in schools: The beginnings of change report by Kearney et al. (2016a). The authors detailed the nature, implementation and results of a pilot program in relation to the impact of RREiS, including bullying, across the whole school – from the classroom, through to the staffroom and broader school culture and ethos.

The Our Watch, an external agency, in collaboration with the Department of Education and Training (DET), delivered the RREiS pilot in 19 diverse Victorian secondary schools (20 campuses) in 2015, reaching 1,700 school staff. The schools were supported to examine, assess and respond to how the workplace is promoting respect and gender equality to 4,000 school students who completeda respectful relationships curriculum using the Building Respectful Relationships: Stepping out against gender-based violence resource in the context of a whole school approach to RREiS.

What distinguishes the RREiS pilot was that it was concerned with building the capacity of the education system as opposed to other approaches, traditionally delivered by external agencies. The mechanisms for 'systematisation' included:

- The delivery of curriculum guidance developed and tested by the DET;
- Professional development;
- Coordination and support to schools via Project Implementation Leaders - primary prevention and gender equality experts - employed by Our Watch and working from the DET regional offices, to embed a whole school approach to respectful relationships education;
- Guidance from the deputy regional directors at three regional DET Offices; and
- Coordination and oversight of the DET central offices via regular communication with Our Watch and the project advisory committee.

The authors maintain building gender equality into the cultural makeup of a school means looking beyond the curriculum and taking a whole school approach. The whole school approach recognises that in order to achieve sustainable change, shifts are needed at a policy, structural, process, system and institutional level. Lessons about respectful and equitable relationships are reinforced by what is modelled to students by their wider school community including their teachers, school staff and school leadership team. The whole school approach aims for change at different levels - changing the structures, norms, and practices within the education system.

This whole school approach to RRSEiS pilot is reviewed in more detail in section 6.6 RREiS whole school project. Suffice it to say, to date, the pilot has not been brought into the mainstream or scaled up, nor have there been any peer reviewed publications regarding the findings. However, a paper on implementation has appeared, applying systems theory to the evaluation of a whole school approach to violence prevention, authored by Kearney et al. (2016b).

Another example of a whole school approach is the Australian Be You mental health initiative (formerly known as KidsMatter), which comprises five strands:

1. Learning resilience.
2. Early support
3. Family partnerships
4. Responding together
5. Mentally healthy communities.

Materials and resources are available to support each strand as well as professional development and training opportunities for school staff. One key resource is a directory of over 100 individual interventions that map onto one or more of the above strands. Information on areas of focus, evidence base, theoretical framework, structure, and other salient features are included (see www.beyou.edu.au).

Another whole school approach is the five-year UK HeadStart program funded by the National Lottery Community Fund which aims at promoting mental health with 10-16-year olds and defines whole school approach as working at a number of levels across a school to enact change in relation to:

1. Leadership and management.
2. School ethos and environment.
3. Curriculum, teaching and learning.
4. Student voice.
5. Staff development, health and wellbeing.
6. Identifying need and monitoring impact.
7. Targeted support.

8. Working with parents/carers.

The KiVa anti-bullying intervention (discussed later) adopts a multilevel whole school approach. It has been shown to reduce bullying behaviour, including when delivered on a national level to approximately 150,000 students in Finland (Kärnä et al. 2013). It has also been shown to lead to improvements in academic, social and emotional outcomes. A cluster randomised controlled trial (RCT) evaluation currently underway in Wales, evaluates the effectiveness of KiVa when implemented in schools (Clarkson et al. 2016).

Up is an intervention using a universal whole school approach aimed at promoting mental health by strengthening social and emotional competence among school children. Social and emotional competence is an integral part of many school-based mental health interventions but only a minority of interventions measure changes in competences. Up consists of four components:

1. Education and activities for school children.
2. Development of staff skills through professional development.
3. Involvement of parents.
4. Initiatives in everyday life at school.

Up was implemented in two Danish schools in 2010-2011 (Nielsen et al. 2015).

It could be suggested that it is fashionable to use the terminology whole school. For example, Peralta and Rowling (2017) reviewed three Australian studies that met their criteria to assess the implementation of a whole school approach to school health literacy and concludes:

> *'The absence of data in these papers demonstrative of whole school action or a whole school approach suggests that these interventions may have been missing key components essential for the development of health literacy in an educational context.' p.373*

Yet none of those three studies claimed to use a whole school approach. Each study involved the implementation of curriculum units and included aspects of a whole school approach but never claiming to be whole school-based. One used the HeadStrong (Perry et al. 2014) resource, and another, a teen mental health first aid (Hart et al. 2016) titled Teen mental health first aid: a description of the program and an initial evaluation.

The current literature search found that by far the greatest number of reviews and articles on whole school approach were in relation to mental health or health and wellbeing. In this regard, a recent policy paper (Glazzard 2018) was unearthed for any reader interested in whole school approach to mental health in response to the 2017 UK green paper, Transforming children and young people's mental health provision, jointly issued by the Department of Health and Department for Education. Public Health England (2015) published a guiding document titled Promoting children and young people's emotional health and wellbeing: a whole school and college approach, detailing eight principles involved with a whole school approach:

1. Leadership and management.
2. School ethos and environment.
3. Curriculum, teaching and learning.
4. Student voice.
5. Staff development, health and wellbeing.
6. Identifying need and monitoring impact.
7. Targeted support.
8. Working with parents/carers.

Samdal (2017) has prepared an outstanding and detailed practical analysis of what a whole school approach should involve in school health promotion. Her analysis reminds readers, when considering planning a whole school initiative, that for those initiatives to be effective, it will involve a 5-10-year timeframe.

4.3 Alternative school-based approaches to whole school approach

A very recent meta review by Šouláková et al. (2019) indicated there are several ways that interventions targeting psychological health can be implemented in school settings:

- **Targeted interventions**
  For example, a school psychologist might implement intensive interventions with high-need students by offering one-on-one support, or targeted interventions with small groups of students who are having difficulties.
- **Classroom-based interventions**
  Another common approach is for educators to offer classroom-based interventions, which typically involves implementing a mental health-based curriculum during regular class time.
- **Entire school environment**
  Some schools also choose to implement whole school approaches in which concepts and activities related to mental and physical health are promoted throughout the entire school environment, sometimes including students' families and larger communities.
- **After-school programs**
  Other possibilities include after-school programs or programs that are offered over lunch or during study breaks.

One successful example of the after-school programs approach is the Project Options intervention to influence adolescent alcohol consumption via altering their perceptions of drinking norms. Schulte and colleagues (2010) reported that Project Options used three different session formats; group, individual and website.. All formats were equally advertised and open to students one day per week at a convenient time (e.g. during lunch period) and location (e.g. easily accessed classrooms).

The group and individual session formats consisted of a maximum of six and four 30-minute sessions respectively. Although the website format was offered to students alongside the other formats during the designated time, it was also accessible outside of the scheduled meetings (i.e. participants could log on at home) on an unlimited basis. All students participating in the intervention over the lunch period received lunch. In addition, students were given a $5 incentive (i.e. gift certificate for music, clothing, movie, or restaurant stores) for completion of a brief questionnaire assessing demographic and alcohol use variables at the end of their first session.

The intervention sessions focus on altering decision-making by improving accuracy of information involved in decision-making and increasing motivation to reduce or cease alcohol use and related risk behaviours. In addition, the intervention aimed to assist teens in identifying alternative behaviours and responses to social situations, and learning successful strategies commonly employed by adolescents to cut down or stop drinking. The content of Project Options was comparable across formats, and students were allowed to selectively participate in any of the following topic sessions:

- **Normative feedback**
  Provide school-specific use rates. Discussion of why youth overestimate and common methods employed by teens to reduce or cease use.

- **Outcome expectancies**
  Discussion of actual effects of alcohol versus results of alcohol expectancies on behaviours while drinking.
- **Stress and coping**
  Discussion of consequences resulting from substance use as a coping strategy.
- **Match healthy coping strategies to target stressor**
- **Progression of problematic use**
  Discussion of how experimental use can lead to problem use and alcohol-related consequences.
- **Behavioural management**
  Learning to identify risky situations, develop a plan appropriate for that situation, and evaluate the effectiveness of the plan.
- **Communication skills**
  Identifying communication errors that lead to conflict and developing more effective techniques.

Results indicated that intervention participants were more likely to increase the accuracy of their peer frequency estimates over the course of the year in comparison to the general student body. Furthermore, students demonstrating decreases in peer perceptions of alcohol use exhibited a greater reduction in number of binge episodes, lower maximum number of drinks consumed per episode, and average number of drinks.

Each of these approaches has unique strengths and weaknesses:

- For example, whole school approaches target the entire school environment, thus providing students with multifaceted health promotion that is infused throughout much of their day. However, whole school approaches can be difficult to implement, as they require support from many different stakeholders;
- Similarly, while providing one-on-one interventions with high-need students provides intensive support for students who are at risk, these interventions do not target the majority of the school population; and
- While classroom-based interventions target larger numbers of students than one-on-one interventions, these interventions are often implemented in a small number of classrooms, which again do not reach the entire school.

In 2019, the UK has mandated a statutory secondary school curriculum unit on gambling in Health Education (https://www.gov.uk/government/publications/relationships-education-relationships-and-sex-education-rse-and-health-education), Internet safety and harms: pupils should know:

> *'The similarities and differences between the online world and the physical world, including: the impact of unhealthy or obsessive comparison with others online (including through setting unrealistic expectations for body image), how people may curate a specific image of their life online, over-reliance on online relationships including social media, the risks related to online gambling including the accumulation of debt, how advertising and information is targeted at them and how to be a discerning consumer of information online.'*

This curriculum approach is likely to result in a large proportion of students being exposed to messages needed in relation to gambling and may present a superior alternative to a whole school approach. The teachers will be supported by a handbook designed specifically for teachers PSHE (PSHE Association 2019). However, the above statement represents a tiny part of a very crowded Health Education curriculum**.**

The type of preventive intervention that a school chooses to implement often depends on its unique needs, budgetary constraints, and support from key stakeholders such as classroom teachers, school administrators, and parents. The meta-review by Šouláková et al. (2019) focussed specifically on classroom-based interventions due to their status as a potential 'middle ground' between one-on-one interventions and whole school approaches. While some schools may not have the budgetary or other resources necessary to implement a whole school approach, there is often a desire to reach more than a few small groups of high-need students, which

makes classroom-based approaches particularly suitable and in practice widely utilised where whole school approaches are intended but unable to be fully implemented.

As will be revealed whole school approaches are not without their limitations, especially regarding the implementation since they require time, training and supervision and flexibility and willingness of schools to change the existing curriculum and of course resources for teachers and parents.

A successful alternative to whole school can be found in the Healthy Learning. Together program documented in a journal article by Schwager et al. (2019). The tool was designed respecting the limited resources of teachers and schools for health promotion interventions. The tool entitled Healthy Learning. Together consists of two modules, including a box of cards with 60 short and easy exercises for school lessons and a poster exhibition with 10 posters with the title 'Belonging' for the school building. The first module exercises last about 10 minutes and are printed on index cards. Each card contains short instructions how to perform the exercise as well as a summary of the objective and symbols concerning duration, recommended age, place, and material needed. All exercises are easy to implement by regular teachers in the course of normal lessons. The authors conclude:

> *'To sum up, we find first evidence on positive effects of the developed health promotion tool on self-efficacy, class climate, and social integration. This is a promising approach since our tool represents a first step into health promotion that can be implemented by teachers in their regular school routine without an additional training or extensive manual. In our view, small interventions like our health promotion tool constitute an alternative to large-scale interventions. It has the potential to address schools that would otherwise not implement health promotion interventions at all. However, our data also shows that a minimum exposure rate of 1.5 exercises a week is necessary to produce these effects. Data on implementation shows that the tool is easy to apply and appreciated by students and teachers but that teachers sometimes still face too much workload so that they are not able to include it regularly and more frequently in addition to the normal educational material.' p.11*

The systematic reviews included in the Šouláková et al. (2019) meta-review tended to provide evidence for beneficial effects of classroom-based body-image, mindfulness, yoga, social emotional learning behaviour and cognitive behavioural therapy programs. However, it is important to note that there were some studies within the reviews that showed no or even adverse effects, such as increases in negative affect. C. Ferreira-Vorkapic et al. (2015) explained these findings by suggesting that the interventions had not been adapted to the developmental level of the children undergoing the programs. Other limitations that some authors pointed out were the poor methodological quality of existing studies and the short duration of some intervention programs. All authors emphasised that in future research the methodological quality of studies should be improved.

Onrust et al. (2016) authored a systematic review and meta-analyses about the effectiveness of school-based programs in preventing or reducing substance abuse, it reviewed 288 programs and concluded that:

> *'Specific aspects of the school-based programs are effective in some developmental stages, but not for other age groups. The differences in effectiveness are systematically related to psychological and cognitive needs and capacities. Our findings highlight the importance of considering a developmental perspective when designing and offering school-based prevention programs. The various developmental stages offer different possibilities and opportunities for the reduction and prevention of substance use.' p.2*

Another approach used in mental health promotion in some US schools is a multi-tiered approach and described by Franklin et al. (2017) involving tiers. Tier one involves teachers carrying out universal screening in classrooms. This followed up by Ter two group sessions for selected in-need students which may involve the teacher. Tier three involves more intense interventions which are therapeutic for those indicating a need for further intervention

and not carried out by the teacher. Franklin et al.'s review (2017) indicates those teachers delivering Tier one interventions are effective in delivering certain outcomes but not others. This approach has been extensively reviewed by Paulus, Ohmann and Popow (2016) in a journal article titled Practitioner review: school-based interventions in child mental health.

Banerjee, Weare and Farr (2014) suggested an important word of caution is provided by the latest meta-analysis (Durlak et al. 2011) of universal social and emotional learning (SEL) programs. Durlak et al. (2011) observed that multi-component approaches were no more likely to bring about positive effects than single-component (i.e. classroom curriculum only) approaches. In interpreting this result, the authors noted that multiple strands of work to promote SEL are difficult to plan and integrate. Indeed, multi-component approaches were significantly more likely to have encountered implementation problems - which separate analyses confirmed would diminish the positive impacts of the school-based work. Banerjee et al. (2014) suggest these pitfalls should by no means detract from the potential value of whole school, multi-component work on SEL, but they do underscore the urgent need for careful consideration of variations in implementation. The authors' state:

> *'We ought not to dismiss the potential positive impacts of a well-delivered standalone curriculum for social and emotional learning, but the broader school context is important.' p.737*

Solid evidence regarding effective school-based programs is hard to find because conducting RCTs is difficult in school settings. Mirzazadeh et al. (2018) investigated studies of school-based programs of youth aged 10-19 years old concluding the quality of evidence for all outcomes was very low - even when RCTs were undertaken.

> *'Studies, including the RCTs, were of low methodological quality and had mixed findings, thus offering no persuasive evidence for the effectiveness of school-based programs. The most effective intervention spanned six years, was a social development-based intervention with multiple components, rather than a sex education program, and started in first grade.' p.1*

The most effective intervention was the Seattle Social Development Project which involved several year's duration, and targeting teachers, parents, and peers to involve students in community service - bonding them with teachers and parents, rather than focusing on school-based only sex education programs. According to the authors, successful interventions may require lasting and multi-component approaches.

A meta-analysis of 165 studies by Wilson, Gottfredson and Najaka (2001) found school-based prevention practices appear to be effective in reducing alcohol and drug use, dropout and nonattendance, and other conduct problems. The size of the average effect for each of the four outcomes was small and there was considerable heterogeneity across studies in the magnitude of effects. They concluded:

> *'It is apparent that any one school-based strategy, implemented in isolation, will not have a large effect, given that none of the evaluated program categories observed large effects. Schools seem to operate under this assumption already because they offer many different types of prevention programs simultaneously. It would appear that school-based prevention, in practice, is generally not a stand-alone curricular or other type of intervention. Rather, it is a mix of many different activities that schools implement.' p.269*

5 Evidence regarding a 'whole school' approach

This section of the review summarises findings around the impact of a whole school approach used in different schools to target mental health and wellbeing issues. Based on a number of papers, it reports best practices for effective interventions.

5.1 Reviews of reviews: mental health and wellbeing

The great majority of material uncovered in this literature review relating to whole school approaches was health related and in particular, to mental health and wellbeing. A further strand involved bullying.

Demkowicz and Humphrey (2019) pointed out that very few individual interventions are truly whole school in nature. Even so, there is no shortage of research in this area. The last decade has seen the publication of a large number of systematic literature reviews and meta-analyses which aim to collate and summarise the evidence base pertaining to the impact of interventions that could be used as part of a whole school approach to promote mental health. Indeed, such is the volume of research that 'reviews of reviews' are emerging.

Meta-analyses, in which the results of many intervention studies are pooled to create an average estimate of impact, suggest that individual interventions in this area produce small - but nonetheless meaningful - changes in pertinent outcomes (e.g. improved wellbeing, reductions in mental health difficulties). For example, a recent meta-analysis of 89 studies (Wigelsworth et al. 2016) reported the impact of universal SEL programs found an average reduction in conduct problems of around 11%. A change of this magnitude can be considered significant given that most children in such studies are healthy to begin with, and that even modest decreases in such difficulties can have important consequences for the broader school environment.

Goldberg et al. (2019) pointed out that some recent reviews suggest that whole school interventions adopting a whole school approach are failing to show sizeable impacts (Durlak et al. 2011; Langford et al. 2015). The meta-analysis authored by Goldberg et al. (2019) sought to determine the effectiveness of interventions adopting a whole school approach to enhance children and young people's social and emotional development. Whole school interventions were included if they involved a coordinated set of activities across curriculum teaching, school ethos and environment, and family and community partnerships.

A total of 45 studies and 30 interventions involving 496,299 participants were included in the Goldberg et. al.'s meta-analysis (2019). Post-intervention outcomes demonstrated significant but small improvements in participants' social and emotional adjustment, behavioural adjustment and internalising symptoms. Interventions were not shown to impact on academic achievement. The authors concluded:

> *'Further research is required to determine the active ingredients of whole school interventions that we can better understand the components necessary to achieve successful outcomes.' p.755*

It should be noted that the Goldberg et al.'s (2019) meta-analysis took into account implementation fidelity and quality assessment. All studies included involved either RCTs or quasi-experimental designs, all had a parent component, and most had a bullying focus. Individual studies included in the meta-analysis are not reported separately in this current review.

There are ongoing studies involving whole school approaches such as the article authored by Las Hayas et al. (2019). The study, among five Pan-European regions with 34 schools (i.e. 17 control and 17 intervention), is designed to demonstrate the effectiveness of a whole school approach whilst recognising a lack of effectiveness of some interventions. Despite the benefits found in many areas involving mental wellbeing, their experience showed lack of effectiveness in some interventions due to barriers in the implementation and lack of engagement of school teachers. Schools appeared to welcome flexibility and autonomy, but unspecific guidelines and unclear instructions left schools confused and with insufficient progress. The Universal Preventive Resilience Intervention Globally Implemented in schools to improve and promote mental Health for Teenagers (UPRIGHT) project is a flexible, but structured intervention of 18–24 sessions that will be inserted as part of the school curriculum for adolescents. A manual for the teachers and an online platform with useful materials have been created ad hoc.

UPRIGHT involves school community, students and families to promote a culture of mental wellbeing and prevent mental disorders by enhancing resilience capacities in European schools. The on-going UPRIGHT program has 18 skills related to four components including mindfulness, coping, efficacy and SEL.

The evaluation will involve around 6,000 adolescents and their families participating along a three-year period of evaluation. Effectiveness of the intervention will be evaluated as an RCT including quantitative and qualitative analysis in the five Pan-European regions representative of the cultural and socioeconomic diversity. The cost-effectiveness assessment will be performed by simulation modelling methods. No cost benefit analysis was found for any study in this current review.

Many reported studies recommend further evaluation is needed to conclusively say the whole school approach is likely to result in effective interventions as there is so much heterogeneity in results.

O'Connor et al. (2018) identified 29 studies concluding:

> *'We tentatively conclude that school-based universal Mental Health and Emotional Wellbeing programs are of value for young people, but further evaluative studies are necessary before implementation.' p.424*

5.2 Reviews of best practice

A widely cited review (mentioned earlier) by Weare and Nind (2011) included 52 systematic reviews and meta-analyses of mental health prevention programs in schools. The interventions identified by the reviews had a wide range of beneficial effects on children, families and communities and on a variety of mental health, social, emotional and educational outcomes. The effect sizes associated with most interventions were generally small to moderate in statistical terms, but large in terms of real-world impacts. The effects associated with interventions were variable and their effectiveness could not always be relied on.

The characteristics of more effective interventions included:

- Teaching skills, focusing on positive mental health;
- Balancing universal and targeted approaches;
- Starting early with the youngest children and continuing with older ones;
- Operating for a lengthy period of time; and
- Embedding work within a multimodal/whole school approach which included such features as changes to the curriculum including teaching skills and linking with academic learning, improving school ethos, teacher education, liaison with parents, parenting education, community involvement and coordinated work with outside agencies.

Interventions were only effective if they were completely and accurately implemented. This applied particularly to whole school interventions which could be ineffective if not implemented with clarity, intensity and fidelity. High quality implementation involved inter-related features:

- A sound theoretical base, explicitness-specific, well-defined goals and rationale, communicated effectively to staff and leaders through thorough training and linked explicitly with the intervention components;
- A direct, intense and explicit focus on the desired outcome rather than using a different focus and hoping for indirect effects;
- Explicit guidelines, possibly manualised thorough training and quality controlled consistent staffing and the specification of individual responsibilities; and
- Complete and accurate implementation.

Most of the reviews reported in Weare and Nind's meta-review (2011) that discussed the issue, suggested that skills work alone is not enough - and that for optimal impact, skills work needs to be embedded within a whole school, multi-modal approach which typically includes changes to school ethos, teacher education, liaison with parents, parenting education, community involvement and coordinated work with outside agencies. The whole school approach, when well implemented, has long been seen as more effective in terms of outcome than a skills-focused, curriculum based, approach alone.

Weare and Nind's review concludes there is a need for rigorous implementation of whole school approaches. This perspective is reinforced in Wigelsworth et al. (2016) meta-analysis:

> *'…implementation fidelity is now recognised as an important feature in the successful delivery of Social and Emotional Learning (SEL) programs (included in the meta-analysis of Durlak et al. 2011).' p.3.*

Whole school programs might be popular, widespread and well thought of by practitioners and policymakers. However, it is notable that the evidence generated by them has been weak in terms of hard outcomes and has not resulted in evaluations that are robust enough to feature in systematic reviews. The authors expressed concern that high-profile programs, such as Australian whole school programs Mindmatters and KidsMatter (now Be You), were not able to meet the evaluation requirements of their review and be included as examples of evidence-based interventions. It is, however, clearly possible for whole school approaches to result in hard outcomes and appear in a systematic review.

> *'So what is going wrong with many agency-led European and Australian whole school approaches in terms of failure to produce outcomes which lead to their inclusion in a systematic review?' p.66*

Some recent reviews identified in the Weare and Nind meta-review suggest that some whole school approaches are failing to show impact owing to a lack of consistent, rigorous and faithful implementation, which is causing these approaches to become too diluted and lack impact.

The necessary characteristics they identify for effective implementation include:

- Having specific, well-defined goals and rationale;
- A direct and explicit focus on desired outcomes;
- Explicit guidelines, possibly manualised;
- Thorough training and quality control; and
- A complete and accurate implementation.

Vanwesenbeeck et al. (2016) reminded would-be implementers not to be swayed by the theory alone:

> *'A so-called 'whole school approach' is widely used by health promoting schools and goes beyond classroom teaching to also address supportive school policies and environments, links with parents and community, and collaboration with health organisations. Ownership is fostered by involving all relevant stakeholders, from school boards to students, government officials to peer educators and teachers to service providers in the implementation of a coherent set of multiple interventions, based on a clear needs assessment. While on the one hand a whole school approach sounds deceptively simple, the practice is complex, dynamic and dependent on the context in which it is embedded.' p.481.*

Vanwesenbeeck and colleagues' (2016) advice mirrors that of a review authored by Chandra-Mouli, Lane and Wong (2015) titled, What does not work in adolescent sexual reproductive health: a review of evidence on interventions commonly accepted as best practices.

A review by the PSHE Association 2016 titled Key principles of effective prevention education, summarised research into effective pedagogical principles in the field of school-based preventative education (i.e. across a range of behaviours including drug and alcohol use, healthy eating, physical activity and sexual activity) as well as school-based programs to build skills and attributes associated with reduced risk-taking behaviour including social and emotional skills, and resilience. The focus was on research which identified effective characteristics, based on evaluations of universal school-based prevention education programs. Fifteen studies met the requisite criteria research needed to review a number of studies, and, based on this, identify characteristics common to effective or to ineffective programs. Programs with a range of objectives were included, such as on drug and alcohol education, safety education, and sex and relationships education.

The report lists 11 key elements of effective practice commencing with 'a whole school approach including multi-component interventions. Most of the reviews recommend the use of a whole school approach, suggesting linking preventative education to whole school policies and to pastoral support, as well as integrating preventative education within the broader curriculum as well as within a discrete subject. The report noted a whole school approach is backed by broader evidence including the Cochrane Review of HPS, that is schools which combine a curriculum with wider parental engagement and a positive school environment (Langford et al. 2014).

However, one study into smoking prevention programs (Thomas, McLellan and Perera 2015) found a lack of evidence for the effectiveness of 'multimodal' programs which include a range of interventions including 'tobacco prevention interventions in schools, the community, and with parents and community members, and school or state policies to change tobacco sales, increase taxes and prevent sales to minors'.

Another review by Jones, Mitchell and Walsh (2014), involved 31 youth prevention meta-analyses with each meta-analysis averaging 68 studies. Thirteen meta-analyses compared the effectiveness of programs that were provided to universal populations of youth versus to either at-risk youth, or to those already participating in or experiencing the problem behaviour being addressed or indicated. While several studies (i.e. five in total) found no differences for this variable, the majority of studies (i.e. eight meta-analyses) found that programs targeted to high-risk or indicated youth were more effective than universal programs.

The extensive analytical review of the WHO HPS framework for improving the health and wellbeing of students and their academic achievement carried out by Langford et al. (2014), and also reported in Langford et al. 2015, pointed out the WHO's HPS framework is an approach to promoting health in schools that addresses the whole school environment. The authors wrote:

> *'Although the HPS framework is used in many schools, we currently do not know if it is effective. This review aimed to assess whether the HPS framework can improve students' health and wellbeing and their performance at school.' p.5.*

Langford et al. (2014) used 67 trials, comprising 1,345 schools and 98 districts, that fulfilled their criteria. These focused on a wide range of health topics, including physical activity, nutrition, substance use (i.e. tobacco, alcohol, and drugs), bullying, violence, mental health, sexual health, handwashing, cycle-helmet use, sun protection, eating disorders, and oral health. For each study, two review authors independently extracted relevant data and assessed the risk of the study being biased. They grouped together studies according to the health topics they focused on. All studies involved cluster RCTs, where clusters were at the level of school, district or other geographical area. Feasibility and pilot RCTs and any trials where only one school was allocated to intervention and control groups were excluded. The unit of analysis was school level.

Interventions using the HPS approach were able to reduce students' body mass index, increase physical activity and fitness levels, improve fruit and vegetable consumption, decrease cigarette use, and reduce reports of being bullied. However, there was little evidence of an effect on body mass index when age and gender were considered, and no evidence of effectiveness on fat intake, alcohol and drug use, mental health, violence, and bullying others. There was not enough data to draw conclusions about the effectiveness of the HPS approach for sexual health, handwashing, cycle-helmet use, eating disorders, sun protection, oral health or academic outcomes. Overall, the quality of evidence was low-to-moderate.

A review by Kidger et al. (2012), involving nine studies, including two studies from the Cochrane review, found limited evidence to suggest that changes to the school environment had a major impact on student mental health and wellbeing. The authors conclude that whole school change can be difficult to establish and sustain, and that interventions that focus on one or two 'active ingredients' may be more effective.

Kuosmanen, Clarke and Barry (2019) carried out a narrative analysis of 16 interventions that were implemented in Europe aimed at enhancing young people's SEL. Results indicate that the effective delivery of SEL interventions on a school-wide basis could provide an important platform on which other universal interventions such as anxiety and bullying prevention, and targeted depression prevention could be developed in a multi-tiered fashion. The school-based SEL interventions include multiple components, involve a variety of teaching methods and work on multiple levels. Most of the SEL programs, as well as the KiVa anti-bullying programs (reviewed in more detail in section 6.3 KiVa: whole school-based bullying programs), included curriculum-based programs, system-level policies and practices and a parental component. These interventions were implemented over several years from kindergarten to secondary schools. All the interventions provided training for the programs implementers and most also provided manuals. The authors conclude:

> *'The findings demonstrate that teachers can implement a wide range of programs addressing social and emotional skills, problem behaviours, anxiety and bullying. Teacher delivered programs are more cost-effective and sustainable, and can result in cross-curricular implementation, thus potentially improving the reach and impact of the programs, particularly in terms of positive academic outcomes. However, implementation quality is crucial in achieving desired outcomes, and therefore, adequate training for teachers and other school staff, supportive organisational structures and system-level practices and policies are essential.' p.79*

The Evidence Based Practice Unit at the University of Manchester (Demkowicz and Humphrey 2019) summarised their findings in a presentation. Extracts follow:

> *'What are the effects of whole school mental health programs?*
>
> *Generally considered that whole school programs usually have positive effects – to varying degrees:*
>
> - *Effect size: Small – but nonetheless meaningful – amounts of change on relevant outcomes;*
> - *Sustainability: Evidence that positive effects do last, but attenuate somewhat over time; and*

- *Wider effects: Some evidence that programs show effects that extend beyond the primary outcome of mental health (e.g. to academic attainment).*

What are the effects of whole school mental health programs?

- *At-risk groups: usually greater effects for children and young people identified as at risk (however, may be due to ceiling effects or peers' limited room for improvement);*
- *Age: evidence remains limited and mixed, with some reviews indicating that younger children benefit more and others indicating that adolescence can be an effective time for intervention; and*
- *Other: Limited discussion of differential gains for children from socio-economically deprived and ethnic minority backgrounds as they are typically included in "at-risk" groups, but where analysed individually, these groups experience greater effects than their peers.*

What are the effects of whole school mental health programs?

- *Interventions that focus on internalising symptoms (e.g. anxiety, depression) show larger effects than externalising behaviours (e.g. aggressive behaviour); and*
- *Interventions that target specific social and emotional skills usually show moderate to large effect sizes.'*

In theory, programs with multiple components should show greater effects. This is often not the case as evidence suggests this is because they are more complex to implement in practice and programs that include parental components have been shown to yield better outcomes.

A number of factors influence the effectiveness of whole school mental health programs, including:

- **Programs characteristics:**
  - Clearly defined goals;
  - Active forms of learning;
  - Include dedicated time/lessons (curriculum approach);
  - Explicit step-by-step guidelines;
  - Intensity/duration as research suggests minimum of two months duration to impact outcomes but usually much longer;
  - Basis in theory; and
  - Evidence base though consider context and cultural transferability.
- **Implementation:**
  - Differences in implementation are an important factor in determining the impact of interventions;
  - Fidelity and adaptation where implementers are well-trained and skilled, lower levels of fidelity do not necessarily lower effectiveness; and
  - Quality matters.
- **Delivery agent:**
  - No consistent evidence that external personnel produce better outcomes than school staff; and
  - Where there are differences, it may be due to lack of training/skills and confidence for teachers taking on a new role.
- **Expectation management regarding:**
  - Outcomes (e.g. how much change and for whom);
  - How long it will take to achieve change; and
  - What is needed to achieve change:

- School staff can be effective implementers;
- Initial training, subsequent support and monitoring of implementation;
- A staged approach to delivery rather than trying to do everything at once;
- Relative risks and benefits of single vs multi-component approaches;
- Selecting interventions that are congruent with the needs and context of your school; and
- Be critical by assessing to what extent is there rigorous evidence to support a given program.

A recent review by O'Reilly et al. (2018) included 10 studies of which five involved universal whole school approaches including: Up, MindMatters, KidsMatter and BounceBack. The authors concluded variable degrees of success, variability in outcomes, challenges of concepts and ideas, difficulties in implementation and attitudes, issues of sustainability, and a large variation in type and quality of publications. The quality of evidence was appraised as generally low to moderate, with many studies relying on students' accounts of their own behaviour, with some studies suffering from high attrition rates.

Therefore, while the popularity of the universal whole school approach is undeniable, shortcomings of these interventions need to be addressed. The limited information from the above review makes it difficult to comment on universal approaches to mental health promotion. Whole school approaches to the promotion of social and emotional health implemented over years, appear to be more effective than brief class-based programs aimed at preventing mental health problems.

A well-designed study authored by Sawyer et al. (2010a) rigorously applied all the principles of a whole school approach. This whole school project was carried out for three years and involved an active mental health promotion program at its core. However, the study failed to show any difference in outcomes between participants and controls, nor even any difference in school climate. In a two-year follow-up there was little evidence that the multi-component universal intervention delivered over the three-year period reduced levels of depressive symptoms among participating students.

In a follow-up study, Sawyer et al. (2010b) concluded:

> *'Implementing school-based interventions is challenging for both researchers and practitioners. To be successful, such interventions need to have clear goals which are consistent with school priorities, effectively engage both teachers and students, allow sufficient time for implementation of all components, and not adversely affect other educational programs and priorities. Even where these goals have been achieved, results relevant to the prevention of depression have been mixed. Implementing universal interventions to improve student mental health is difficult in school settings that commonly have a crowded agenda of educational and health-related programs. Successful implementation will require programs which are perceived by teachers and students as relevant to educational and learning goals, and which can be effectively delivered in conjunction with other school programs.' p.304*

Neville, Joscelyne and Chester (2019) pointed out due to the lack of UK studies reviewing whole school approaches and resilience, a further search was made of National Healthy Schools Program, SEL and Targeting Mental Health in Schools (TaMHS) evaluations reported on government websites and in the 'grey' literature. Several reports had been commissioned to report the results of the above initiatives. These generally showed disappointing results for improvements in pupil emotional or resilience outcomes. For example, the National Centre for Social Research found that in the two-year timeframe of their evaluation of National Healthy Schools Program there were no significant changes in pupil knowledge, attitude or behaviour associated with the health themes of the programs. Generally, however, schools and teachers welcomed the programs as they thought it gave them focus to evaluate their schools' approach to a health curriculum. There were some whole school changes including greater focus on anti-bullying and collaboration with outside agencies.

Equally, an evaluation of the TaHMS project showed that there was a measurable improvement in primary children's behavioural difficulties following implementation of TaMHS, but not in their emotional difficulties. The review by Thomas, McLellan and Perera (2015) mentioned above, found 'curriculum only' approaches superior to 'multimodal' approaches. 'Whole school' was not a term used in their review. Bourke, Kinsella and Prendeville (2020) recently reported on interviews with 13 teachers and two school principals regarding an ethical education (EE) curriculum. In general, teachers did not feel adequately prepared to teach the curriculum, particularly those new to EE. Teachers' capacity to directly teach the curriculum and to apply ethical concepts at whole school was identified as significant barriers to implementation. Many teachers reported not having the pedagogical skills and knowledge they require to teach EE and a lack awareness to do so. Insufficient training was consistently noted by teachers and principals as a barrier to the implementation of the curriculum. The authors note this is consistent with other local and international research that has found that teachers' professional learning programs are not intentionally preparing them for the role of implementers of whole school interventions. They point out the difficulties in attempting a whole school approach especially from programs fidelity perspective.

The evidence regarding whole school approaches in health lead the Evidence Based Practice Unit (Demkowicz and Humphrey 2019) to the following practical implications:

- Whole school approaches to promoting mental health are not a panacea, and so expectation management is required in relation to:
  - Outcomes (how much change, and for whom);
  - How long it will take to achieve change; and
  - What is needed to achieve change.
- With appropriate training and support, school staff can be effective implementers;
- Given that truly whole school approaches are complex to implement in practice, a staged approach to delivery is advisable as opposed to 'trying to do everything at once';
- There is no single gold standard intervention. Rather, interventions should be selected based on local need and context; and
- While there are manifold programs with a strong evidence base, there are also a large number for which there is weak or limited empirical support. Schools should adopt a critical approach, and always ask to what extent there is rigorous evidence to support a given intervention.

Elliott (2017) found evidence indicating how difficult it is to get schools to implement programs with respect to sun protection in primary schools in northern Queensland. The Queensland DET mandated a written SunSmart School policy for all government schools across Queensland where the risk of skin cancer is very high in summer owing to a very high ultraviolet index.. In one study, 91% of 723 schools sampled had a written policy but only 3% of schools mentioned all 12 sun protection criteria recommended by the Australian SunSmart School program**.** The vast majority of schools only mentioned one (10%) or two (57%) of the criteria.

6 Examples of evaluated school prevention programs

This section of the review details a number of evaluated school prevention programs already mentioned, thus far, in summary form.

6.1 Bounce Back: school-based resiliency program

https://www.bounceback-program.com/

Bounce Back is a school-based resiliency program intervention intended for all children from K2, Years 3-4 and Years 5-6. It is a manualised program with very clear step-by-step instructions and lesson plans. It is designed so that any teacher can pick it up and use it as needed. Bounce Back can be run as a year-long, multi-year programs, or individual lessons or units can be selected depending on student needs and resource availability. There is no teacher training available to assist with the delivery of this programs. The curriculum units in the Bounce Back classroom resiliency programs can be summarised as follows:

- **Core values**
  Developing positive and pro-social values.
- **People bouncing back**
  Developing strategies for coping and bouncing back using the Bounce Back acronym:
  - Bad times don't last;
  - Other people can help if you talk to them;
  - Unhelpful thinking makes you feel more upset;
  - Nobody is perfect – not you and not others;
  - Concentrate on the good and funny bits;
  - Everybody has setbacks;
  - Blame fairly;
  - Accept the things you can't change and try to change what you can first;
  - Catastrophizing exaggerates your worries; and
  - Keep things in perspective.
- **Courage**
  Finding courage in both everyday life and difficult circumstances.
- **Looking on the bright side**
  Teaching optimistic thinking.
- **Emotions**
  Amplifying positive emotions and managing negative emotions.
- **Relationships**
  Skills for building and maintaining friendships.
- **Humour**
  As a coping skill.
- **No bullying**
  Skills for countering bullying.
- **Success**
  Skills and attitudes for being successful.

The program's guide includes a checklist for the teacher at the end of each lesson that consists of a list of all activities that need to be delivered as part of the lesson plan. Anthony and McLean (2015) reported on a small-scale evaluation of Bounce Back in two primary schools in Melbourne. There is a lack of evaluations of school-based programs owing to the fact that evaluating interventions, particularly at whole school level, is very challenging. They chose the Bounce Back programs since it was identified by a comprehensive nation-wide pilot study of the KidsMatter framework based on 61 responding schools as the most popular programs with 64% of schools choosing to include it as part of their SEL curriculum (Slee et al. 2009). This finding strongly suggests that Bounce Back has a lot of appeal for schools and accordingly needs to be evaluated. Information was not available as to why it had such appeal for schools. The authors speculated that its affordability, absence of formal teacher training requirements and its 'smorgasbord model', that allows for specific components of the programs to be selected on a needs basis and integrated with what is already happening within the school, are all contributing factors. The programs are whole school, universal, year-long and multi-year programs.

The aim of the evaluation study was to determine the short-term effectiveness of the school-based classroom resiliency programs. Overall, the results provide evidence for the effectiveness of the Bounce Back programs. Children who participated in the programs reported significantly higher levels of resilience resources post-intervention compared to those reported by the comparison group and these increases were maintained at the three-month follow-up. Children who participated in the intervention also reported decreased vulnerability levels three months post-intervention compared to those reported pre-intervention.

It should be noted that this program is not whole school approach but is included because of its popularity and evidence for its efficacy. It does not train teachers nor involve parents. Bounce Back has a website offering only online training for teachers at https://bouncebackonline.teachable.com/p/bounceback.

6.2 MindMatters: whole school-based mental health and wellbeing programs

https://emergingminds.com.au/resources/mindmatters-secondary-school-professional-learning/

MindMatters is the secondary school equivalent of KidsMatter for primary schools. The MindMatters program consists of a professional development program, and materials for use in schools. The materials consist of a booklet that provides the basis for establishing a whole school approach, suicide prevention guidelines and an annotated bibliography. It includes an audio-visual resource on understanding mental illness and a resource entitled Mapping and Managing MindMatters, which provides information on the process for establishing a whole school approach. For the classroom, the materials include resources to support programs in four areas:

1. Enhancing resilience.
2. Dealing with bullying and harassment.
3. Grief and loss.
4. Understanding mental illness.

Two national organisations, the Australian Principals Association Professional Development Council and the Curriculum Corporation, were contracted by the Commonwealth Department of Health and Aged Care to manage a national dissemination of the MindMatters resource.

Schools can engage in a range of activities as part of their whole school strategies including running youth forums, mental health days, making dramas and videos around the theme of bullying, conducting school-wide team building games, addressing staff mental health needs via the conduct of staff surveys, drafting policy and practice

guidelines regarding incidents of bullying or harassment, organising parent forums, revising referral protocols and enhancing transition and peer support programs. The project was supported by MindMatters project officers.

A non-controlled evaluation addressing the resilience and protective factors in the programs involving 15 non-randomly selected schools with a three-year follow-up resulted in no significant effect on substance abuse (MindMatters Evaluation Consortium 2000).

A separate process evaluation was undertaken by Hazell (2006) to identify why there was a great deal of inconsistent results. Since access to these reports was not available to this reviewer two papers reporting on this process evaluation will be quoted. Wyn et al. (2000) stated:

> *'Teachers identified that the greatest challenge they met in dealing with the MindMatters project was in addressing a whole school approach. Adopting a classroom program need only involve engaging the commitment and skill of the teacher. Addressing school ethos and environment, policy and practices and developing or extending partnerships with parents, community groups or health agencies requires direction of time and energy to work with others. This big picture approach entails large-scale change, which takes time and commitment to drive. Previously, it was often seen as activity above and beyond the prime duty of teaching class or contributing to student or faculty management, however, the MindMatters project found that the provision of a safe and supportive environment was seen to be important and part of the core business of a school. Despite this, core team members encountered many comments which indicated barriers to the implementation of mental health education. For example, some teachers felt that too much is expected of schools and teachers and that resourcing for welfare staff is not sufficient. It was common for teachers to say that health education is often marginalised by the competing concerns and limited time available within schools.' p.599*

Another paper, Hodder and colleagues (2011) stated:

> *'The authors identified limited uptake of the intervention by schools, in particular, a whole school approach to intervention adoption was implemented by less than half of schools, only one-third had implemented recommended intervention planning and monitoring mechanisms, and only 20% had developed recommended relationships with external agencies. Interviews with school staff identified a number of barriers to intervention implementation including: inadequate resources; inadequate levels of school staff professional development; inadequate school executive support; and the importance of funding to ensure sustainability.' p.723*

A more recent evaluation of MindMatters, authored by Hodder et al. (2017) concluded:

> *'No significant differences were found between intervention (MindMatters) and control students for any secondary outcomes. The universally implemented pragmatic school-based intervention was not effective in reducing the prevalence of tobacco, alcohol or illicit substance use, or in increasing the protective factors of students.' p.1*

The author of this review chose to detail MindMatters secondary programs rather than KidsMatter as ORG have stated that secondary students are their focus. Additionally, evaluation of KidsMatter occurred outside the timeframe of this review. Interestingly, the only papers unearthed about KidsMatter were in relation implementation issues: Slee, Dix and Askell-Williams (2011); and Dix and colleagues (2012).

6.3 KiVa: whole school-based bullying programs

https://youth.gov/content/kiva-antibullying-program

The KiVa programs includes universal actions, directed at the class and school level, and indicated actions, for addressing incidents of bullying. It offers an innovative approach to bullying in that it focuses on the role of bystanders (i.e. fellow pupils who witness bullying events). Through class lessons, it teaches children to recognise what is, and is not, bullying and how to respond when they see bullying. Lessons are grouped into three units aimed at children aged six-nine, 10-12 and 13-14 years old respectively. This approach is based on extensive research showing that victims report distress when others do nothing to help and that bullies tend to behave aggressively to attain higher status and are reinforced by onlookers' apathy or encouragement. In addition, this research found that when bystanders do intervene, the bullying tends to stop.

The universal interventions of KiVa consist of three different age-appropriate versions that are, in the final version of KiVa, now widely implemented in Finnish schools, targeted at grades one, four, and seven.

Lessons are given by classroom teachers. The detailed lesson plans involve discussion, group work, role-play exercises, and short films about bullying. As the lessons proceed, class rules based on the central themes of the lessons are successively adopted one at a time. One unique feature of KiVa are the virtual learning environments involved.

For primary school students (i.e. grades one to three) there is an antibullying computer game that can be played during and between the student lessons. The game involves five levels, and the topics and tasks in each level are closely connected to matters presented in the corresponding student lessons. By playing the game, students acquire new information and test their existing knowledge about bullying and learn new skills to act in constructive ways in bullying situations. Furthermore, they are encouraged to make use of these skills in real-life situations with their peers.

For secondary school students, there is a different virtual learning environment called KiVa Street. It is an internet forum where the students sign in and navigate to visit different places. For instance, they can go to a library and find information about bullying, or they can enter a movie theatre and watch short films about bullying. Similar to the computer game, the KiVa Street aims to provide knowledge, skills, and motivation to change one's own behaviour related to bullying. In all grade levels, KiVa provides prominent symbols such as bright vests for the recess supervisors to enhance their visibility and signal that bullying is taken seriously in the school and posters to remind students and school personnel about the KiVa program. Schools get presentation graphics they can use to introduce the program for the whole personnel and for parents. Parents also receive a guide that includes information about bullying and advice about what parents can do to prevent and reduce the problem.

Initially an RCT of KiVa was conducted in Finland involving more than 8,000 children aged 10-12 years in 78 schools finding that it was effective for reducing self-reported victimisation and bullying perpetration. The effects were seen across all types of bullying, including verbal, physical, racist, sexual and cyber-bullying. Following the success of this trial, the Finnish government supported a national roll-out of KiVa and it is now delivered in over 90% of schools in Finland (i.e. pupils aged 15 years old in approximately 2,700 schools) after the first three years. A non-randomised evaluation of this roll-out has also demonstrated positive effects, albeit smaller in size than in the trial (Kärnä et al. 2011).

Interestingly, according to Kärnä et al. (2013), KiVa was more effective in primary schools than secondary schools:

'…after 9 months of implementation, the KiVa program is effective in primary school (grades one-six), whereas the positive effects in secondary school (grades seven-nine) are more modest and depend especially on the gender of the student.' p.15

The KiVa program is being trialled in Wales to see if it is transferrable (Clarkson et al. 2016).

6.4 Y-PATH 'PE 4 Me': school-based physical health programs

https://irishheart.ie/courses/y-path/

Y-PATH 'PE 4 Me' is a whole school programs which is delivered by the Physical Education (PE) teacher for wellbeing and comes with a wide range of free resources both online and offline. Focusing on physical literacy this program was developed as a direct response to the frightening low level of physical activity and skill levels of Irish youth. It is flexible in its delivery and backed by eight years of Irish research at Dublin City University which demonstrates an improvement in physical activity and fundamental movement skills (FMS) through use of the programs.

There are four key components to the Y-PATH intervention:

1. **Student component**
   Specific focus on health-related activity and FMS content subsumed within the existing PE curriculum, delivered by specialist PE teachers.
2. **Parent/Guardian component**
   Physical activity information evening prior to the beginning of the intervention, and distribution of specifically tailored Y-PATH physical activity information leaflets.
3. **Teacher component**
   All school teachers attending two workshops which highlighted the importance of active role modelling, and voluntary participation in a one-week teacher pedometer challenge. The teacher pedometer challenge was integrated mid-course during the Y-PATH intervention to further stimulate teacher involvement in youth physical activity promotion.
4. **Website component**
   All student, parent and teacher resources were made readily available for all intervention participants (http://www.dcu.ie/shhp/y_path.shtml).

The initial 2012 trial of Y-PATH 'PE 4 Me' (O'Brien, Issartel and Belton 2013) showed significant gains in the intervention group versus the control group.

The targets for the program are youths aged 12-15 years old over a three-year period. Belton, O'Brien, McGann and Issartel (2019) summarised the findings of a larger scale evaluation involving a two-year cluster RCT involving 20 Irish post primary schools (2014-2016). Results from this RCT confirmed the programs was effective in improving youth FMS proficiency. In addition, youth in the Y-PATH intervention group-maintained minutes of moderate-to-vigorous physical activity levels over time, while youth in the control condition declined by an average of six minutes.

The Y-PATH 'PE 4 ME' program is delivered through a method of blended learning using a mixture of online of one hour and face to face training of three hours. It provides PE teachers with access to a range of resources such as:

- Lesson plans;
- In class digital materials;
- Posters;
- Student journal; and
- Student assessments.

6.5 Live Life Well @ School program

The Live Life Well @ School program is a component of the NSW Government's response to prevent childhood obesity, having prominence in the NSW Healthy Eating and Active Living Strategy: Prevention overweight and obesity 2013-2018, and contributing to the NSW Premier's Priority to reduce overweight and obesity rates of children by 5% over ten years. It is a joint initiative between NSW Health and the NSW Department of Education in consultation with the Catholic Education Commission NSW and the Association of Independent Schools of NSW.

The Live Life Well @ School program supports a range of internal and external nutrition and physical activity programs, resources and strategies across NSW. The program is based on key health promotion messages about nutrition, physical activity and screen time. Local Health Districts' health promotion officers provide additional support for program implementation via school visits, phone calls and email follow ups to:

- Assist schools to develop an action plan that reflects a whole school approach to nutrition and physical activity;
- Assist in the development of community focused nutrition and physical activity strategies; and
- Provide access to information and resources that support the teaching and creation of school environments that promotes physical activity and healthy eating.

The Live Life Well @ School program includes processes that monitor and evaluate the program and focus on assessing implementation, reach and impact of the program and comprises a number of key components including:

- Professional learning for teachers through workshops;
- In service training modules to train staff within schools;
- Funding to support teacher attendance at workshops;
- Resources for schools;
- Grants to schools to support implementation of their action plan;
- Conferences; and
- Advice and support for schools to assist in the implementation of action plans.

Between 2008-2014, 4,617 teachers from 2,077 NSW primary schools attended the Live Life Well @ School workshops for the first time, an average of 838 teachers each year. The conferences have been very well received, with 84% of attendees reporting that they felt that the conference provided them with valuable resources and 61% outlining that their confidence to implement Personal Development, Health and PE activities into their classrooms had increased. There has been a steady significant growth of NSW schools adopting the Live Life Well @ School program, from 32% in 2012 to 77% in 2015 across all types of schools (i.e. Government, Catholic and Independent schools). These schools have achieved 70% or more of the Live Life Well @ School program practices related to promoting and encouraging healthy eating, improving physical activity and improving the quality of service delivery. There have also been significant increases in the proportion of schools with priority population groups that have adopted the Live Life Well @ School program.

Since 2012, the proportion of trained primary schools that have adopted the Live Life Well @ School program has significantly increased from 31.8% in 2012 to 77.2% in 2015. Corresponding increases have been seen across all school sectors. The greatest increase in program adoption has occurred since 2014.

The only evaluation appears to be data collected in the implementation of the program. Given the repeated evidence regarding the lack of fidelity in the implementation of many programs the improvements are strong evidence of the efficacy of the program. Statistically significant improvements over the period occurred in the following practices:

- **Practice Four**
  Physical activity during recess and/or lunch.
- **Practice Seven**
  Teacher professional learning/development on healthy eating and physical activity.
- **Practice Eight**
  School team/committee with executive membership to support the implementation of Live Life Well @ School.
- **Practice Nine**
  School planning processes incorporate Live Life Well @ School strategies.
- **Practice Ten**
  School monitors and reports annually on Live Life Well @ School strategies.

In 2015, the majority of Live Life Well @ School program practices were achieved by over 70% of schools, and in many instances by over 75% of schools. There was one practice 'The school provides supportive environments for healthy eating' pertaining to school canteens and the provision of food to students and the community (i.e. Practice Five), where the proportion of schools which had achieved the practice was substantially lower when compared to the achievement of other practices (43.5%). In addition, a lower proportion of schools achieved Practice Ten regarding monitoring and reporting on Live Life Well @ School strategies (63.5%) compared to the achievement of other practices, although this had shown improvements over the previous three years. Achievement of Practice Five 'Supportive environment' for healthy eating has remained low (43.5-48.9%) over the period 2012 to 2015.

6.6 RREiS whole school project

The RREiS whole school project, mentioned earlier, was a very ambitious pilot project for years eight and nine across 19 secondary schools in Victoria in 2015. The RREiS program was an across the curriculum approach and outlined in Kearney et al. (2016a).

The pilot was specifically designed to establish a mechanism for collaboration, with Project Implementation Leaders (i.e. Our Watch staff) being strategically based in the DET's regional offices. Highly collaborative relationships between Project Implementation Leaders and school staff were established, however, limited progress was made towards strengthening relationships with the wider school community and community-based organisations. The most significant weakness of the pilot project was in the area of long-term vision, approach and funding, which is probably why it has not progressed beyond the pilot stage. According to the authors:

> *'The most significant weakness of the pilot was in the area of long-term vision, approach and funding. While pilots are by definition fixed term, the 12-month implementation period for this pilot limited the possible outcomes of the project in several ways. Project timelines prevented: engagement with the broader school community, including parents and community clubs (such as sporting groups) associated*

with the school; pre-planning and consultation with community organisations, in particular the integrated family violence (response) system and organisations with primary prevention and gender equality expertise; evaluation of the impacts of the program towards long-term behaviour change as longitudinal evaluation would be required to assess the benefits to students in their future relationships and safety; and adequate maturation towards cultural change in schools.' p.6

Results indicated students' knowledge of, attitudes towards, and confidence in discussing issues of domestic violence, gender equality and respectful relationships improved across all 24 relevant survey questions. The authors cite an example of the increase in the proportion who felt that 'slapping or pushing a partner to cause harm or fear' was a form of domestic violence increased from baseline 70% to 80% in the follow-up survey.

Improvements were identified in relation to school policies, practice and culture, reflected in survey results for teachers and students, improved classroom behaviour and improved teacher/student relationships, and updating of policies and procedures to promote gender equality and respectful relationships.

Detailed recommendations regarding making respectful relationships core business are provided and are useful reading for any organisation like the ORG if they were intending to contemplate a whole school approach using external people to ensure fidelity of implementation:

- Plan for a state-wide roll-out, through an opt-in model;
- Identify a mechanism for whole of government co-ordination;
- Establish state-wide mechanisms for consultation, planning and monitoring;
- Ensure leadership across the work areas of the DET;
- Ensure ongoing and longitudinal evaluation; and
- Employ professional staff to inform work at a regional level.

The suite of professional learning provided in RREiS was found to be the biggest change agent in the delivery of the pilot. Three tiers of professional learning were provided:

- **Planning for RREiS**
  Training for school leaders to plan activities for the whole school approach.
- **Delivering RREiS**
  Training for teachers delivering the curriculum resource.
- **Whole school briefing**
  Information for all school staff, explaining the key concepts of RREiS and responding to disclosures. The pilot identified a number of risks where appropriate professional learning is not delivered, or participation is insufficient.

7 Evidence from school-based gambling education initiatives

This section of the review focuses on specific youth gambling education programs implemented in different countries internationally before and since 2010. It presents the content of these programs (e.g. teacher resources, classroom interventions, duration of the program) and when an evaluation was conducted it also reviews program effectiveness.

The literature review key search criteria include the date of publication. Reflecting the review methodology, the following section has been structured to first review studies before 2010 and then more recent studies published since 2010.

7.1 Studies before 2010

Given the paucity of evaluated school-based gambling programs this literature research extended the search to studies since the year 2000. This section of the report briefly identifies some earlier studies and school-based programs most of which were not whole school approaches.

7.1.1 'Teen Gambling: It's a Risky Deal'

Teen Gambling: It's a Risky Business is an eight-and-a-half-minute video featuring catchy graphics, interviews with middle-school and two adolescent actors as anchors. The video is meant to stimulate discussion in classes regarding gambling's potential risk. The video features five 'myth buster' moments that debunk misconceptions such as luck and skill can make you a consistent winner, only certain types of people become addicted to gambling, and gambling with friends or 'free' online gambling is always harmless. The video was available from the Oregon Department of Human Services in June 2007. No evaluation could be found.

7.1.2 'You Bet!' and 'Just a Another Game?'

Both were two sets of comprehensive resources developed by Tacade and the International Gaming Research Unit and commissioned by the UK Responsibility in Gambling Trust in 2006 for schools and youth education settings. They are described in Buczkiewicz and Griffiths (2006). No formal evaluation was identified. Griffiths (2008) suggested that initial feedback by teachers had been very good to excellent.

7.1.3 'Lucky'

Lucky is a 20-minute video with a humorous style. There are two main characters including Lucky, a sarcastic clown who has lost all his money gambling, and his assistant. The two were invited to a school to present a show about gambling. Throughout the video, Lucky explains the differences between gambling and games of skill. He also talks about the true chances of winning, the illusion of control, the notion of randomness, lucky charms, and the uselessness of strategies. Lucky was originally in French and then made into English. Both versions were evaluated on French, and on English, speaking students in Canada. The video's aim was to modify erroneous beliefs and attitudes toward gambling by targeting several misconceptions, the illusion of control, and cognitive

errors underlying gambling. Lavoie and Ladouceur (2004) reported on the first evaluation involving students in grades five and six in the French version study, using two schools.

The second study involved grades six and seven with the English version involving four schools. Both versions were evaluated by a simple before-after with control (i.e. one experimental group who were exposed to the video and a control group who did not get exposed to the video), Ladouceur, Ferland and Vitaro (2004). In both studies the experimental condition (i.e. the video) significantly improved participants' knowledge, and significantly decreased their misconceptions as compared to the control group. The video condition was therefore significantly better than the control condition at decreasing the number of errors made by students on both the misconception and the knowledge questions.

7.1.4 Stacked Deck

Stacked Deck is a set of five to six interactive lessons that teach about:

- The history of gambling;
- The true odds and 'house edge';
- Gambling fallacies; and
- Signs, risk factors, causes of problem gambling, and skills for good decision making and problem solving.

An overriding theme of the program is to approach life as a 'smart gambler' by determining the odds and weighing the pros versus cons of your actions. A total of 949 grade nine to twelve students in 10 schools throughout southern Alberta received the program and completed baseline and follow-up measures. These students were compared to 291 students in four control schools. Four months after receiving the program, students in the intervention group had significantly more negative attitudes toward gambling, improved knowledge about gambling and problem gambling, improved resistance to gambling fallacies, improved decision making and problem solving, decreased gambling frequency, and decreased rates of problem gambling. There was no change in involvement in high risk activities or money lost gambling. Williams, Wood and Currie (2010) concluded:

> *'As expected, and consistent with previous research, the Stacked Deck program produced significant and sustained changes in gambling attitudes, knowledge, and fallacies. At follow-up, students in the intervention schools demonstrated significantly more negative attitudes toward gambling, greater knowledge of both gambling and problem gambling, and greater resistance to gambling fallacies. This is an important result, indicating that the content of the Stacked Deck program was appropriate and delivered in a fashion that allowed for retention of this material. It is also likely the case that changes in these attributes are preconditions for actual changes in gambling behaviour. In addition, the present program also produced significant improvements in applied decision making and problem solving, a decrease in the percentage of gamblers, decreased overall gambling frequency, and, most importantly, some evidence of decreased rates of problem gambling (i.e. significantly lower rates of problem gambling at follow-up compared to the control group).' p.121*

7.1.5 Curriculum approaches

The search identified two papers of interventions involving material designed to fit into existing curriculum, both Canadian. The first paper, Williams and colleagues (2004), reported on RCT of two programs implemented in Alberta, Canada. The first was a 10-session program delivered to several classes of university students taking introductory statistics. This program focused primarily on teaching the probabilities associated with gambling and included several hands-on demonstrations of typical casino table games.

The sample consisted of 470 students from the University of Lethbridge, in Lethbridge, Alberta. This intervention proved very effective in significantly improving student's ability to calculate gambling odds as well as awareness of and resistance to gambling fallacies. It is interesting to note that these changes only occurred in statistics classes that received gambling-specific instruction on probabilities. Statistics classes that received generic information on probability theory did not have an improvement in their ability to calculate gambling-specific odds. However, the true purpose of this intervention was to examine the impact this improved knowledge and skill had on actual gambling behaviour. The presumption was that if students thoroughly understood the negative mathematical expectation of gambling games they would gamble less. Unexpectedly, this proved not to be the case. Students receiving the intervention had no significant decrease in their likelihood of gambling, their likelihood of being a problem gambler, the amount of time they spent gambling, or the amount of money they spent gambling. There was also no significant change in their attitude toward gambling.

The second study was a five-session program, Stacked Deck, delivered to high school students at several sites in southern Alberta. The program was implemented in six different school districts and 12 different high schools in southern Alberta. At least one school in each school district served as a control school. By June 2004, 1,500 grade nine to twelve students had participated representing approximately 1,000 students in the intervention group and 500 students in the control group. The program is offered in the Career and Life Management class in the senior grades and health classes in grade nine. Comparisons between the intervention and control schools occur at baseline and three-months following the end of the intervention

This second program was more comprehensive, containing information and exercises on the nature of gambling and problem gambling, gambling fallacies, gambling odds, decision-making, coping skills, and social problem-solving skills. Data was collected concerning gambling attitudes, gambling fallacies and gambling behaviour at three and six-months post-intervention. The intervention proved very effective in significantly improving student's knowledge of gambling and problem gambling, as well their awareness of and resistance to gambling fallacies. Unexpectedly, there was no apparent improvement in decision-making or coping skills.

The true purpose of the intervention was to examine the impact this improved knowledge and skill had on actual gambling behaviour. Unlike the university project, the type of knowledge and skill acquired in this intervention did translate into significantly less gambling behaviour. Students receiving the intervention had a significant decrease in their likelihood of gambling, the amount of time they spent gambling, and the amount of money they spent gambling. There was no significance decrease in their likelihood of being a problem gambler. Of importance, there was also a significantly more negative shift in their attitude toward gambling. The authors conclude:

> *'Dramatic decreases in gambling behaviour were not necessarily anticipated, as the intervention was not overtly advocating abstinence. Also, the large majority of students was gambling at non-problem levels prior to the intervention and continued to do so after the intervention. The truest test concerns whether students receiving the intervention have a lower future incidence of problem gambling. However, the marked decrease in overall gambling behaviour is very encouraging.' p.20*

The authors suggest if there are lessons to be learned from these two initiatives:

- Teaching people about gambling odds is perhaps not that important in the prevention of problem gambling and should never be used as the sole intervention;
- Developing a more negative attitude toward gambling is the variable that most strongly predicts decreased gambling behaviour;
- Improving people's knowledge about problem gambling appears to be important and is perhaps a mechanism by which attitudes change;
- Teaching people about the cognitive errors underlying gambling fallacies appears to be important for some people in changing their gambling behaviour; and

- Trying to improve generic decision making, problem solving, and coping skills is very difficult to do and is not necessarily needed to decrease gambling behaviour in non-problem gamblers.

The second identified paper, authored by Turner, Macdonald and Somerset (2008), involved the evaluation of a curriculum resource. The paper reported on the development and pilot evaluation of a high school-based problem gambling prevention curriculum. The prevention program focused on problem gambling awareness and self-monitoring skills, coping skills, and knowledge of the nature of random events.

The teachers were given a curriculum package that consisted of a series of lesson plans, overheads, a text and CD-ROM developed for the study, discussion questions, and some other demonstration materials. The CD-ROM contained skits illustrating problematic gambling, counselling, demonstrations of utilising coping and critical thinking skills, and a tutorial on random chance. Teachers were instructed that each lesson takes approximately 70-minutes to administer.

The curriculum consisted of six lessons and a summary lesson covering three streams of content:

1. Knowledge of random chance.
2. Coping and life skills.
3. Avoiding problematic behaviour and undue risk through self-awareness and self-monitoring.

To improve the students understanding of random events, the students were taught about the origin of how random events occur (i.e. fundamental chaotic uncertainty) in order to demystify random chance. This then led into a discussion of concepts such as the independence of random events and the exposure of numerous myths about games of chance. In addition, an essential feature of the prevention curriculum was the connection between random events and the emotions involved in winning and losing.

The second stream, on coping and life skills, addressed the needs of the 'emotionally vulnerable' problem gambler to mitigate stressful experiences. The students were taught about the effects of stress and were instructed in the use of constructive strategies to deal with stress. The third stream, self-monitoring for signs of negative consequences stemming from over involvement in gambling involved three components. First, students were instructed on the full range of negative consequences that can stem from problem gambling. Second, students were instructed on common barriers to being fully objective when scrutinizing one's behaviour. Third, students were provided with a list of sample questions to ask themselves that probe whether their emotional disposition, ability to set and stick to limits, value for money, relationships or school performance were being negatively affected by their involvement with gambling. In addition, the students were instructed to be aware of how their expectations about gambling can be affected by experience (e.g. wins can encourage people to take more risks). The curriculum gave students examples of how pathological gamblers get into problems by not monitoring their own thoughts, feelings and behaviours and instructs the students on how to self-monitor emerging problems in all life areas. Self-monitoring was seen as the link that connects the cognitive and emotional aspects of gambling together through greater self-awareness. The material also stressed that the coping skills and self-monitoring strategies included in the curriculum were not restricted to gambling problems, but also can be applied to any stressful situation.

The results of a controlled experiment evaluating the students' learning's from the program indicated significant improvement in the students' knowledge of random events, knowledge of problem gambling awareness and self-monitoring, and knowledge of coping skills. The results suggest that knowledge-based material on random events, problem gambling awareness and self-monitoring skills, and coping skills can be taught. These findings provide some evidence that in terms of random events knowledge test, with a large effect, and self-monitoring skills quiz scores, with a moderately small effect size, the program reached those students who were most in need of the information. However, in terms of coping knowledge, the results suggest that high-risk students did not benefit very much from the session.

7.2 Studies since 2010

This section of the literature review presents the studies identified into three classifications:

1. Two studies in which parents are included.
2. Seven studies involving school-based programs without parents.
3. Six reviews of school-based programs.

It is notable that never was the term 'whole school approach' used in any of these school-based prevention programs or reviews of programs and the alternative term 'universal approach' was referred to in only one review of the reviews. It would appear that school-based gambling prevention programs have at most been minimally influenced by health professionals with respect to 'whole school approach'.

7.2.1 Parent included school-based interventions

7.2.1.1 'Don't Gamble Away Our Future' (DGAOF)

This school-based gambling approach is documented in two papers that is Taylor and Hillyard (2009) and Ren et al. (2019).

The Illinois Institute for Addiction Recovery developed a gambling awareness prevention program called Don't Gamble Away Our Future (DGAOF) to educate minors about gambling and the dangers associated with it. They started collecting data for the purpose of evaluation in 2005 to evaluate the program's effectiveness at raising awareness of gambling, changing faulty or problematic knowledge about gambling and to assess the frequencies of problem and pathological gambling among participants at program implementation (i.e. year one).

Findings indicated that 10% of the participants were probable pathological gamblers and that the program was successful at increasing knowledge of gambling and the negative effects it can have, over the short term. School administrators were contacted and apprised of the issue of problem gambling among minors to generate support for the DGAOF program. Once permission was granted to enter the four school locations, teachers were given a training manual that showed them how to use the DGAOF interactive CD-ROM as well as other training materials.

Before the program was administered, gambling pathology was assessed among students aged 12 years and older. All of the students received a self-report pre-test that measured their knowledge of gambling behaviour and associated risks prior to the program. The program was administered to a convenience sample of 8,455 students from four Midwestern US school settings (i.e. primary schools, junior high schools, high schools, and a juvenile detention centre). Pre-tests were administered to participants before the program began and post-tests after the program was completed.

Interactive PowerPoint presentations with students were conducted to introduce in-depth prevention material for each age group. For instance, probability concept was not introduced for students in primary schools. Presentations were held in classrooms with approximately 30 students learning at once. Each presentation lasted 45–60 minutes including interactive discussions and games. An average of 14 presentations were provided for each school annually in order to cover all eligible students. The presentation was usually held in health classes in high schools, in physical exercise classes in middle schools, and in each individual classroom in primary schools. At the conclusion of every presentation, each student was given a parent pack to take home, which included a gambling fact sheet and a parent letter that explained the DGAOF program in details, a wrist bracelet with the DGAOF logo on it, and an interactive CD-ROM that provided education about problem gambling in an engaging format. The 45-min preventative program educating them about the issue, the myths and

misconceptions, and the dangers associated with gambling, consisted of lecture, activities, and discussion. Participants were provided a CD-ROM that contained several interactive components designed to support the program objectives following program completion. Information packets were also given to parents, teachers, and school administrators prior to program implementation.

Parents were invited to presentations that were free and open to the general public. The presentations were advertised through parent education packets and the media (e.g. radio announcements). Parent education packets were provided to each family prior to the program's implementation and included information about the project and an interactive website they could visit to access additional information regarding the project and problem and pathological gambling among minors.

Findings indicated that participants knew more about gambling and the dangers associated with it after the program than they did before the program was administered. Results also showed that younger children (i.e. primary school location) improved their scores more than older children (i.e. junior high, high school, and detention centre locations), and males improved their post-test scores more than females. The dnpreventative program was clearly effective in educating participants about gambling, its myths, and its potential outcomes. The authors conclude:

> *'The "Don't Gamble Away our Future™" program is relatively easy to implement, targets youth as well as their families, incorporates technology that is enticing to youth, and the current study demonstrated that it is effective in the short-term. Future research will evaluate the long-term effectiveness of the program on knowledge as well as on behaviour.' p.259*

The second paper (Ren et al. 2019) presents the results after five years of data collection involving 16,000 students. About one fifth (21.3%) of students were exposed to the intervention twice or more with the median gap between interventions 368 days. Students receiving multiple interventions had higher scores on the pre-test as compared to those receiving a single intervention and they demonstrated an increasing trend of awareness about gambling over time. The prevalence of problem gambling had decreased among students receiving the intervention twice as compared to receiving the intervention once. However, this effect was not confirmed among students receiving the intervention three or more times. The authors concluded:

> *'In conclusion, the DGAOF program has demonstrated a positive long-term impact on increasing gambling knowledge and partially reducing pathological gamblers through direct training.' p.1*

Comments (from the author of the review)[3]:

1. This program could be classified as whole school with regard to training teachers, curriculum material, involving parents and students.

2. In terms of evaluation quality, the study relied on self-report (like most studies in this category), lacked a control group for comparison and involved short time frame between pre and post-test. However, it is (a continuing) longitudinal study and did allow for multiple exposures approximately 12 months apart demonstrating that one repeat exposure (not available in any other study) can enhance positive effects.

[3] Comments from the author of the review have been added to recent studies (i.e. since 2010) of school-based gambling education. These comments provide a succinct discussion enabling the reader to consider further aspects which are relevant in the context of a whole school approach.

7.2.1.2 School and family gaming intervention - Thailand

A recent study on preventing gaming addiction is reported by Apisitwasana, Perngparn and Cottler (2018). The study has been included since ORG expressed concerns regarding gaming in association with gambling and because it demonstrates what can be achieved by a school-based program when parents are actively involved.

In Thailand, young people use the internet on average three hours a day and the primary reason for usage is gaming with internet cafes being extremely popular. Six percent of Thai internet users meet the criteria of Internet addiction with one in eight children addicted to gaming.

The quasi-experimental study was implemented among students of grades four and five at primary schools in Bangkok selected through multistage random sampling. Two comparable schools were randomly assigned to either the intervention or control group. Then, 310 students in the randomly selected classrooms were allocated to each group. The intervention group received the self-regulation program with school and family involvement to prevent gaming addiction. Master teachers attended in-house training on prevention of gaming addiction in children. Parents of these children received a gaming addiction prevention manual and guidelines. The program lasted eight weeks. The control group received no intervention. A questionnaire measuring knowledge and attitude about gaming, a game addiction screening test, and a game addiction protection scale were utilised to assess subjects at baseline, immediately after, and three months post-intervention.

To ensure the reliability of the children's answers, the researcher monitored the effect of the program through a weekly checklist. Parents were told to supervise their child in the practice of gaming addiction behaviour and self-regulation, and to provide feedback to teachers each week. The program required the involvement of teachers, to lead activities, and of parents, to help maintain consistency, during the program. 'Master teachers', who underwent necessary training, took a leading role. They were the key actors educating the students and regulating gaming behaviour. Families played a crucial role in maintaining program consistency. The program aimed to address knowledge, attitude, and self-regulation skills with regard to the ability to control and manage frequency of play and time spent gaming. The intervention contained one hour of activities a week during classes from weeks one to eight.

The program did not set out to change gaming addiction behaviour directly. Rather it attempted instead to enhance self-regulation to promote confidence in refusing game playing, gain more knowledge about gaming addiction and its effects, as well as provide information about how to regulate themselves, the types of games they can play, suitable duration to play games, etc. All of these are likely to assist students to prevent gaming addiction behaviour.

The findings revealed that there were significant differences in knowledge, attitude, self-regulation, and gaming addiction behaviours immediately and three months post intervention. Positive effects of the intervention included increase in knowledge, attitude, and self-regulation, whereas the game addiction screening test score was significantly decreased immediately and three months after the program.

7.2.2 School-based programs without parent involvement

All of the programs reviewed here were conducted in Europe, one in set in Portugal, one in Croatia, one in Germany, two in Italy, and two with one being a replication, in Romania.

7.2.2.1 Lisbon Portugal Outside Trainer High School Program

Calado and colleagues (2019) reported on a study of a programs designed and delivered themselves, with one of the group of authors staying in the same class during the programs. The study evaluated the efficacy of an integrative intervention to prevent youth problem gambling based on a multidimensional set of factors including gambling-related knowledge, misconceptions, attitudes, gambling frequency, amount of money spent, total hours spent gambling per week, and sensation seeking.

The study involved 111 high-school students, including 65 females, 46 males and a mean age of 17.6 years old, who were enrolled in a school in Lisbon, in Portugal. Six classes participated, which were randomly assigned to the experimental and control groups. The experimental group completed the pre-measures one week before the intervention and at the end of the last session of the program (i.e. post-test), and the follow-up six weeks after the intervention has ended. The control group was administered the pre-test and post-test questionnaires within the same week of the experimental group but did not receive the intervention. While the experimental group received the intervention, the control group continued with the normal school activity. Pre- and post-intervention as well as follow-up assessments were collected in the classroom.

The intervention comprised didactic units to increase correct knowledge and reduce gambling-related misconceptions, but also to target on other factors associated with adolescent risky behaviours in general (e.g. reducing the levels of sensation seeking, and helping adolescents to practice other abilities during the intervention, such as helping students to improve their decision-making skills when faced with situations that might encourage more riskier responses). The five sessions covered:

1. Gaming and gambling.
2. Cognitive distortions and gambling-related misconceptions.
3. Attitudes towards gambling and money.
4. Sensation seeking.
5. Problem gambling.

A variety of methods and techniques to deliver the activities to the students were used, including:

- Icebreaking and warm-up activities to make the students feel comfortable with the trainer of the program and enhance group cohesiveness;
- Quizzes in order to facilitate previously learned content;
- Interactive methods such as live discussions, and real-life situations in which students could practice newly learned skills;
- Encouragement of critical thinking, especially to promote more insight when deciding to engage in a risky behaviour, and to reduce the levels of sensation seeking;
- Team learning - in pairs, threes, small groups;
- Examples from life-real situations; and
- Positive atmosphere building so that students could feel comfortable in discussing topics related to training activities.

These techniques were also used to increase students' engagement in the program. The program comprised five didactic units, each consisting of one session, that were delivered in class during normal school time. The intervention was delivered on a weekly basis and each session lasted approximately one hour.

To verify that the intervention had the desired effect on adolescent self-reported problematic gambling, changes in the percentage of at-risk/problem gamblers inside the experimental group from pre-test to follow-up were evaluated. The percentage of at-risk/problem gamblers decreased from 21.4% in pre-test to 7.7% in follow-up, a statistically significant reduction. Students who had received the intervention enhanced their knowledge about gambling, and reduced their gambling related misconceptions, attitudes towards gambling, and the total hours spent gambling per week, whereas the students from the control group did not show a significant change on these variables from pre-test to post-test. Nevertheless, the intervention did not show any effect on gambling frequency, amount of money spent gambling.

Comments (from the author of the review):

The results of this study confirm other studies in relation to the limits of school-based programs to influence self-reported gambling behaviours, other than total hours spent per week on gambling. The reduction in percentage of at-risk/problem gamblers supports the use of such a program as does the stability of the findings over the time period, albeit only six weeks. The sample sizes were quite modest and like others the data collected relied on self-reports. The approach relied on experts on gambling (the authors) delivering and assessing the programs not teachers.

7.2.2.2 Who really wins? Croatian Youth Gambling Prevention Programs

Huic et al. (2017) reported on the development and pilot evaluation of a Croatian school-based youth gambling prevention program Who really wins?. The program was aimed at minimising risk and enhancing protective factors related to youth gambling. A short-term evaluation of the program was conducted with a sample of 190 first- and second-year high school students including 67.6% of boys aged 14–17 years old and an average age of 15.61 years old. An experimental design with two groups (i.e. training vs. no training) and two measurement sessions (i.e. pre-test and post-test sessions) was used to evaluate change in problem gambling awareness, cognitive distortions, knowledge of the nature of random events as well as in social skills. Results showed significant changes in the post-test sessions, which can be attributed to changes in the Training group. There was a decrease in risk factors, namely better knowledge about gambling and less gambling related cognitive distortions. Immediate effects on protective factors such as problem-solving skills, refusal skills, and general self-efficacy were not observed.

The study set out to test short-term effects of the programs designed to target both risk and protective factors associated with adolescent gambling and general risk behaviour (i.e. to diminish risk factors and enhance protective factors). Three objectives were set:

1. To enhance correct knowledge about gambling (i.e. protective factor) and its consequences and to modify erroneous beliefs about gambling related to illusions of control, superstitious thinking and probabilistic reasoning (i.e. risk factors), given poor knowledge and erroneous beliefs are all associated with more frequent gambling and riskier gambling, and more adverse consequences (St-Pierre et al. 2015).The hypothesis was that the programs activities would enhance correct knowledge about gambling and its consequences and diminish different kinds of cognitive distortions - illusion of control based on knowledge and skill, superstitious thinking and probabilistic reasoning.

2. To enhance protective factors that are proven to be related to positive developmental outcomes and lower frequency of adolescent risky behaviour in general (Cordova et al. 2014; Catalano et al., cited in

Huic et al. 2017; Durlak et al. 2011), such as critical thinking and problem-solving skills, resistance to peer pressure and self-efficacy. Since these skills usually express themselves in specific contexts and social situations, and are seen as long-term protective factors, the program was not expected to show short-term effects with regard to these particular protective factors.

3. To examine effects on students who already manifest adverse psychosocial consequences because of their gambling activities, in comparison to students who do not.

"Who really wins?' is a universal prevention program of adolescent gambling, aimed at adolescents from 14 to 16 years of age. The intervention comprised of six didactic units of 90 min each, implemented in class, during regular school time. The first and last unit included pre-test and post-test questionnaires.'

The units were summarised as follows:

'Unit 1: Set the working conditions (each student signed a contract recognising the importance of their active participation in training activities) and introduced students to the concept of gambling activities, discussing positive and negative aspects of gambling/betting, and making students more aware of potential dangers and negative consequences of gambling.

Unit 2: Involved an in-depth approach to misconceptions related to sports betting, improving probabilistic reasoning and discussing the perils of intensive gambling/betting.

Unit 3: Focused on the interconnectedness of our behaviour and its consequences and the importance of critical thinking when deciding whether or not to engage in a certain kind of behaviour, especially gambling/betting.

Unit 4: Students learned about problem solving skills, and how to apply them in real-life problem gambling scenarios.

Unit 5: Focused on the importance of peers in adolescent life and resistance to peer pressure; role-playing exercise was employed to enable students to practice refusal skills.

Unit 6: Repetition of all learned concepts/skills; students were put in a situation where they needed to answer fictitious questions about gambling, its consequences, problem and peer pressure situations from fictitious social networks users their own age.' p.1018

A plethora of methods were used to deliver activities to the students:

- Questionnaires, quizzes, worksheets etc;
- Games and exercises as warm-up activities, to enhance group cohesiveness and as evocation of previously learned content;
- Creative techniques - making posters, creating slogans and stories;
- Interactive methods such as role playing, live discussions, real-life situations in which students could practice newly learned skills;
- Encouragement of critical thinking, especially with regard to social influences;
- Team learning - in pairs, threes, small groups, presenting work in front of the class; panel discussions;
- Examples from life-real situations that closely mirror possible adolescent life situations; and
- Relationship and positive atmosphere building so that adolescents could feel safe to discuss topics related to training activities.

A total of 190 first and second year high-school students including 67.6% of boys aged 14–17 years old enrolled in two public high schools in Zagreb, the capital of Croatia, participated in the study. Both schools were randomly selected from the available schools in the city, one from the list of general education high school programs, and

one from vocational high school study programs. Two first grade and two second grade classes, randomly divided between the intervention (i.e. the training group) and control (i.e. the no training group) groups, participated in each school.

The results showed that high-school students do gamble, start to play different games in their early teens, and that they are already at risk to become problem gamblers. Also, students' knowledge about gambling and its consequences is not extremely high, and they have cognitive distortions related to gambling. They believe that good skills and knowledge about gaming will help them be better gamblers (i.e. understand the illusion of control), and they do not have good probabilistic reasoning. They also harbour superstitious beliefs about gambling/betting.

Short-term outcome evaluation showed a significant decrease in risk factors. The programs significantly improved students' knowledge about gambling consequences, dispelled their myths associated with gambling, and decreased cognitive distortions of all types including illusion of control, fallacies in probabilistic reasoning, and superstitious thinking.

The program did not lead to any significant changes in intra- and interpersonal skills such as self-efficacy, problem solving, peer pressure resistance, or gambling frequency right after its implementation.

The results showed improvement in all three types of distortions, as well as in the domain of correct knowledge that covered a variety of information including mathematical/statistical knowledge, information about the risky nature of gambling, risks and consequences of gambling and gambling industry roles and rules. The largest effect was detected in correct knowledge about gambling and its consequences, probably because this was an area which had most room for improvement at the beginning of the program.

Comments (from the author of the review):

The study only used small sample sizes and the gains were over a short term. A specific characteristic of the study was the inclusion of cognitive distortions that were measured in all forms including illusion of control, probabilistic reasoning and superstitious thinking.

7.2.2.3 'Vernetze' German programs

www.Welten

Walther, Hanewinkel and Morgenstern (2013) reported on a school-based media education program for sixth- and seventh-grade adolescents on gambling knowledge, attitudes, and behaviour. A two-wave cluster RCT with two arms (i.e. intervention vs. control group) was conducted in the German Federal State of Schleswig-Holstein. The intervention group received a four-unit media education program, which contained one unit on gambling. The program was implemented by trained teachers during class time. The control group attended regular classes without any specific intervention. Survey data from 2,109 students with a mean age 12 years was collected before and shortly after the intervention.

The school-based prevention program was delivered in the Communication curriculum program consists of four 90-minute units covering the following themes:

- **Unit one**
  Internet use.
- **Unit two**
  Online communication.

- **Unit three**
  Computer gaming.
- **Unit four**
  Gambling.

All working units focus on monitoring, discussion and reflection of own use, and on raising awareness of excessive use and addictive behaviour. The prevention program is carried out by trained teachers during usual school lessons. Teachers receive four-hour training and a written manual that describes the activities, goals, and didactical techniques of each teaching unit in detail. During the 90-minute gambling unit students learn about:

- Features distinguishing gambling from other games;
- The development and symptoms of pathological gambling;
- Gambling features promoting addiction;
- Actual winning probabilities;
- Popular gambling fallacies; and
- Existence and profits of the gambling industry.

The gambling unit included three activities. The first is a coin toss experiment in which students gather personal experience of chance followed by information given by the teacher about popular gambling fallacies, true odds of winning, and who really profits from people's gambling activities. In the second activity, students discuss the development and warning signs of pathological gambling, illustrated by a short case study. To practice and to repeat what they have learned about gambling addiction students complete a simplified version of the South Oaks Gambling Screen-Revised for Adolescents as a role-play exercise referring to the person described in the case study before. The last activity informs students about gambling features, stressing addiction (e.g. rapid succession of games).

The authors found significant program effects for gambling knowledge and for gambling attitudes and beliefs. At the post-test assessment, students who participated in the program had more knowledge about gambling and less problematic gambling attitudes and beliefs compared to students of the control group. Additionally, the program led to a slightly reduced number of current gamblers at post-test but did not influence the rate of lifetime gamblers, which increased in both groups over time. The effect on current gambling is remarkable considering the short post-test interval. This supports the findings of the Stacked Deck program which involved five or six lessons versus only one in this study.

Even though correlations were small, gambling behaviour was positively associated with gambling knowledge and also with problematic attitudes about gambling. Interestingly, problematic attitudes were more strongly related to current gambling than gambling knowledge. Such a pattern indicates that attitudes and beliefs might be more important for the progression of gambling than knowledge, questioning a knowledge-based approach for gambling prevention.

Comments (from the author of the review):

This study is unique in the embedding of a one lesson in an existing curriculum unit. The teaching of the total communication curriculum unit may have enhanced the positive results. The participation rate of schools was quite low and extra schools were recruited and ended up in the control group. No attempt was made to obtain a follow up to check on longer term effects. The significant decrease in current gambling was a finding only achieved at that time period by one other study. The major limitation was non-random assignment of students to control group.

7.2.2.4 Integrative Intervention Study Tuscany - Italy

Donati, Primi, and Cheisi (2014) reported a study with 181 Italian adolescents aged approximately 16 years, in Tuscany, Italy - using a multidimensional approach aimed at changing a set of factors including knowledge, beliefs, attitudes, and skills related to gambling. Based on the findings of a previous study that proposed an integrated model including several adolescent gambling behaviour related factors (Donati, Primi, and Cheisi 2014), the intervention was designed to modify gambling knowledge and misconceptions, probabilistic reasoning, economic perception of gambling, and superstitious thinking.

Specifically the approach aimed to improve correct knowledge of gambling (i.e. the awareness of gambling, general meaning and specific activities) and negative effects it can have, and to reduce erroneous beliefs about it, such as the 'illusion of control', i.e. the belief that the outcome of a chance event can be influenced or controlled by one's skill or abilities. With regard to probabilistic reasoning, the aim was to reduce the susceptibility to the gambler's fallacy, a well-known bias in probabilistic reasoning stemming from the belief that the likelihood of an event is related to preceding, independent outcomes. Finally, the study aimed to modify economic perception of gambling and superstitious thinking. Specifically, the authors wanted to decrease adolescents' beliefs about gambling as a good way to obtain money, and their tendency to perceive biased causal relationships between unrelated events.

The study aimed to:

- Evaluate the short-term effects of the intervention on increasing correct knowledge on gambling and normative probabilistic reasoning related to gambling, and to reduce misconceptions about gambling, optimistic perception of gambling as economic activity, and superstitious beliefs;
- To test the short-term effects considering separately adolescents without gambling related problems and those with gambling problems;
- To verify the stability of the short-term effects over time, over a period of six months by the end of the intervention;
- To test the stability of the effects also considering separately adolescents without gambling related problems and those with gambling problems; and
- To test gambling participation after six months of the intervention.

The participants were 181 high school students including 64% boys from an age range of 15-18 years old, enrolled at two public high schools in Tuscany, Italy. From the available schools in the area, four schools were randomly selected. Classes were randomly assigned to the training and no training conditions.

The intervention consisted in the integration of different training techniques for the delivery of the educational contents such as activities with random events generators (e.g. coins, dice, card decks), PowerPoint slides, a video, and collective discussions. The intervention comprised two didactic units of two hours (i.e. one per week) each implemented in each class, during the normal school time. It was conducted by a developmental psychologist expert in adolescent gambling and school intervention. Teachers were not present during the administration of the training program.

The participants who attended the training program improved their correct knowledge on gambling and reduced their misconceptions about it, economic optimistic perception of gambling profitability, and superstitious thinking. While the participants who did not follow the training, program did not show any change from pre- to post-test. The short-term changes were found both in adolescents without gambling problems and adolescents with problematic gambling behaviour. However, only non-problem gamblers showed a significant decrement of misconceptions from pre- to post-test. Concerning long-term efficacy evaluation, the effects persisted over a period of six months in both non-problem and at-risk/problem gamblers. Additionally, there was a significant

reduction of the percentage of gamblers and at-risk/problem gamblers from pre-test to follow-up. The study failed to influence adolescents' normative probabilistic reasoning (i.e. to reduce their susceptibility to the gambler's fallacy).

Comments (from the author of the review):

This study was more comprehensive than earlier studies in its objectives thereby overcoming weaknesses of these studies. The study did not use teachers to deliver the program. It was small scale but even, so the results were statistically highly significant. The study highlighted the difficulties in changing students' normative probabilistic reasoning and gambling misperceptions.

7.2.2.5 Web-based intervention (WBI) - Italy

Canale et al. (2016) reported a study to test the preliminary efficacy of a web-based gambling intervention program for ninth grade students within a high school-based setting in Italy representing a sample of 168 students in total and comprising 58% of males.

Twelve classes at one high school were randomly assigned to one of two conditions:

- **Intervention condition**
  Comprising of 6 classes and a total of 95 students.
- **Control condition**
  Comprising of 6 classes and a total of 73 students.

Both groups received personalised feedback and then the intervention group received online training (i.e. interactive activities) for three weeks. All students were recruited to participate by the school during class periods. Research assistants attended classes to explain the research opportunity and invited students with parental consent to participate. Students were assigned a unique pin number and the Uniform Resource Locator (URL) for participation. Students logged on to the website and were routed to a baseline survey, which was completed immediately. The online survey took approximately 10 minutes to complete. Students had an additional class meeting in which research assistants attended the class and guided the students through logging on to the online intervention. All students who participated in the baseline survey were invited to complete a two-month survey.

The WBI was designed to change attitudes of gambling, gambling beliefs, and gambling behaviour by providing personalised feedback regarding individual status for developing gambling related problems, and accurate information about cognitive distortions, independent events, and myths related to gambling. Both groups received personalised feedback. Figure 2. Detail of the WBI activities below shows the content of each activity.

Figure 2. Detail of the WBI activities

Time	Activity	Description
Week 1		Components of PF: 1. Gambling profile, 2. Consequences of gambling, 3. Tips for safe gambling
Week 2	Game 1: "What is gambling?"	Students learn how to distinguish between luck-based and skilled-based activities
	Game 2: "Stop the chance"	Students become familiar with important concepts related to gambling such as luck and chance. Winning and losing numerical points reinforce the player's performance. The more a player persists in this type of activity, the more points are lost
Week 3	Game 3: "Question and answer on gambling"	Students become familiar with important concepts related to gambling such as independent events, myths and facts, and responsible choices.
Week 4	Quiz 1: "Test your knowledge"	A quiz to find out how much students know about gambling-related characteristics (prevalence, cognitive distortions and beliefs)
	Quiz 2: "What are the odds?"	Information on the true odds involved in most gambling activities through a comparison between probabilities of winning in gambling activities and very low probability events (e.g., probability of an asteroid impact).
Week 8		Component of PF: 1. Gambling profile, 2. Consequences of gambling, 3. Tips for safe gambling

At a two-month follow-up, students in the intervention group reported a reduction in gambling problems relative to those in the control group. However, there were no differences in gambling frequency, gambling expenditure, and attitudes toward the profitability of gambling between the two groups. In addition, frequent gamblers (i.e. those that gambled at least once a week at baseline) showed reductions in gambling problems and gambling frequency post-intervention. Frequent gamblers that only received personalised feedback showed significantly less realistic attitudes toward the profitability of gambling post-intervention. The authors concluded:

> *'The results indicate that a brief web-based intervention delivered in the school setting may be a potentially promising strategy for a low-threshold, low-cost, preventive tool for at-risk gambling high school students.' p.946*

Comments (from the author of the review):

The study indicates that a web-based approach can result in positive outcomes to reduce problem gambling. Also, it demonstrates that personal feedback alone is not sufficient and information such as about gambling fallacies is also a necessary condition to achieve change. In particular the study revealed that informing students about irrational thoughts and misunderstandings linked to randomness and probabilities (e.g. independence of chance events, illusion of control features, etc.) may lead to a desirable behaviour change.

7.2.2.6 'Amazing Chateau' Rational Emotive Education (REE) - Romania

The program to be described here was administered to two different groups of children aged 12-13 years old from grade six in Cluj-Napoca, Romania. The second study was a replication of the first study using a new sample of children. Todirita and Lupu (2013) reported on the initial study. The purpose of the study was to compare the influence of specific primary prevention with REE on the subjects' knowledge about games. The experimental design randomly assigned children (i.e. 81 children in total) aged 12–13 years old and comprising 37 male and 44 female, into three groups:

1. **Control**
   A control group which included 24 children.
2. **Information**
   A group who received specific information about games using the interactive software Amazing Chateau. This group included 29 children.
3. **REE**
   A group who received REE alone. This group included 28 children.

All children completed a questionnaire with 38 items at the beginning of the study and after 10 weekly interventional meetings. Each item had three answering options, children choosing only one correct answer.

REE is a prevention program which can be used in classes; it aims at teaching teenagers problem-solving techniques and at enhancing their emotional strength by making them aware of the irrational beliefs causing emotional distress and replacing them with rational, adaptive beliefs. According to the cognitive behavioural model, irrational cognitions lead to disruptive behaviours. A disruptive behaviour such as gambling can be modified either by changing irrational cognitions (i.e. general intervention) or changing knowledge about and attitudes with reference to gambling (i.e. specific intervention). Providing gambling specific information may be an effective way to prevent gambling problems among children. This could reduce their illusion of control; change their knowledge and their attitudes regarding games of chance and games of skill.

One psychologist and a student in psychology administered the experimental and control conditions to each of the following three groups:

1. **Control**
   This group was neither shown the software, nor presented the principles for REE. However, to thank the children for their participation and for ethical considerations, they were to be shown the software during the next school year.
2. **Information**
   This group had 10 weekly meetings with a specialist in gambling. They received information about gambling and gaming throughout the software designed for elementary school children. Children had the opportunity to experience two different types of activities: gambling activities and skill activities. During these activities children learnt that gambling makes you lose a lot of money and that you cannot predict the outcome of the game; it gave them the possibility to replace misconceptions (e.g. What are the chance when flipping a coin to land on head after five flips landed on head?), the illusion of control (e.g. Praying will help me win more), attitudes (e.g. Betting a lot of money makes me look 'very cool') and cognitive errors (e.g. Betting on the same numbers will increase my chances to win) with rational and correct conceptions.
3. **REE**
   This group had 10 weekly meetings with a psychologist specialist in gambling. REE offered the possibility to classify emotions into positive, negative functional and negative dysfunctional; children learnt about cognitive and behavioural ABC models, they were explained that emotions and behaviours

are triggered by cognitions; and by changing irrational cognitions they can change their emotions and behaviours.

Both programs (i.e. information via Amazing Chateau and REE) influenced students' answers to the post-test questions. The use of the CD-ROM significantly improved subjects' knowledge about gambling and corrected their information about how games work versus REE and the Control. The authors concluded:

> *'The research revealed that specific information has a greater impact on the children's knowledge, illusion of control, attitudes, and erroneous cognitions about gambling. That means that offering correct information about gambling to children we make changes in their cognitive structure and thus prevent the outcome of a disruptive behaviour.' p.166*

A replication study was conducted and reported by Lupu and Lupu (2013). Participants were randomised and included 75 children aged 12-13 years old split into three groups for the replication study:

1. **Control**
   A control group.
2. **Information**
   A group who received specific information (i.e. the CD-ROM and REE).
3. **REE**
   A group who received REE alone.

Subjects from the information group revealed significantly more correct answers than the control group. Also, subjects from the information group obtained significantly more correct answers than the REE group. The authors concluded:

> *'An important aspect revealed here is that prevention programs do work in changing erroneous cognitions if specific prevention programs (educating and correcting teenagers' erroneous cognitions about gambling) are combined with rational emotive education.' p.582*

Comments (from the author of the review):

Both studies used three classes from one school, so the sample is very small and limits generalisability of findings. No attempt was made to collect measures of gambling behaviour before or after the intervention. The status of these studies should be regarded as being a pilot. A longer follow-up would also be an improvement. The program was not delivered by teachers.

7.3 Reviews and meta-analyses of studies post year 2000

Six reviews or 'reviews of reviews' of school-based gambling interventions were identified from the literature review listed in order of recency:

1. McMahon, N., Thomson, K., Kaner, E., and Bambra, C. 2019, 'Effects of prevention and harm reduction interventions on gambling behaviours and gambling related harm: An Umbrella review', *Addictive Behaviours*, vol. 90, pp. 380-88.
   This 'review of review' analysed 10 reviews of which four reviews were post year 2010 of evaluated evidence for school-based programs involving 11 unique studies.

2. Oh, B.C., Ong, Y.J., and Loo, J.M.Y. 2017, 'A review of educational-based gambling prevention programs for adolescents', *Asian Journal of Gambling Issues and Public Health*, vol. 7, no. 4, doi: 10.1186/s40405-017-0024-5.
   This review analysed 17 studies of which only five were both relevant and were post-year 2010.
3. Keen, B., Blaszczynski, A., and Anjoul, F. 2017, 'Systematic Review of Empirically Evaluated School-based Gambling Education Programs', *Journal of Gambling Studies*, vol. 33, pp. 301-25.
   This review analysed 19 studies of which only nine were relevant and six were year 2010 or more recent.
4. Kourgiantakis, T., Stark, S., Lobo, D., and Tepperman, L. 2016, 'Parent problem gambling: A systematic review of prevention programs for children', *Journal of Gambling Issues*, vol. 33, pp. 8-29.
   This review analysed 16 studies of which only six were relevant and only four were year 2010 or more recent.
5. St-Pierre, R.A., Temcheff, C.E., Derevensky, J.L. and Gupta, R. 2015, 'Theory of Planned Behaviour in School-based Adolescent Problem Gambling Prevention: A Conceptual Framework', *The Journal of Prevention*, vol. 36, no. 6, pp. 361-385.
   This review analysed 19 studies of which only three were year 2010 or more recent.
6. Ladouceur, R., Goulet, A., and Vitaro, F. 2013, 'Prevention programs for youth gambling: a review of the empirical evidence', *International Gambling Studies,* vol. 13, no. 2, pp. 141-159.
   This review analysed 15 programs of which only seven were relevant and all, but one was pre-year 2010.

A small number of studies since 2010 have been included in some detail across five of the six reviews outlined above:

- Todirita and Lupu (2013) included in review two, three, four and five;
- Lupu and Lupu (2013) included in review two and three;
- Donati, Primi and Chiesi (2014) included in review two and three;
- Walther, Hanewinkel and Morgenstern (2013) included in review two, three, four and five;
- Canale et al. (2016) included in review three; and
- Williams, Wood and Currie (2010) included in review two, three, four, five and six.

All six studies are included in one, but only secondarily via reviewers in review two and six. Each of these studies has already been reported on in this section of the literature review. McMahon et al. (2019), the latest review, specifies the outcomes of the studies included by each of the six reviewers, ignoring year of publication. Almost all were published in the last 20 years.

Oh, Ong and Loo (2017) concluded that three of the five studies demonstrated a reduction in gambling behaviours. One of the three showed a decline in problem gambling.

Keen, Blaszczynski and Anjoul (2017) concluded five of the nine studies, that attempted to measure intervention effects on behavioural outcomes, demonstrated a significant reduction in gambling behaviour. However, all five studies had methodological inadequacies common to many studies in the field such as brief follow-up periods, lack of control comparison, and inconsistencies and misclassifications in the measurement of gambling behaviour, including problem gambling.

Kourgiantakis et al. (2016) concluded only two of the six studies demonstrated a reduction in gambling behaviours.

St-Pierre et al. (2015) was a theoretical paper. Of the 19 studies included very few attempted to measure changes in gambling behaviour due to the intervention. Of the three that did, only one (Walther, Hanewinkel and

Morgenstern 2013) was successful in modifying gambling behaviour by reducing the number of current gamblers immediately following the intervention. No long-term follow-up was the norm. Most studies were able to demonstrate significant improvements in knowledge about gambling and/or excessive gambling, reductions in participants' erroneous cognitions or misconceptions about gambling. None of the 19 had demonstrated that the gains in knowledge or reductions in misconceptions are maintained over time. Only three studies included were dated 2010 or later.

Ladouceur, Goulet and Vitaro (2013) concluded two studies demonstrated a reduction in gambling behaviours. However, one study which demonstrated reductions in time and money spent gambling found no reduction in the likelihood of gambling-related problems.

With regard to the quality of the six studies included above, Keen, Blaszczynski and Anjoul (2017) rated two as 'strong', two as 'moderate', and two as 'weak':

- Williams et al. (2010) was rated as 'strong';
- Todirita and Lupu (2013) was rated as 'moderate';
- Lupu and Lupu (2013) was rated as 'weak';
- Walther et al. (2013) was rated as strong';
- Donati et al. (2014) was rated as weak'; and
- Canale et al. (2016) was rated as 'moderate'.

Keen, Blaszczynski and Anjoul's (2017) quality ratings suggest a strong correlation between data collection methods and overall global rating.

Oh, Ong and Loo (2017) suggested that gambling educational programs that targeted risk factors provide useful insights into improving and restructuring cognitive process in relation to gambling. Most studies placed too much emphasis on cognitive aspects that can contribute to gambling behaviour, while other risk factors such as parental and peer influences, which are known contributing factors to youth problem gambling development were not addressed. As adolescents learn through modelling and are in the stage where they are more susceptible to peer influences and peer pressure, programs that integrate parental and peer support can provide a holistic prevention against problem gambling, as suggested in the 25 year review of research on youth gambling (Derevensky and Gilbeau 2015) mentioned earlier.

On the other hand, some programs aim to increase the influence of protective factors to address problem gambling among youths, provide an alternative perspective. Williams, Wood and Currie (2010) found that addressing gambling knowledge and fallacies, as well as increasing problem-solving skills could reduce gambling behaviour.

Keen (2017) asserts that main indicator of programs effectiveness is long-term behavioural change. The current author, a research psychologist, would assert that expecting such an outcome is unreasonable for an education program versus a behaviour change programs. Education is primarily about enlightenment and encouraging informed decision-making. Achieving behaviour change may need to involve environmental supports such as peers, parents even legislation. The biggest behavioural improvements in smoking cessation and road safety (i.e. drink driving, seat belts, and bicycle helmets) did not come from education alone.

The Keen (2017) review determined that programs were effective in reducing common misconceptions and fallacies about gambling, increasing knowledge of gambling forms, odds highlighting differences between chance and skill, and creating more negative attitudes toward gambling. Some studies also demonstrated improvements in more specific skills such as coping, awareness and self-monitoring, attitudes toward and dialogue about peer and familial gambling, problem solving and decision-making:

> *'However, from these results it is not possible to determine if such cognitive improvements prevent the development of future gambling problems. Additionally, any improvements if present may deteriorate in the long term (Donati et al. 2014; Ferland et al. 2005; Lupu and Lupu 2013). Given only one study measured outcomes at 12 months, it is difficult to determine if such deterioration effects are unique to these programs or if they are likely to be observed in all preventive efforts.' p. 317*

The Keen (2017) review is instructive with respect to program content and frequency across the 19 studies reviewed:

- Nineteen targeted cognitive aspects of problem gambling, such as fallacies and misconceptions;
- Thirteen attempted to teach about the unprofitability of gambling (e.g. house edge, odds);
- Eleven covered components of randomness in gambling;
- Eleven raised awareness of the signs and symptoms and consequences of problem gambling;
- Six included specific skills such as coping, problem-solving and decision-making;
- Ten studies did not measure behavioural outcomes and three of these were delivered over more than one session or integrated into the school curriculum; and
- Seven of the nine studies measuring behavioural outcomes involved programs lasting more than one session.

> *'More comprehensive programs, and those with booster sessions, tended to perform better than their brief counterparts on cognitive and behavioural interventions' p.319.*

The authors suggest it would be more economical for existing teachers to adapt and deliver programs to their students via some form of manual or teaching kit. The PSHE (2019) teacher handbook (i.e. How to address gambling through PSHE education: teacher handbook) would fit this suggestion.

The review found positive results for online approaches and computer programs, including Amazing Chateau and Lucky, and commend WBI as cost effective, consistent, unbiased, and socio-culturally relevant to youth.

They also raise a concern about the difficulties in teaching about randomness and expected value which teachers may feel will be difficult for students to understand yet such concepts are important to understanding unprofitability and unpredictability. Finally, they warn:

> *'Promoting a negative viewpoint of gambling and its associated consequences are not sufficient to prevent gambling problems.' p.321*

The review by Ladouceur, Goulet and Vitaro (2013) was a review of studies primarily between years 2000-2010 with one much earlier in 1993, including:

- Gaboury and Ladouceur (1993), A school-based prevention program;
- Ferland and al. (2002), 'Lucky', the video program – French version;
- Lavoie and Ladouceur. (2004), 'Lucky', the video program – French version;
- Ladouceur, Ferland, Roy and al. (2004), 'Count Me On' program;
- Lemaire and al. (2004), 'It's Your Lucky Day' program;
- Vitaro and al. (2005), 'Youth gambling: An awareness and prevention workshop Level II' – French version;
- North American Training Institute (n.d.), 'Kids Don't Gamble… Wanna Bet?' program;
- Turner, MacDonald, Bartoshuk and al. (2008), A one-hour school-based preventive program;
- Taylor and Hillyard (2009), 'Don't Gamble Away Our Future';
- Williams (2002), McGill adolescent gambling prevention CD-ROM;
- Williams and al. (2004), 'Gambling: A Stacked Deck' program;
- Williams and al. (2010), 'Gambling: A Stacked Deck' program;
- Ferland and al. (2005), A three-session school-based awareness workshop; and

- Turner, Macdonald and Somerset (2008), A curriculum of problem gambling.

The review concluded programs are generally effective in reducing misconceptions and increasing knowledge about gambling. However, a lack of long-term follow-ups and of behavioural measures makes it difficult to draw any clear conclusions about the effectiveness of such programs.

With few exceptions, studies showed no positive effects on gambling behaviours or gambling-related problems. The few that did could not demonstrate that the effects on gambling behaviour were achieved through the improvement of personal and interpersonal skills, which changed little after the intervention. The study by Williams, Wood and Currie (2010) points to promising strategies by demonstrating that the inclusion of a booster session can improve retention and consolidate attitudinal changes.

The Ladouceur, Goulet and Vitaro (2013) review questioned whether the universal approach by targeting all students independent of their individual characteristics was the way to go. It may be a good strategy to increase youth awareness about gambling in general, but it may not be sufficient for youth at risk of developing gambling-related problems. In such cases, a targeted prevention approach may be more advisable.

> *'This fact brings us to a fundamental question that should serve as the basis of any prevention approach with youth: what is the main purpose of the preventive strategies? Is it to promote awareness about gambling among the majority of youth, or is it to prevent gambling-related problems among a minority of youth? If the main purpose is to prevent the development of excessive gambling and related problems, it would be critical to target at-risk subgroups and risk factors for gambling-related problems. As demonstrated by others, prevention sessions conducted by gambling experts are more effective for youth at risk of gambling problems than others. Thus, it would be appropriate for future prevention programs to screen these youth and engage them in effective and relevant preventive interventions.' p.156*

The review by Kourgiantakis et al. (2016) set out to review programs aimed at children with problem gambling parents. However, all of the problem gambling prevention programs in the selected studies were universal and do not specifically target children of problem gambling parents or any other specific subgroups.

Another gap they pointed out was the lack of family focused prevention strategies which the substance use literature has shown to be the most effective form of prevention. Their review was heavily weighted to studies pre-year 2010 with only four of the 16, 2010 or later.

Most of the studies recruited participants through schools and were school-based prevention programs. All of these studies (i.e. 16 in total) used samples of students aged eight to 19 years old. Eleven studies evaluated problem gambling prevention programs that were one session in length. The remaining studies examined programs that ranged between three and 10 sessions. Seven studies did not have any follow up measurements. Most studies with follow up had a single post-test measurement after one to three months. The majority (i.e. 12 in total) of the studies in their review aimed to increase participants' knowledge about gambling and change erroneous beliefs about gambling. Five studies evaluated programs that not only aimed to increase knowledge and change beliefs, but also develop skills.

Most of the studies found that these programs can increase knowledge and change attitudes towards gambling in children and youth. A study evaluating a one-hour program by Turner et al. (2008) showed that participants absorbed only a slight increase in knowledge about random events. Another study found that, while participants did report that the website raised awareness about gambling, the study nevertheless could not determine if there were changes in gambling knowledge and beliefs (Korn et al. 2006).

Only two studies in their review showed that there were changes in gambling behaviour post-intervention (Walther, Hanewinkel, and Morgenstern 2013; Williams, Wood and Currie 2010). Five studies evaluated the

effects of the program on skills such as decision making, problem solving, coping, and self-monitoring (Ferland, Ladouceur and Vitaro, cited in Keen, Blaszczynski and Anjoul 2017; Turner et al. 2008; Turner, Macdonald, and Somerset 2008; Williams 2002; Williams, Wood and Currie 2010). Three out of the five studies showed changes in coping skills, self-monitoring, problem solving and/or decision making (Turner, Macdonald, and Somerset 2008; Williams, 2002; Williams, Wood and Currie 2010).

Since this literature review focussed on studies from 2010 onwards the references above for these earlier studies are not included in this literature review's list of references.

7.4 Gambling and risky behaviours in youth

In the light of the finding above that high-risk students are unlikely to benefit from gambling interventions the findings on impulsivity and problem gambling need to be considered for programs development as do other influences. Secades-Villa et al. (2016) reported a study of 874 high school 15-year-olds in Spain, finding that there is a strong relationship between impulsivity and gambling in adolescence and this relationship is bidirectional.

Zhai et al. (2017) conducted surveys across schools in Connecticut involving 4,523 student aged 14-18 years old. Greater alcohol use and especially binge-drinking was associated with elevated gambling frequency, likelihood of at-risk/problem gambling and perceptions of family and peers gambling, leading the authors to advocate educating not only students but also parents and peers.

Rahman et al. (2014) reported on a large-scale study of high school students, concluded that inter-relationships between problematic drinking and gambling in youth may relate to more permissive attitudes across those domains. Stronger links between at-risk/problem gambling and gambling with adults in the high-frequency-drinking group raises the possibility that interventions targeting adults may help mitigate youth gambling and drinking.

Leeman et al. (2014) reported a study of 2,805 high school students finding a strong relationship between perceived parental permissiveness toward gambling and adolescent gambling, and also, all substance-use behaviours as well as alcohol and drug problems and smoking.

Slavin et al. (2013) collected data from 2,276 Connecticut high school students. Gambling perceptions were more permissive and at-risk/problem gambling was more frequent amongst adolescents reporting serious fights versus those denying serious fights. A stronger relationship between problem-gambling severity and regular smoking was observed for adolescents involved in fights.

Weinberger et al. (2015) set out to examine the relationships between smoking and gambling in 1,591 Connecticut high-school students. For at-risk problem gambler adolescents, smoking was associated with greater online, school, and casino gambling; gambling due to anxiety and pressure; greater time spent gambling; early gambling onset; perceived parental approval of gambling; and decreased importance of measures to prevent teen gambling. For low risk gambling adolescents, smoking was associated with non-strategic gambling (e.g. lottery gambling); school gambling; gambling in response to anxiety; gambling for financial reasons; greater time spent gambling; and decreased importance of measures to prevent teen gambling. Stronger relationships were found between smoking and casino gambling, gambling due to pressure, earlier onset of gambling, and parental perceptions of gambling for at-risk problem gambling adolescents versus low risk gambling adolescents. The authors conclude:

'Smoking may be a marker of more severe gambling behaviours in adolescents and important to consider in gambling prevention and intervention efforts with youth.' p.131

Walther, Morgenstern and Hanewinkel (2012), in a report of a cross-sectional survey with 2,553 German students aged 12-25 years old, found positive correlations between tobacco, alcohol and cannabis use and a smaller positive correlation between problematic gambling and problematic computer gaming. Problematic computer gaming co-occurred only with cannabis use, whereas problematic gambling was associated with all three types of substance use.

The Longitudinal Study of Australian Children which comprises multiple Australian youth annual surveys (Warren and Yu 2019) revealed those who engaged in other risky behaviour such as smoking and drinking alcohol, or had friends who smoked or drank, were also more likely to gamble. Boys, but not girls, who had been either the victim or perpetrator of bullying at school were also more likely to report having gambled.

7.5 Summary of evidence of school-based gambling projects

At the end of the last decade, the Gambling - Inquiry Report from the Productivity Commission (2010) indicated universal school-based programs that target a number of risky behaviours might be effective in helping young people to develop an understanding of the potential risks and harms associated with gambling. However, more research is needed to test the effectiveness of school-based gambling education programs as evaluations of similar education programs about alcohol and tobacco have shown that, while they can raise awareness, they could have no, or even opposing, behavioural impacts.

'Given the lack of evidence on behavioural effects of school-based gambling education programs, a key question is whether it is possible to draw some insights for gambling policy from other school-based social education programs.' p.9.12

'While there are limited evaluations of school-based education for gambling, they find improved understanding of gambling, but little evidence of positive behavioural change. The evidence base on education aimed at other risky activities, including alcohol, drugs and road safety, also shows modest impacts and, in some cases, increased risk-taking behaviour.' p.9.15-16

'Where school-based gambling education is undertaken, the Commission believes that such programs are more likely to be effective if:

- *both the students and teachers are keen to participate;*
- *the program is delivered around the time students start to experiment with gambling (around years one and two of high school) with follow-ups in years 11 and 12, when riskier behaviours appear more common;*
- *the program attempts to modify both existing and future risky gambling behaviour; and*
- *there is a strong focus on the scope for harm to occur from gambling, and on the reasons why.' p.9.19*

In 2020, this current literature search suggests that despite different approaches school-based youth gambling prevention programs have demonstrated their short-term effects, such as improving gambling knowledge and

changing attitudes towards gambling after intervention (Todira and Lupu 2013; Huic et al. 2017; Walther, Hanewinkel and Morgenstern 2013).

One study indicated impacts on actual gambling behaviour such as on 'total hours spent gambling each week' (Calado et al. 2019) but others have failed to show impacts on gambling frequency and gambling expenditure (Canale et al. 2016; Huic et al. 2017).

There are only few studies that have assessed the long-term effectiveness of youth gambling interventions with respect to behavioural change in the literature (Oh, Ong and Lu 2017). Some studies have demonstrated some limited effect on the gambling behavioural change (Donati, Primi and Chiesi 2014; Williams, Wood and Currie 2010) but one study reported no significance influence on lifetime gambling in a short-term program (Walther, Hanewinkel and Morgenstern 2013). It suggests that studies with longer follow-up period are needed to test the long-term effect of any intervention. The study by Calado et al. (2019) which involved only a six-week period did show a significant reduction in the percentage of at-risk /problem gamblers. Using repeat interventions 12 months apart has shown to decrease the prevalence of problem gambling (Ren et al. 2019).

With respect to adolescents, most gambling programs implemented in schools include both abstinence and harm reduction elements. St-Pierre and Derevensky (2016) classified the school-based gambling-specific prevention programs into two broad categories:

1. Psycho-educational prevention programs.
2. Comprehensive psycho-educational and skills training prevention programs.

Prevention programs from both categories share goals referring to increasing awareness or knowledge about gambling and issues related to gambling, inclusive of the nature of gambling, gaming odds and probabilities, erroneous cognitions and gambling fallacies, warning signs of problem gambling and consequences related to problem gambling.

The second group of prevention programs includes a broader scope of themes including self-esteem, interpersonal and coping skills, problem-solving, decision-making and refusal skills. As such they incorporate not only youth problem gambling risk and protective factors, but also general risk and protective factors for adolescent risk behaviour.

Existing prevention programs are mostly classified as universal prevention programs (i.e. aimed at general population with no significant risks) and most of them fall into the category of psycho-educational school-based prevention programs. The vast majority of prevention programs in the field focus on the cognitive component (e.g. knowledge, attitudes, normative beliefs, misconceptions and erroneous cognition in general and related to gambling) (Donati, Primi and Chiesi 2014; Taylor and Hillyard 2009). Some of them incorporate inter- and intrapersonal skills and focus on general prevention of risk behaviour (e.g. problem-solving, decision-making, coping skills, refusal skills, social-emotional skills (Todirita and Lupu 2013). However, only a few are comprised of both components (Williams et al. 2012; St-Pierre and Derevensky 2016).

Research evidence about the effectiveness of prevention programs that focus only on the cognitive component show a significant change of correct knowledge and misconceptions about gambling (Donati, Primi and Chiesi 2014; Taylor and Hillyard 2009) especially for younger students and boys (Taylor and Hillyard 2009). However, there is only limited effect for at-risk/problem gamblers (Donati, Primi and Chiesi 2014), and only a few programs reported sustainable (i.e. long-term) effects or changes in gambling behaviour (Donati, Primi and Chiesi 2014; Williams, Wood and Currie 2010).

A number of authors (Williams et al. 2012; Wulfert, Blanchard and Martell 2003) have questioned the effects of programs based on statistical and mathematical knowledge with weak evidence of their success in behavioural

change. Williams et al. (2012) argue that it is possible that researchers have been focused on wrong types of knowledge and that focusing on gambling fallacies may be more productive than efforts focused on improved understanding of probability.

School-based universal interventions that, along with the cognitive component, involved inter- and intrapersonal skills also show improvements in knowledge about gambling and risks of gambling (Todirita and Lupu 2013) as well as in skills, mostly problem-solving and decision-making (Turner, Macdonald and Somerset 2008), as well as coping skills (Williams, Wood and Currie 2010).

Systematic reviews showed that programs with both components (i.e. knowledge and skills) documented positive effects on behaviour change as well, but still to very limited and questionable extent due to lack of long-term follow-up or longitudinal research (Ladouceur, Goulet and Vitaro 2013; Keen et al. 2016).

The conclusion on youth gambling prevention programs effectiveness can be drawn from Williams et al. (2012) work that clearly points out the necessity of comprehensive programs with a broad scope of topics that include statistical knowledge about gambling, providing information on the potentially addictive nature of gambling, explaining gambling fallacies, building self-esteem, and peer resistance training.

8 Recommended content for gaming/gambling education

This section of the review starts by evaluating the convergence of gaming and gambling and reporting relevant school-based programs and interventions. It covers key recommendations for effective gambling education and assesses existing curriculum which may be fit for purpose (i.e. mathematics and health education). Finally, it provides further overarching considerations around combining psychoeducation and skills training.

8.1 The convergence of gaming and gambling

A sizeable growing literature exists in relation to the co-occurrence of gaming and gambling for youth. This co-occurrence usually is referred to as convergence and relates to video game playing and gambling. This literature has had little impact to date on documented evaluated school-based gambling programs. For this literature review, the reviewer searched each of the identified school-based programs for 'gaming'. The clear result was the terms 'gaming and gambling' are used concurrently almost as substitutes and the term 'gaming' is not used at all in some reviews (e.g. Sansanwal et al. 2015 study of teachers; Keen, Blaszczynski and Anjoul 2017 review of evaluated school-based programs). Most often 'gaming' was associated with electronic gaming machines.

One program (Calado et al. 2019) used the first session to differentiate between gaming and gambling:

> *'Each team were presented with images of videogames and gambling activities and were asked to indicate which of them were gambling….the concept of gambling was introduced, and students were made aware that gambling involves betting money or something of material value on an event with an uncertain outcome, and that humans are unable to control' Table 1*

The German Vernetze (Walther, Hanewinkel and Morgenstern 2013) 90-minute program (discussed in section 7.2.2.3 'Vernetze' German programs) had units covering four themes including internet use, online communication, computer gaming, and gambling.

One program referred to above in Thailand was specifically related to preventing gaming addiction (Apistwasana, Perngparn and Cottler 2018).

Back in 2011 a major Australian report did not include video gaming in its 13 gambling activities (Purdie et al. 2011). Remarkably the UK Fast Forward Gambling Education Toolkit (2019) still does not refer to gaming, other than gaming machines.

A typical quote from a report of a school-based program would be:

> *'Increasing the awareness or knowledge about gambling and issues related to gambling, inclusive of the nature of gambling, gaming odds and probabilities, erroneous cognitions and gambling fallacies, warning signs of problem gambling and consequences related to problem gambling' Huic et al. (2017) p.1013*

The convergence of gaming and gambling is recognised implicitly in more recent school-based materials for young people. For example, Ohio for Responsible Gambling, ChangeTheGame and its youth resource:

> *'If you spend hours on end playing video games on computers and mobile devices, you should know that many of those games actually replicate real-life gambling behaviours:*

- *Games offering opportunities for login rewards with instant upgrades create a habit of gaming every day;*
- *'Loot boxes' and spin-to-win rewards replicate real-life gambling opportunities by building competition among on-line friends and allowing players to earn fake money or other prizes; and*
- *Innocent-looking games with shiny, little rewards may seem harmless. But they could lead to lifelong issues for the young people exposed to them.'*

The significance of gaming via video games cannot be overstated. McBride and Derevensky (2016) summed up the convergence of gambling and video game playing:

> *'Both represent two leisure activities in which adolescents and young adults participate. There are psychological and behavioural parallels between some forms of gambling (e.g. slot machines, video lottery terminals, electronic gambling machines) and some types of video games (e.g. arcade games). Both activities operate on behavioural principles of variable reinforcement schedules in order to reward and prolong play and use exciting and stimulating sound and light effects within game play. Additionally, both activities have similar negative effects associated with excessive play (e.g. poor academic performance, moodiness, loss of interest in activities previously enjoyed, and interpersonal conflict). Thus, there is concern that children and adolescents who are attracted to video games, for both psychological rewards and the challenge, may be at greater risk to gamble.' p.156*

The authors examined the gambling and video game playing behaviour among 1,229 adolescents and young adults. Results indicate that gamblers, relative to non-gamblers, were more likely to play video games. Video game players were more likely than non-players to gamble. Both social and problem gamblers had higher rates of video game playing than did non-gamblers, and addicted gamers had higher rates of gambling than did social and non-gamers.

The pace at which technology has facilitated the convergence of online gambling and gaming has been much more rapid than that of the research examining this phenomenon. Much of the early research and school programs were based on the parallels between gambling and video game playing mainly examined arcade-type games and slot machine gambling among adolescents but that association may no longer hold. As gambling enters the digital age and converges with other digital media, including video games, clear-cut distinctions between the two activities begin to disappear. One of the biggest changes in the division between gambling and video game playing is the existence of social media games, that is, games played via social networking sites such as Facebook.

A recent report from Stuart et al. (2019) on Parent Zone report, of a UK survey carried out by Ipsos MORI stated that online games are an almost universal pastime among children, with 93% regularly playing. Of those, more than three quarters (76%) believe that online video games try to make you spend as much money as possible. Further, almost half (49%) believe that online video games are only fun when you spend money.

Australian data from the Longitudinal Study of Australian Children Annual Report 2019 (Warren & Yu 2019) indicate that young people who reported playing gambling-like games in the previous 12 months have also spent money on gambling and accordingly such games may normalise gambling.

Kim et al. (2017) reported participants noted the role of peer influence as well as incentives (e.g. sign up bonuses) as important factors that motivated them to start engaging in online gambling. Participants also noted a link between social casino games and online gambling. Specifically, several young adults reported migrating to online gambling within a relatively short period after engaging with social casino games. Potential mechanisms that may lead to the migration from social casino games to online gambling included the role of advertisements and the

inflated pay out rates on these free to play gambling like games. The results highlight the potential of social casino gaming to act as a gateway to online gambling, especially amongst this vulnerable population.

Freund et al. (2017) cited above, raise the issue of convergence:

> *'Examining gambling among young people also needs to consider new developments in gambling, such as the recent emergence of internet gambling. Online gambling may pose a particular risk for young people, given that it is easily accessible, and a familiar environment for young people who have grown up with computers and the internet. In addition, there is growing convergence between gambling and other activities such as computer games and video gaming, blurring the distinction between gambling and gaming. For example, many gaming sites offer rewards such as tokens or credits that can be swapped for monetary prize.' p.5*

The Victorian Responsible Gambling Foundation (VRGF) research agenda for 2018-2022 recognises that technological advancements, the convergence of gaming and gambling require on-going research into impacts on the community.

Wardle (2019) suggested the term 'convergence' relates to the introduction of gambling-like practices within video games where the emphasis has been explored from the viewpoint of the product, examining similarities in game/gambling mechanics rather than the convergence of behaviours in practice.

Wardle's paper focuses on the betting of skins within video games to explore co-occurrence with other forms of gambling among British children aged 11–16. Analysing the British Youth Gambling Survey showed that 39% of children who bet on skins in the past month had also gambled on other activities. Betting on skins and other forms of gambling increased with age and concordance of skin gambling/betting was greatest for those who also gambled online. Among gamblers, those who bet skins had higher rates of at-risk and problem gambling than those who did not (23% vs. 8%), though they had a greater breath of gambling involvement. Skin gambling alone was not significantly associated with at-risk gambling when other forms of gambling activity were considered. Skin betting and gambling on other activities cluster together, especially where the medium underpinning the behaviours is the same. The authors conclude:

> *'Children who engage in both skin gambling/betting and other forms of gambling should be considered at-risk for the experience of harms because of their heightened engagement in gambling and gambling-like activities.' p.1109*

Derevensky and Gainsbury (2016) indicated concerns given the popularity of social casino games raising the question as to whether the intersection between social media and gambling represents a potential risk for young people irrespective of the lack of financial investment.

Of particular concern are 'loot boxes' because they resemble gambling slot machines where no player skill is involved and the outcome (prize) is randomly determined. King and Delfabbro (2018a) in an editorial suggested that predatory monetisation schemes can be understood with reference to the concept of 'entrapment' (i.e. the belief that one has invested too much to quit).

King and Delfabbro (2018b) pointed out that video games are becoming increasingly monetised with the addition of in-game purchasing options, which has prompted some comparisons of these products to electronic gaming machines. The expansion and sophistication of 'micro-transaction' options in online games (e.g. 'loot boxes') has also led to concerns about vulnerable users (e.g. adolescents) overspending on these schemes. Currently, there are limited regulatory and/or consumer protection frameworks for video game monetisation schemes. The authors outline some potential measures in the areas of:

- Game design and in-game purchasing system characteristics;
- Transparency and accuracy of game design and features;
- Broad consumer protection measures; and
- Consumer information and industry accountability.

They conclude:

> *'As gaming and gambling continue to converge, there will be a greater importance placed on the need to understand the optimal approaches—including player education, interventions, industry action, and modifications to the activities themselves—to respond effectively to the needs and behaviours of this large and diverse player base.' p.11*

In another paper, Delfabbro, King and Gainsbury (2019) examined what is meant by skill in gambling and to what extent electronic skilled-gambling games differ from existing forms of gambling.

Gainsbury (2019) pointed out gambling problems, including among adolescents, are not a new phenomenon. Whilst a few studies support the theory that gambling themes within games will increase the uptake of gambling by normalising gambling, creating favourable attitudes, and encouraging migration to gambling. The migration hypothesis is that social casino games will encourage uptake of gambling, particularly among those who have made in-game purchases. On the other hand, prevalence studies indicate that the level of gambling problems in the adult population has remained relatively stable over the past 30 years, despite the introduction of new games. These studies indicate that gambling participation is decreasing, and younger generations are less likely to engage in traditional forms of gambling such as slot machines. Gainsbury writes:

> *'More research is unquestionably needed to further unpack the relationship between gaming and gambling and related behavioural addictions. Research that includes longitudinal components and assesses directionality and causation of engagement and problems will inform on the dynamic interactions between these activities and related harms… An Australian study found that nine percent of adolescents and 17 percent of adults surveyed reported that playing social casino games decreased how much they gambled, 12 which is consistent with qualitative reports that the games reduced urges to gamble. Engagement with gambling within games may be educational to teach people the low chances of winning, the impact of spending money and not receiving the expected benefits, and to allow people to engage in gambling-like scenarios with lower costs than actual gambling.' p.82*

The Australian study was by authored by Gainsbury et al. (2015), commissioned by Gambling Research Australia.

Mark Griffiths (2018) in his article, expresses a personal opinion:

> *'Personally, I view the buying of 'loot boxes' as a form of gambling, particularly because the 'prizes' won are (in financial terms) often a lot less than that of the price paid. Obviously, I am out of step in relation to the regulators in my own country, but if third-party websites continue to host services where in-game virtual items can be bought and sold, the activity definitely constitutes a form of gambling by almost any definition of gambling currently used in the field of social sciences.' p.54*

Some psychologists suggest that while gambling-like games and randomised 'loot boxes' within online games are not currently classified as gambling, exposure to these activities at a young age may normalise gambling behaviour in the future (Griffiths, 2018). In Australia, while these activities are still legal, in a submission to the 2018 Senate Inquiry into gaming micro-transactions for chance-based items (Deblaquiere, Carroll and Jenkinson, cited in Warren and Yu, 2019) recommended the prohibition of micro-transactions for chance-based items in online games available in Australia in order to alleviate the public health risks and associated costs with further normalising gambling in the Australian community through the provision of these items.

Two recent studies of adults reported in Brooks and Clark (2019) concluded:

> *'These results demonstrate that besides the surface similarity of 'loot boxes' to gambling, loot box engagement is correlated with gambling beliefs and problematic gambling behaviour in adult gamers.' p.24*

This relatively brief review thus far, on convergence of gaming and gambling and possible impacts on problem gambling behaviour, has been included in this section to remind any would-be designer of school-based gambling programs that gaming is an essential element in young people's leisure activities including elements that appear to involve gambling.

Recommended reading for any such program development is by King and Delfabbo (2020), which is available online at https://www.sciencedirect.com/science/article/pii/S2352154619301044. The authors provided an excellent list of references including recommended readings and conclude that further research is needed to fill in gaps in current understanding of the ways in which gaming-gambling crossover activities and promotions influence users. Some of the articles mentioned in their review have been included above. The review above is not comprehensive but illustrative of some of the literature on the topic.

8.2 What should a school-based gambling program teach?

8.2.1 Mathematics: probability and statistics

Given that problem gamblers' have been found to have relatively low knowledge of the nature of random events and also coping skills, Turner, Macdonald and Somerset (2008) tested a curriculum designed to overcome these deficiencies in two small-scale studies. The prevention curriculum consisted of six lessons and a summary lesson complete with group activities, handouts, resource text, overheads, an interactive CD-ROM and a VHS tape. It focussed on the connection between coping skills, self-monitoring or meta-questioning skills and random events knowledge. Both studies showed significant increases in measures of random events knowledge. In study two, a significant increase occurred also for coping knowledge but increases for self-monitoring failed to reach significance. The authors concluded that it was possible to teach students about the nature of random events and the concept of coping skills.

An early study by Williams and Connolly (2006) examined the influence of improved knowledge of odds and mathematical expectation on the gambling behaviour of university students. A group of 198 introductory statistics students at the University of Lethbridge, Lethbridge, Alberta received instruction on probability theory using examples from gambling. One comparison group of 134 students received generic instruction on probability and a second group of 138 non-statistics students received no mathematical instruction. Six months after the intervention, students receiving the intervention demonstrated superior ability to calculate gambling odds as well as resistance to gambling fallacies. Unexpectedly, this improved knowledge and skill was not associated with any decreases in actual gambling behaviour.

It is interesting to note that these changes only occurred in statistics classes that received gambling-specific instruction on probabilities. Statistics classes that received generic information on probability theory did not have an improvement in their ability to calculate gambling-specific odds. The authors concluded:

'The primary purpose of this intervention was to examine the impact this improved knowledge and skill had on actual gambling behaviour. The presumption was that if students thoroughly understood and experienced the negative mathematical expectation of gambling games they would gamble less. Unexpectedly, this proved not to be the case. Students receiving the intervention had no significant self-reported decrease in their likelihood of gambling, their likelihood of being a problem gambler, the amount of time they spent gambling, or the amount of money they spent gambling. There was also no significant change in their attitude toward gambling. To be fair, dramatic decreases in gambling behaviour were not necessarily anticipated, as the intervention was not overtly advocating abstinence and it was not intended to be a comprehensive problem gambling prevention program. Also, the majority of students were gambling at non-problem levels prior to the intervention and continued to do so after the intervention (although there was also no significant change among the 40 students who were problem gamblers).

A truer test might be whether students receiving the intervention have a lower future incidence of problem gambling. However, the absence of behavioural change is not very encouraging. Furthermore, the lack of association between changes in gambling math skill or course grade with changes in gambling behaviour in the regression analyses provides further evidence that knowledge about gambling odds and mathematical skill may not be that important.

In retrospect, it may be that teaching people about gambling odds is analogous to telling smokers about the harmful effects of smoking or alcoholics about the harmful effects of drinking. Individuals involved in these behaviours are usually already aware of these facts. Knowing something and having this knowledge alter your behaviour are two different things, as evidenced the general finding that primary prevention programs tend to be effective at changing knowledge but not behaviour.' p.66

Lowe and Money (2017) reported on a two-year joint project trial between the Mathematical Association of Victoria (MAV) and the VRGF developing units of work that use the gambling issue as a context for covering the probability and statistics strand of the Victorian curriculum. The MAV has developed five units of work on the gambling theme, two for Year 10 and three shorter units for Victorian Certificate of Applied Learning (VCAL). Three key ideas are involved:

1. The saying 'chance has no memory' summarises what mathematics teachers recognise as independent events. The gambling context strengthens students' understanding of how this concept refutes the many misconceptions that gamblers have about random outcomes.
2. The equation 'expected return to the punter equals probability times pay-out' is the mathematical equivalent of the 'risk versus reward' theme of the wider curriculum. It adds a meaningful purpose to the study of probability.
3. The saying 'Short term gain? – Long term pain!' summarises the decreasing probability of breaking even as a commercial gambling game continues. The punter's average percentage loss remains the same, but the spread of results becomes less likely to extend from losses into wins.

The Year 10 units are designed to fully cover the curriculum in probability and statistics at this level. Each unit has eight lessons, all matched to outcomes of the Victorian curriculum. The material consists of lesson plans, worksheets and spreadsheet templates that allow teachers and students to generate a large number of trials. They are available from the MAV website (www.mav.vic.edu.au).

The three VCAL units are linked to specific learning outcomes in Numerical Information and Data and are designed for implementation at foundation, intermediate or senior level.

The authors point out from their experience with the trial:

- The time allocated to statistics and probability varies considerably from school-to-school;
- There is a disappointing gap in the 'official' mathematics curriculum. While 'risk versus reward' is a theme of economics and health education, the equivalent 'probability times pay-out' is left out of the mathematics description;
- The gambling context exposes otherwise unsuspected misunderstandings in relation to random outcomes;
- The use of repeated simulations provides students with deep understanding of the link between theoretical probability and relative frequency – including its variability; and
- Experienced teachers confidently adapt the lessons to the requirements of their classes. At Year 9 they might replace the worksheets with student-centred predict-observe explain investigations. In contrast, at VCAL level they might rely more heavily on class activities, the worksheets and the important final discussions that follow.

Their short paper provides teachers with a number of easily understood worked examples.

8.2.2 Health education

The PSHE conducted a literature review before designing and releasing the PSHE Association (2019) teacher handbook, How to address gambling through PSHE education: teacher handbook. Their summary of that review with respect to the knowledge, skills and attributes likely to benefit young people as they navigate choices to gambling was:

- *'Increasing awareness of one's personal autonomy, intrinsic goals, and ethical values;*
- *Increased self-efficacy to act in line with them, resisting peer or other influences;*
- *Emotion regulation skills, including coping adaptively with negative emotions and adaptive ways of sensation-seeking;*
- *Positive social norms (where individuals believe their peers and/or family are more approving or more involved in gambling);*
- *Understanding of probability, odds, house edge, randomness, superstition and other 'thinking errors' such as a sense of deservedness;*
- *Understanding of gambling industry strategies to draw people in and keep them gambling, including those that exploit natural human biases and errors; and*
- *Gambling risks and harm.' p.14*

As a result of gambling education during the primary phase, pupils should be able to understand:

Nature of risk

- *Assess risk in a variety of everyday situations; and*
- *Identify what factors make a risk worth taking or mean a risk is too great.*

Key principles of gambling

- *Explain what gambling means;*
- *Give examples of winning, losing, saving and spending;*
- *Identify different ways people can win, lose or spend money; and*
- *Explain luck, chance, probability and risk in relation to gambling behaviours.*

Influences on gambling decisions

- *Explain what can affect someone's decision to spend, save or gamble money (or other items);*
- *Describe how it feels to win or lose (games, money, precious items);*

- *Explain how or why someone might feel pressure to gamble; and*
- *Explain why some people may choose not to gamble at all.*

Help-seeking

- *Describe what to do if they are concerned about someone's gambling behaviour'. PSHE (2019) p.14*

As a result of gambling education during the secondary phase, pupils should be able to:

Nature of risk

- *Explain how to make informed decisions about risk;*
- *Identify what factors make a risk worth taking and which factors mean a risk is too great; and*
- *Evaluate factors which affect the likelihood and degree of risk in different situations.*

Key principles of gambling

- *Define gambling and suggest examples of common gambling behaviour and evaluate whether these are a worthwhile use of money;*
- *Describe the law as it relates to gambling; and*
- *Explain what 'impulsivity' and 'delayed gratification' are and how they relate to gambling.*

Gambling-related harms

- *Identify and challenge common gambling stereotypes;*
- *Describe the potential risks associated with gambling;*
- *Explain how chance-based transactions in online games can carry similar risks;*
- *Explain the risk of debt from gambling; and*
- *Describe the potentially addictive nature of gambling and the links with mental wellbeing.*

Influences on gambling decisions

- *Explain why people make different decisions about whether or not to gamble;*
- *Describe how others can influence gambling-related decisions; and*
- *Explain/demonstrate ways to resist influence.*

Odds, probabilities and thinking errors

- *Assess the probabilities of winning and losing in different forms of gambling;*
- *Describe how the gambling industry sets odds that ensure they make a profit;*
- *Explain the techniques the gambling industry uses to encourage gambling and how to resist these; and*
- *Explain the thinking errors and biases associated with gambling.*

Help-seeking

- *Identify warning signs that a person needs help with their gambling behaviour; and*
- *Describe ways to get help for people with gambling-related issues' PSHE (2019) p.15*

As already mentioned, gambling represents one tiny part of a very crowded UK Health Education curriculum and this situation is likely to be mirrored in the NSW Health Education curriculum. The NSW ORG needs to keep this in mind in deciding its school-based educational strategies for NSW schools.

8.2.3 What should the focus be?

A recent review paper by Keen, Anjoul and Blaszczynski (2019) puts forward four recommendations:

1. **Shift the focus away from harms to increase youth engagement**
   Gambling education programs should shift from focusing on explaining the negative consequences of gambling to teenagers. Instead, programs could explain how and why people develop problem gambling. Teenagers may find information about problem gambling development more relevant and relatable. As such, they may be more engaged with the program and learn more about gambling.
2. **Apply a cognitive-developmental approach to gambling education**
   The authors recommend that gambling education programs use a cognitive-developmental approach to correct teenagers' misconceptions about gambling. People who have misconceptions about gambling are more likely to develop gambling problems. Evidence suggests that a cognitive approach is better than other approaches at influencing gambling behaviour. Cognitive-developmental approaches teach people strategies to replace their unhelpful thoughts and beliefs with useful ones. Gambling misconceptions may arise because of a lack of understanding of specific concepts in mathematics. Thus, it is important to teach teenagers mathematical concepts related to gambling, such as probability and randomness.
3. **Educate about gambling mathematics to prevent harm**
   The authors recommend that gambling education programs teach teenagers about gambling misconceptions first and then teach them gambling mathematics. Research suggests that teaching teenagers about gambling misconceptions can encourage them to rethink their beliefs about gambling outcomes. As teenagers rethink their beliefs, they may be more willing to accept the mathematical concepts that underlie gambling games. Some evidence suggests that people who understand gambling mathematics may be less likely to develop gambling problems.
4. **Leverage technology to teach complex concepts**
   The authors suggest that gambling education programs use technologies to teach teenagers about complex mathematical concepts related to gambling. Specifically, programs could use computer-generated visualizations and animations. Research suggests that visual formats help people learn complex science concepts. Computer visualisations can also demonstrate that gambling losses are inevitable over a long period of time. Teenagers who see how gambling outcomes play out over time may be less likely to be harmed by gambling.

The authors from this paper conclude:

> *'However, it is important that these suggestions are tested empirically using robust experimental and longitudinal research methodologies and are well supported by regulatory practices and legislative policies.' p.378*

9 Australian school-based gambling education initiatives

This section of the review presents and details the content of existing school-based gambling programs implemented in each state of Australia.

9.1 Examples of responsible gambling in curriculums Australian schools

9.1.1 Tasmania: 'What's the Real Deal?'

The Department of Communities, Tasmania has produced a teaching kit for Tasmanian high schools year levels seven and eight which can be accessed at https://www.communities.tas.gov.au/disability-community-services/gambling/current_programs_and_activities/current_campaigns/whats_the_real_deal.
The kit is titled Sorting out the luck, loss, myths and realities of gambling.

What's the Real Deal? is designed to assist teachers to educate young people about the risks and potential problems associated with gambling, supporting students to make informed choices and identify warning signs of problem gambling in themselves and others.

The kit examines odds, beliefs and superstitions about gambling, the pathways to problem gambling and the help available, the role of advertising in influencing gambling choices, and the interests of the different stakeholders in the gambling sector. What's the Real Deal? can be downloaded and the Gambling Support program can supply the DVD of video resources. There are four units, resources, worksheets and a CD with videos:

- **Unit one**
  Hits or myths:
  - Focus curriculum area is Health and Wellbeing; and
  - Supporting curriculum area is Mathematics - numeracy.
- **Unit two**
  What's your view about gambling:
  - Focus curriculum area is Health and Wellbeing; and
  - Supporting curriculum area is Society and History.
- **Unit three**
  What on earth is advertising:
  - Focus curriculum area is Health and Wellbeing; and
  - Supporting curriculum area is Information and Communication Technologies.
- **Unit four**
  A gallery about gambling:
  - Focus curriculum area is The Arts; and
  - Supporting curriculum areas is Health and Wellbeing, and English - literacy.

Unit four can be addressed when students have completed the first three units. Unit four is a demonstration, and in effect a culminating performance, of the learning in the previous three units.

No literature relating to implementation or evaluation was found.

9.1.2 Queensland

The literature research identified Gambling: That's entertainment? as part of 'Studies of Society and Environment, Middle Primary: Level'. However, the syllabus was dated year 2000. It can be accessed at https://find.search.qld.gov.au/s/search.html?query=gambling&num_ranks=10&tiers=off&collection=qld-gov&profile=qcaa&form=simple. Details of the introduction of the programs, its content and evaluation can be found in two papers: Curtin, P. and Smith, C. 2002, 'Why risk it? Exploring responsible gambling in the school setting', paper presented at the AARE Annual Conference Brisbane, University of Queensland, 2-5 December, and Curtin, C. and Honeyfield, N. 2002, 'The Lighthouse Project: An Evaluation of Responsible Gambling Curriculums in Schools', National Association of Gambling Studies 2002 Proceedings, pp. 180-186.

The project was described as a whole school approach. The evaluation (Curtin and Honeyfield, 2002) was qualitative and focussed on teachers and implementation. The authors argue that to achieve the goals of projects like the Lighthouse project, in future two critical elements need to be in place:

> *'1. The way in which the school community/educators/administrators engage or are motivated to engage with the issues.*
>
> *2. The energy, enthusiasm and insight of the educators impacts when teaching the module.' p.186*

Searching the Queensland Curriculum Standards Authority website with the term 'gambling' reveals that the topic is currently included in a number of curriculums including:

- Essential Mathematics Applied Senior Syllabus 2019;
- Specialist Mathematics 2019;
- Health General Senior Syllabus 2019; and
- Sport and Recreation Applied Senior Syllabus 2019.

9.1.3 Victoria: 'Lovethegame'

https://responsiblegambling.vic.gov.au/reducing-harm/love-the-game-program/?utm_source=offline&utm_medium=lovethegame

This program meets many of the criteria for a whole school approach, but the term does not appear anywhere on the website for the programs. The focus is on betting on sports.

9.1.3.1 School education program overview

> *'Never before has gambling been so heavily promoted and accessible especially through sport. This makes it feel like a normal part of the game and harder for your students to recognise the potential harm. We want them to love the game not the odds. The school program helps support students to develop healthy and informed attitudes. We have face-to-face sessions, units of curriculum and it's all about giving students a heads up.*

> *Our face to face sessions are freely available for teachers, parents and students. In our senior student workshop, we explore what's making betting feel more normal, the limited chances of winning, the risks involved, how to know if it's becoming a concern and where to find help.*
>
> *These topics are also investigated throughout our curriculum-based units available online for years 10 to 12 including VCAL whilst online take a look at our school gambling policy template and loads of information for teachers and parents including videos, quizzes and newsletter articles.*
>
> *We're here to help you support resilience to harm in the future.*
>
> *The session we just had was very useful. We get to learn stuff that we didn't know about gambling because if you get too attached to it you're going to lose money it has a very limited chance of you winning a bet. Help your students love the game and not the odds. Go to lovethegame.vic.gov.au.'*

The face-to-face sessions involve one-hour sessions for senior students and 30-40-minute sessions for teachers and also for parents.

The website provides:

- Information for parents including a downloadable fact sheet on how and what to talk about to teens regarding gambling; and
- A 17-minute video and a transcript for teachers professional development which raises issues such as gaming and myths.

The VRGF School Education Program offers:

- Free face-to-face information sessions for teachers, parents and students;
- Gambling policy template;
- Secondary curriculum-based units covering a variety of subject areas;
- Articles for school newsletters;
- Information for parents;
- Young Aboriginal People's Awareness Program; and
- An eNewsletter.

The curriculum-based units cover a variety of subject areas for Years 10 to 12. The resources have been mapped to:

- Compulsory VCAL strands including literacy and numeracy skills and personal development skills; and
- Year 10 humanities, critical and creative thinking and social capability.

Details are available for each VCAL strand and Year 10 subjects at https://responsiblegambling.vic.gov.au/reducing-harm/schools/resources-teachers/

- VCAL Literacy Skills Unit: Potential influences;
- VCAL Literacy Skills Unit: Love the game, not the odds;
- VCAL Numeracy Unit: What are the odds?;
- Wellbeing: Telling gaming from gambling;
- Humanities Unit: The role of regulation; and
- Humanities Unit: Risky business.

The literature search did not uncover any information as to take-up and implementation by teachers nor evaluation of student outcomes such as awareness, knowledge, attitudes or behaviours.

9.1.4 New South Wales: ORG Classroom resources

9.1.4.1 What do teens think about gambling?

https://www.gambleaware.nsw.gov.au/for-professionals/for-teachers-and-youth-workers/free-classroom-resources

ORG has created a collection of free resources for download and use in your classroom and to help you identify a student with a gambling problem:

- Youth social media resources;
- One more punt… (A3 poster);
- None of my friends have a gambling problem (A3 poster); and
- Think you can spot a student with a gambling problem (brochure).

What do teens think about gambling? Eleven videos talking directly with teens:

- **Video 1 Make me feel good**
  Teens talk about their response to a gambling advert. We asked them 'how do gambling ads make you look and feel good?'.
- **Video 2 Man-flirt**
  Teens who they think gambling ads 'flirt' with the most. In other words, 'which target demographic are they most interested in appealing to?'.
- **Video 3 Tip this**
  Teens what they think about the amount of sports betting ads that air during sporting matches on TV.
- **Video 4 Show me the glamour**
  Teens why betting agencies might use celebrities and sports stars to promote their brands.
- **Video 5 Can you bank on it?**
  Teens to guestimate how many sports betters actually make a profit over a 12-month period.
- **Video 6 Never seen a loser**
  Teens discuss facets of gambling that ads show and those they don't show.
- **Video 7 Re-take**
  Teens if, once they know the real odds, it changes how they see gambling ads.
- **Video 8 Scratch this**
  Discuss scratchies and how much you have to spend to win.
- **Video 9 Get off my phone!**
  Teens discuss gambling ads appearing on their phones.
- **Video 10 Smarts means wins?**
  Teens answer the question 'when it comes to gambling, does skill have much to do with it? Or is it all about chance?'.
- **Video 11 The odds are what?**
  Teens answer the question 'what do you think the odds are of winning on the pokies?'.

No data was found in the literature search regarding teacher take-up or student outcomes.

9.1.4.2 Life ready

https://education.nsw.gov.au/teaching-and-learning/curriculum/key-learning-areas/pdhpe/life-ready

Life Ready is a mandatory 25-hour course designed to prepare and support senior students as they encounter situations related to health and safety as they become more independent and gain more responsibilities. It focuses on offering opportunities for students to build the functional knowledge and skills for life post school.

> *'The content of the school's Life Ready program should be based on the needs and interests of students. This means that each year, every school should develop a program that is relevant to the particular group or cohort of senior students.*
>
> *Skill development is central to learning in Life Ready. The development of the following skills will empower students to take positive action to be healthy, safe and well; promote positive and respectful relationships and transition confidently to post school independence, and participation in the community, communication and interpersonal skills.'*

The website would not allow this researcher access to curriculum content to establish if gambling was already included in any subjects. It should be noted the NSW Department of Education has a Wellbeing Framework for Schools, which can be found at https://education.nsw.gov.au/student-wellbeing/whole-school-approach/wellbeing-framework-for-schools.

9.1.5 South Australia: 'Gambling is No Game'

http://nogame.com.au/

This literature review was unable to find any reference to school-based gambling curriculum activities. It appears the South Australian Government is adopting different tactics educating parents via the no game website and being active in attempting to reduce young people's exposure to simulated gambling games.

9.1.5.1 Website information for parents

A website has been developed to deliver information targeted to parents. This website includes the following content.

> *'Fast facts about online simulated gambling games:*
>
> *Gambling content sometimes appears in a game by linking to another site that lets you win extra credits for your game.*
>
> *Casino-style games are available for video game consoles, on social media sites, and as apps that allow you to practise gambling without betting money (e.g. blackjack and poker games). Often these games give free credits but encourage you to purchase more.*
>
> *Some commercial internet gambling sites offer demo/practice modes that allow young people to practise gambling before playing for real.*
>
> *Some types of simulated gambling are more risky for children than others. Some of the key factors that make a game risky are:*
>
> • *A realistic gambling environment – a game might look like a casino or real poker machine;*

- *Frequent simulated gambling – a game might only involve playing slot machines or blackjack; and*
- *It is easy to win at the gambling activity – a game might make sure that you win more than you lose.*

There may be hidden costs in the games your child is playing. While many games are free to download, some can include in-game costs that can be easily purchased, often without parents being aware.

It is possible for children to buy online without needing a parent's credit card or password. For example, a child can buy pre-purchased 'load and go' cards from the post office or supermarket and use these for in-app purchases.

Gambling is NO GAME – look out for online games that simulate gambling Australia's teenagers spend more than five hours a day on digital media activities, according to the Australian Communication and Media Authority.

Unlike previous generations, today's youth have online lives that blend seamlessly with their offline lives. They invite the world into their daily activities through use of computers, smart phones and tablet devices to view content, socialise, communicate, play games, learn and do homework.

And while teenagers are very technology savvy, it is increasingly common to see very young children – sometimes under three – easily navigating their way around a tablet or smartphone to play a game or watch a video.

Alongside the rapid growth in smartphones, tablets and video games that link to the internet, there has been an explosion in downloadable games. There is no doubt these new technologies bring benefits, but as parents, carers and educators we are all aware of the need to protect children and teenagers from the risks that come with it.

An emerging area of serious concern is games that simulate gambling. Increasingly, these games can be played on social media sites, video games that link to the internet and mobile applications. It's a growing business in a largely unregulated market.

What to look out for. It's important to be aware that simulated gambling content may be part of the games your child is playing.

Gambling is only available to adults through licensed operators whose activities are regulated in order to safeguard children from the potential harms of gambling.

But young people can now gain access to games that provide a realistic gambling experience that is not subject to the same regulations, because money cannot be won. Simulated gambling games are not regulated as legal gambling services and do not meet the definition of interactive online casino-style gambling, which is illegal in Australia.

Simulated gambling content is not classified with age restrictions in the same way as other content that is considered unsuitable for children by the National Classification Code and Guidelines.'

9.1.5.2 Government Action

South Australia will introduce new laws that will allow classifications, such as MA15+, to be applied to games that contain simulated gambling. This will enable parents, carers and educators to be better informed about the games children are playing.

An online Watch List with reviews of popular apps and online games with gambling content will be developed by March 2014. The value of this initiative is to inform parents and provide an interactive forum for parents and other community members to contribute their views to the Watch List and help identify potential new online games with simulated gambling.

An 'Unleashed' competition will be held for the local technology industry to develop a tool or resource that gives parents advice about minimising simulated gambling risks. The Premier will take this issue to the Commonwealth Government and other states and territories advocating for the inclusion of simulated gambling in the national classification regime. National action will have the greatest effect in ensuring that children are not exposed to inappropriate or unsuitable gambling content.

Cyber safety is part of the Australian Curriculum that is progressively being rolled out to all schools in South Australia. Please ask your child's teacher or Principal if you would like to know what policies and procedures are in place to protect and inform your child about online predators, cyber bullying and to how to best manage social media.

The South Australian government has identified young people and gambling as a social problem to be tackled as part of its youth grant funding. As a result, programs are now underway to address gambling issues among young people from multicultural communities and to develop a 'Keep it Fun' app, to be created by young people, to help their peers understand the risks of excessive gaming and gambling.

The South Australian government is running a community awareness campaign to build understanding of the issues and risks so people can make informed decisions about access to online games.

9.1.6 Western Australia

https://senior-secondary.scsa.wa.edu.au/

The author of this review searched Western Australia education websites for secondary curriculum subjects and search for gaming and for gambling within each subject, but no information was available.

Interestingly, as part of Responsible Gambling Awareness week Centrecare and Department of Local Government, Sport and Cultural Industries sponsored a half day forum: The intersection between online gaming and gambling with guest speakers Sally Gainsbury and Daniel King.

Western Australia has a well-developed and well documented (Saunders and Miller 2009) whole school approach in drugs and roads safety School Drug Education and Road Aware, which is available at www.sdera.wa.edu.au.

9.1.7 Australian Capital Territory

http://www.bsss.act.edu.au/curriculum/australian_curriculum

Gambling is paid lip-service in Essential Mathematics and optional Contemporary Mathematics and non-existent elsewhere. Contemporary Mathematics integrates Australian Core Skills Framework Level 3 Numeracy.

> *'The students who undertake this subject will continue to develop their numeracy skills at a more sophisticated level than in Years F to 10. Students will also learn about the probability of certain events occurring and will therefore be well equipped to make informed decisions about gambling.'*

This also applied to Essential Mathematics where no other mention of gambling occurred.

Topics in Elective 2 Mathematics in Sport may include:

- Probability;
- Applications of chance; and
- Dangers of gambling.

9.1.8 Northern Territory

No information was obtained in relation to schools.

10 Key recommendations and considerations

This section of the review concludes on the key learnings and considerations for the development of a successful youth gambling education program based on the findings of this literature review.

10.1 Teachers hold the key to success

Numerous studies indicate the critical importance of teachers to any school-based prevention approach. Invariably the fidelity of implementation depends on the enthusiasm and skill of the teacher to deliver the program. Accordingly, the NSW teacher survey to be undertaken will provide clues as to the challenge ORG will face in developing and implementing any new program, irrespective of adopting a whole school approach or some other alternative. Whole school approaches are fashionable, but the evidence of their efficacy depends very heavily on the teacher take-up and delivery of the program. Evidence for success for whole school prevention programs is patchy with the key determinant being fidelity of implementation.

Gambling is often stigmatised. Teachers and parents, and adolescents too, are unlikely to recognise when gambling is problematic, and given the convergence between gaming and gambling, whether or not an activity ought to be classified as gambling. Gambling is safely undertaken by many adults and accordingly, is unlikely to be perceived to be a significant adolescent problem by parents, teachers, and the public in general. Parents are only slightly more likely than teachers to perceive gambling as an issue of concern because parents are often role models for gambling activities, especially in relation to sport betting.

The salience of gambling as a risky behaviour for adolescents is very low. Both teachers and parents are likely to see gaming and/or gambling as the, or one of, the least risky behaviours likely to be undertaken by adolescents because it is less visible, and no secondary effects are immediately visible - unlike the consequences of many other risk-taking activities. Both teachers and parents are much more likely to express concerns about drug use, bullying, alcohol use, cigarette smoking, unsafe driving practices, eating disorders, excessive use of video games and spending too much time online than possible harmful effects of gambling.

Teachers have an increasingly crowded curriculum. As such, they generally have little time to allocate to prevention programs and are likely to favour more seemingly apparent problems causing easily identified consequences such as some of those listed immediately above. The teacher survey will provide data regarding the incidence of teachers addressing gambling somewhere in their lessons versus other risky adolescent behaviours. The recently introduced PSHE teacher handbook for mandatory lessons on internet gambling in the UK cites survey data revealing gambling by 11-16-year olds in the previous week at 11% far exceeds smoked a cigarette (5%) or had used drugs (3%).

10.2 Parents: a needed partner

Parents need to be made aware of the potential for harm for young people given the ubiquity of adolescent gaming and gambling. Not only are parents likely to underrate the incidence of adolescent gambling, they are likely to see such gambling as harmless and be more tuned to other seemingly much more risky activities with more vivid and widely known undesirable consequences.

School-based prevention programs which include a parent element are more likely to indicate greater positive outcomes. Conversely, for programs where results are disappointing evaluators are likely to include lack of any attempt at parent involvement as a weakness of the program.

Parents are in the best position to monitor their offspring's gaming and gambling activities once they become alerted to the need for an opportunity to do so.

Many studies reveal a correlation between parent gambling and adolescent at risk or problem gambling resulting in evaluators' recommendations including a need for parent involvement. One study indicated two thirds (67%) of young people who gambled indicated parents/guardians were present within the context of gambling when the young person gambled.

Peers are more likely than parents to approve of adolescent gaming and gambling, so parents can play a role in helping counteract peer pressure to gamble, especially where their young children seems to be heading into harmful territory. Peer pressure is also likely to be involved in the relationship between other potentially harmful activities and gambling. One study revealed those adolescents who used their own money on gambling in past seven days were more likely to have drunk alcohol (41%), taken drugs (21%) or smoked (25%) compared with 11-16-year olds who have not gambled.

10.3 Knowledge, awareness and attitude change are more likely outcomes of school-based programs than behaviour change

The majority of reviews and meta-analyses of school-based prevention programs for health, wellbeing, bullying, resilience, and gambling, etc. conclude school-based programs are successful with respect to positive changes in knowledge, awareness, attitude change but fail to achieve positive gains in behavioural outcomes.
Education is primarily a process where the aim is to provide students with awareness, some knowledge and, on occasion, skills so that when circumstances arise that are relevant to that education the student can make informed decisions with respect to the behaviour they choose to adopt. Education is not brainwashing. Rather, it ought to be an enlightenment process.

Psychologists have a great deal of evidence that providing information and changing attitudes is not sufficient to ensure behaviour change occurs. When it comes to gambling, or any other risky behaviour, behaviour change is much more likely to occur when the person involved has developed a strong intention to change, has sufficient self-efficacy to perform the recommended behaviour, and believes others who matter (parents, peers) will approve of the advocated behaviour. School-based programs rarely, if ever, are able to create strong intentions or develop self-efficacy.

The incidence of gambling might be high amongst adolescents but the proportion of those who gamble being at-risk or being problem gamblers is quite small. Accordingly, were any behaviour changes to occur, it would be minimal, especially across the whole intervention group.

If behaviour change is the expected goal of a school-based intervention, then the education process should focus on providing information such as challenging misconceptions to assist would-be gamblers minimise their exposure to harmful gaming and gambling situations. Additionally, the education process should deliberately set

out to identify those students most at risk of harmful gambling and ensure such students get access to behaviour change counselling either in the school setting or elsewhere.

Behaviour change on a large scale is best achieved by changing the situation in which the harmful behaviour occurs. The greatest gains in health and road safety have not come about by education (school-based or mass communication) alone. They have been a result of the situation being changed in which the behaviour is performed thereby providing the performer with an excuse to change or actually forcing a behaviour change because the circumstances no longer support the old behaviours.

School-based programs can sometimes result in negative outcomes as indicated in the Gambling – Inquiry Report (2010). Driver education is not recommended as a subject for schools precisely because the evidence is clear. Such courses are likely to heighten young people's perceptions of their driving abilities resulting in increased risk-taking and crashes. Gains have been achieved by legislation such as Graduated Licensing Scheme and the Safer Driver courses for NSW Learner drivers where the focus is more on recognising and avoiding risky situations and on decision-making, not on driving skills nor on what to do when in a bad situation.

Legislation is a more likely means of achieving widespread behaviour change by altering the opportunities for harmful gambling situations than any school-based programs. The concerns over the convergence of gaming and gambling may be lowered by implementing legislation as suggested by some psychologists.

Given the association of parents' gambling and adolescent problem gambling behaviours, behaviour change may be encouraged by gaining the awareness and co-operation of parents.

10.4 Whole school approach is an ideology, not a panacea

The whole school approach has not proven to be the magical ingredient especially in secondary schools. The national evaluation of the English Select Entry Accelerated Learning in secondary schools found that there was no significant impact on pupil outcomes in terms of social and emotional skills, mental health difficulties and behaviour. This was the case in all schools, regardless of apparent progress made in the delivery of Select Entry Accelerated Learning, and there was no evidence of a relationship between level of implementation and the achievement of expected outcomes (Lendrum, Humphrey and Wigelsworth 2013). A similar disappointing result is reported with respect to a two-year cyberbullying program (Acosta et al. 2019).

It could be suggested that in some cases the 'whole school approach' can be a popular terminology. One reviewer (Peralta et al. 2019) evaluated three supposedly Australian adolescent health literacy whole school programs according to the reviewer finding deficiencies in all three. Yet, none of the three programs claimed to be implementing a whole school approach.

Critical to the development of a whole school approach is the commitment from the school leadership team and the teachers. A whole school approach may be most appropriate where the school climate and ethos are important in achieving the programs goals, as would be the case for bullying and also mental health. Gaming and gambling education are less likely to depend on school climate or ethos than are mental health education projects. Evaluation of the Australian MindMatters program reported teachers identified their greatest challenge was addressing the whole school approach. Other studies of whole school programs indicate low implementation rates.

A big commitment is also required by the organisation developing any whole school approaches because they will involve considerable resources over a period of five to 10 years if positive outcomes are to be achieved. These resources for teachers and parents will involve time, personnel and money in development, in training, in follow-up, in assessment, in refinement, and especially in convincing schools to adopt changes to existing curriculum. The Victorian Respectful Relationships in Schools whole school pilot, involving massive resources, has not been mainstreamed to date, probably owing to the level of resources needed, including personnel in the Education Department and outside personnel delivering the program.

The whole school approach is predicated on the assumption all students will be exposed to the program as will be their teachers and their parents and sometimes the wider school community. But in reality, only some teachers are likely to deliver the program and to varying degrees of fidelity. Were a school to implement a whole school approach then concepts and activities related to gaming and gambling would be promoted throughout the entire school environment ideally including students' families and the larger community (e.g. sporting teams). The feasibility of this approach for a gambling education initiative need to be considered before engaging a whole school approach.

The UK, rather than taking a whole school approach to gambling, has mandated a statutory secondary school unit in health education regarding Internet safety and harms which includes online gambling and accumulation of debt. This reflects the findings of the Evidence Based Practice Unit based in London indicating the complexities in implementing whole school approaches suggesting using a staged approach to delivery.

There are numerous examples of viable and sometimes successful alternatives to a whole school approaches mentioned throughout this review, such as the Healthy Learning. Together program in Germany. The program was designed to make it easy to for teachers to implement and produced significant outcomes including gains in children's self-efficacy (Schwager et al. 2019).

Another alternative approach in line with 3.5 above is the tiered approach where Tier one is universal and carried out by the teacher with universal screening. Tier two involves group sessions with selected in-need students. Tier three is therapeutic with those in need of further intervention (Franklin et al. 2017; and Paulus, Ohmann and Popow 2016). There is evidence in favour of programs targeting high risk or indicated youth rather than a universal approach.

In reviews of programs in SEL, whole school multi-component approaches are significantly more likely to encounter problems, especially in relation to implementation and lack of engagement of teachers. Further, because whole school approaches are difficult to establish and sustain, they are no more likely to bring about positive effects than single classroom curriculum only approaches or interventions that focus on one or two active ingredients such as a curriculum components and parent component. But they can achieve significant but small improvements in designated outcomes. One reviewer of European and Australian whole school programs (e.g. Mindmatters) asked what is going wrong because they fail to produce outcomes which would make them eligible to be included in a systematic review.

10.5 School-based gambling education minus whole school approach

It is notable the term 'whole school approach' was never used in any of the school-based gambling prevention programs or reviews of programs. The alternative term, 'universal approach', was referred to only in one review of the reviews. It would appear that school-based gambling prevention programs have, at most, only minimally been influenced by health professionals with respect to the whole school approach.

Most school-based gambling education programs reviewed were multi-component usually with a focus on the curriculum unit, only two included parents. Early studies (i.e. before 2010) were curriculum only interventions showing compared to the control group, significant positive improvements on almost all outcomes. However, they were not able to demonstrate that high risk students could benefit from the interventions in terms of coping knowledge or intentions.

Almost all school-based gambling interventions achieved significant positive changes in the short term with respect to a range of gambling knowledge, including myths and potential outcomes. Some studies attempted to measure behavioural outcomes and some achieved changes in gambling behaviour but have been criticised on methodological grounds.

Across most school-based gambling interventions there is fairly strong evidence of significant improvements in knowledge with respect to gambling consequences, dispelling myths, and decreased cognitive distortions such as the illusion of control, fallacies in probabilistic reasoning, and superstitious thinking.

Reviews of these gambling programs mirror reviews of school-based interventions in the health domain, namely, they are deficient with respect to: the lack of a behavioural outcome measures pre and post, follow-up outcomes at the six-month post-intervention interval, or beyond, using a cluster randomised control approach randomly allocating schools as opposed to individual students, and no information on integrity checks to check on if the intervention was applied consistently across groups.

Adolescent at-risk problem gamblers are likely to exhibit a cluster of risky behaviours indicating impulsiveness, problematic drinking, smoking, cannabis and other drug use. This cluster is suggestive of perceived and actual parental permissiveness as well as parental gambling. Most programs did not address parental or peer influence even though it is known they are contributing factors to youth problem gambling.

10.6 Convergence the new game in town

Until recently, gaming was unlikely to be included in school-based gambling programs. The evidence is clear: adolescent gamblers are very likely to play video games. Children and adolescents who are attracted to video games may be at a greater risk to gamble. Most adolescents play video games and many of the online games encourage via incentives spending money.

Experts advise that children who engage in both skin gambling/betting and other forms of gambling should be considered at-risk of harm because of heightened engagement in gambling and gambling-like activities. 'Loot boxes' have been described as a form of entrapment because they resemble gambling slot machines where no player skill is involved, and prizes are randomly determined.

Whilst education has a role to play in protecting adolescents from video game monetisation schemes it is likely other approaches will be needed, including, industry action and modifications to the activities themselves and maybe legislation as exists with other forms of gambling to protect youth.

Given a concern about internet gaming addiction in children in Thailand, a successful innovative school-based intervention included parents who were given a gaming addiction prevention manual and guidelines in supervising the practice of gaming addiction behaviour and self-regulation with the parents providing feedback to teachers each week. Importantly, the program did not set out to change gaming addiction behaviour directly. Rather, it attempted to enhance self-regulation to promote confidence in refusing game playing, gain more knowledge about gaming addiction and its effects, as well as provide information about how to regulate themselves, the types of games they can play, suitable duration to play games, etc. All of these are likely to assist students to prevent gaming addiction behaviour in the future.

10.7 What should be the focus of any program?

Whatever is included, its aim ought to be to prepare youth to avoid gambling harm. Each chosen element should be included because it provides sound knowledge or skills to influence future decision-making when youth are exposed to gaming and or gambling opportunities. The research evidence suggests that any comprehensive program should involve a broad scope of topics including statistical knowledge about gambling, information on the potentially addictive nature of gambling, explaining gambling fallacies, but importantly also building self-esteem, and peer resistance training and self-efficacy to regulate their own behaviour.

The expectation of the outcomes of any new program should not be an immediate decrease in gambling behaviour in those receiving the intervention. What can be expected is that adolescents can be made more aware of the addictive nature of gambling, knowledgeable about gambling myths and fallacies, understanding about odds, and ideally, skills to allow themselves to self-regulate.

Giving people information rarely leads to behaviour change (e.g. smoking, alcohol, drink driving, speeding, etc.). Knowing about the harmful effects of any of these behaviours doesn't necessarily lead to behaviour change. Behaviour change requires internal or external motivation leading to an intention to do something supported by a belief in one's ability to do it (self-efficacy). School-based programs and most communication programs are unlikely to be sufficiently motivating or provide the skills needed for change. Merely teaching about gambling odds is unlikely to influence behaviour.

Should a program include probability theory? For many students it will be difficult to comprehend. One study found that teaching probability theory specifically using examples from gambling can result in students being able to calculate gambling odds and resist gambling fallacies but not if the teaching involves generic probability theory.

The UK PSHE association handbook titled How to address gambling through PSHE education: teacher handbook (2019) provides an excellent model of what to address in a gambling curriculum. It includes it in PSHE education but given the crowded curriculum it is unlikely to be implemented as well as it should be even though it is, in part, mandated.

The four principles enunciated in Keen et al. (2019) should underpin any new program development: shift the focus away from harm to increase youth engagement, apply a cognitive-developmental approach, educate about gambling mathematics to prevent harm, and leverage technology to teach complex concepts.

The choice of where in the curriculum should be left to the education experts. Mathematics is an obvious choice as demonstrated in the section 9 above. In the UK it is in PSHE. In Tasmania, for example the four units are split across: health and wellbeing, society and history, information and communication technology, and the arts. The Victorian Responsible Gambling resource is used in VCAL literary, numeracy and humanities units.

At what educational stage should gambling education be introduced? The answer in part should depend on at what age are most children and adolescents engaging in gaming which can lead to gambling. Most, but not all the programs reviewed involved secondary students.

Internet gaming and sports-betting are likely to be the most important gambling activities undertaken by teenagers and should underpin examples of gambling in classroom activities if, for no other reason than enhancing student involvement. In this regard, any program to be implemented needs to be appealing, stimulating, even entertaining to teachers and students and possibly parents.

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