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Cyberbullying Prevention in Schools:

A Literature Review on Cyberbullying and its Supported Theories and Technologies

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As education is recognized as a component of wellbeing, schools play a pivotal role in fostering students' knowledge and skills to strengthen their social and emotional wellbeing, benefiting both individuals and the wider community. To fulfil this responsibility, schools must aim to prevent conflicts that may negatively impact students' socio-emotional wellbeing, such as cyberbullying.

Cyberbullying, a modern form of bullying facilitated by digital mediums, poses a growing concern due to its potential to cause serious mental and emotional harm to young people. As a relatively new field of study, cyberbullying prevention has gained significant interest from researchers, educators, parents, and policymakers. However, the current focus of research and prevention efforts primarily revolves around traditional bullying, leaving a gap in understanding and addressing cyberbullying adequately.

This thesis aims to bridge the gap between theory and practice in cyberbullying prevention by exploring different prevention strategies through the lens of various theories. By conducting a comprehensive literature review, the study examines how these theories inform and support the prevention of cyberbullying within school settings. Furthermore, the research investigates the implementation and efficacy of these prevention strategies in real-world contexts.

Keywords:

Cyberbullying

Social Emotional Learning

# Contents

# Introduction

Education serves many purposes and a particular purpose that has been highlighted in recent years is the purpose of promoting children's overall wellbeing. There has been a shift from schools being merely centres of knowledge transfer into centres of holistic child development. This development includes the growth of children's wellbeing and its components. Within the wider discourse of welfare, education can be seen as a good, something that has utility within a wider context of wellbeing (I.e., it is a component of wellbeing) (Watson, Debbie, Emery, & Carl, 2012, p.11). When education becomes the utility for fostering children with the knowledge and skills they need to strengthen and regulate their social and emotional wellbeing, this benefits not only the children, but the greater community as a large. Naturally, this also lends itself to the notion that schools should also aim to become entities which help prevent conflicts arising that might negatively impact students' socio-emotional wellbeing. These conflicts include cyberbullying, a phenomenon which can lead to victims experiencing negative effects such as depressive symptoms, social anxiety symptoms and below average wellbeing (Fahy et al, 2016, as cited in, Gazdek, 2021) and have potentially worser outcomes than traditional bullying (Zych et al, 2015, as cited in Gazdek, 2021).

Cyberbullying is a growing concern among young people today, as it has the potential to cause serious mental, psychological and emotional harm. In recent years, there has been a growing interest in the scientific community to study cyberbullying. There is also a growing interest in and a better understanding of the importance of cyberbullying prevention in schools, with educators, parents and policy makers. This could be due to a widespread increase of cyberbullying in recent years. The increase of cyberbullying cases has led to a whole new set of challenges for schools and educational institutions. Schools are having to face this modern form of bullying that has different characteristics than traditional bullying. Research on bullying and schools is primarily focused on traditional bullying. Similarly, the prevention programs that are in place in schools are mostly focused on reducing traditional bullying behaviours. This could largely be because cyberbullying is still a relatively new field of study.

The growth of cyberbullying tendencies and the need for more research regarding its prevention was a motivator for this research. In addition, in academic literature, there seems to an absence in cyberbullying research that combines both theory and practice. Most literature is usually focused on one of the two perspectives whether that is studying the practicalities of a program

that has been implemented or delving into the theoretical aspect and its critical interpretations. This research paper helps bridge the two and fill this gap in research by studying the theory and preventative measure side by side. This way the practice can be better understood by the principles of the theory and the theory can help inform the practice and its implementation.

The personal importance of this research for us researchers is to spread awareness of prevention strategies in order to protect and maintain the mental and socio-emotional wellbeing of students. We believe that professionals within the field of education have a responsibility to their students, to protect them and their development and learning to the best of their ability. This should include attempting to prevent cyberbullying before it becomes an issue for students within the school community, and to intervene in any occurring cyber-harassment or cyberbullying. Becoming aware of different prevention strategies and implementing their practices in schools can help reduce the number of cyberbullying victims. On a societal level, it is important schools are conscious of how they can proactively encourage students to use cyber mediums responsibly through social emotional learning, the promotion of digital skills, and other practices. On a theoretical level, the importance of the research is to explore cyberbullying as a phenomenon so we can gain a holistic understanding of it. We seek to obtain a deeper understanding of the theoretical basis of cyberbullying research, and thereby shed light on potential gaps within the research.

This research explores different cyberbullying prevention strategies through the lens of different theories. Through a literature review, these strategies and their supporting theories have been studied and analysed. More specifically, research on how the theories inform the prevention of cyberbullying within schools has been studied. The theories themselves provide the reasoning behind the features of each distinctive prevention strategy and therefore it was vital during the making of this research paper, to take into consideration the theories. Regarding the prevention strategies that have been mentioned in this research, evidence of possible prior implementation in schools has also been studied. Overall, the focus of the research has been to explore these following research questions: What are the different ways cyberbullying can be prevented in schools? What are the theories supporting these prevention strategies and how do they help inform the ways cyberbullying behaviour can be prevented in schools?

## 1.1  Defining Cyberbullying and its Motivations

There are many agreed upon definitions of cyberbullying. The most common definitions are 1) Cyberbullying defined as "wilful and repeated harm inflicted through the use of computers, cell phones and other electronic devices" (Hinduja & Patchin, 2009, p. 5) and 2) Cyberbullying defined as "an aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly over time against a victim who cannot easily defend him or herself" (Smith et al, 2008, p.376). Cyberbullying as a phenomenon is becoming more relevant as technology evolves and the use of cyber mediums increases. As technology develops, systematic communication on cyber mediums is made more possible which gradually leads to more incidents of cyberbullying.

According to Chadwick (2014), there are different forms of cyberbullying. These forms of cyberbullying can be divided into different categories. These categories including Harassment, Denigration, Flaming, Impersonation (Chadwick, 2014). Harassment refers to "repeatedly sending offensive, rude and insulting messages" (Chadwick, 2014, p.4). Denigration refers to "distributing information about another person which is derogatory and untrue" (Chadwick, 2014, p.4). Flaming refers to "Online Fighting or an intense argument using angry, vulgar language" (Chadwick, 2014, p.4). Impersonation refers to "breaking into an email or social networking account and using that person's online identity to send or post vicious or embarrassing material to or about others" (Chadwick, 2014, p.4). All these forms of cyberbullying revolve around the feeling of desiring power and control.

Both bullying and cyberbullying are both largely rooted in power and control (Pepler, 2007; Belsey, 2008, as cited in Chadwick, 2014). However unlike in traditional bullying, researchers have not agreed that an imbalance of power is a necessary component (Vandebosch & Van Cleemput, 2008). A vital component of cyberbullying that could be a potential predictor is anonymity (Williams & Guerra, 2007). Anonymity and distance allow for perpetrators to feel more secure about attacking people online on the web. Children use anonymity to their advantage and mask their identity by having multiple email addresses, impersonations, or having fake users. The anonymity ensures the person cyberbullying that they won't be punished for their negative actions which in turn motivates them to say things they wouldn't otherwise say

face to face. This leads to them attacking victims more severely than if they were face to face bullying. An effect of this anonymity is that it breeds disinhibition. Behavioural disinhibition can be defined as loss of implicit social knowledge or social dysdecorum (Butler & Chiong, 2019). When one is anonymous, they do not experience the impact of their actions resulting in them showing a lack of restraint in their behaviour and disregard for social norms. This results in the bullies being emotionally removed from their victims.

Although many different variables have been identified as risk factors for cyberbullying perpetration, relatively few studies have been interested in the theory behind cyberbullying (Barlett, Chamberlin & Zachary, 2016). The BGCM (Barlett and Gentile Cyberbullying Model) is a learning-based theory of cyberbullying perpetration. The theory states that positive cyberbullying attitudes predict cyberbullying perpetration (Barlett, Chamberlin & Zachary, 2016), and is at present the only theoretical model of cyberbullying available. The theory argues that cyberbullying attitudes often form when the aggressor believes that the online environment allows individuals of all physical sizes to harm others and they are perceived as anonymous (Bartlett, Chamberline & Witkower, 2016).

# Understanding and Preventing Cyberbullying Through Reviewing Literature

Cyberbullying prevention has been a focus of many studies in recent years, as the topic of cyberbullying has gained attention from researchers worldwide. While there is much more research on traditional bullying than cyberbullying, there have been an increasing number of studies on the topic of cyberbullying, cyber-harassment and preventing online aggressive behaviour. Some of these studies focus specifically on preventing cyberbullying in the school context. We will be looking at the different aspects of cyberbullying prevention related research to try and provide a closer look at the current scientific understanding of cyberbullying prevention and cyberbullying prevention methods. We will be looking at the research on Social Emotional Leaning regarding cyberbullying, cyberbullying literature and how the ecological systems theory has been utilised in understanding cyberbullying and its prevention, as well as looking at how perceived school climate and school policies effect cyberbullying perpetrated in schools.

Much of cyberbullying research has relied on well-established psychological and communication-based theories such as the General Aggression Model, Theory of Reasoned Action, and General Strain Theory (Barlett, Chamberlin & Zachary, 2016), however in this thesis we will be looking specifically at theories and important concepts in cyberbullying prevention literature that have been applied when creating cyberbullying prevention strategies and programs for use at school environments.

## 2.1 Social Emotional Learning as a Tool for Combatting Cyberbullying Among Students

One of the suggested practical methods of preventing bullying is teaching socioemotional competencies in school (Smith & Low, 2013). Recent studies have shown that school-wide SEL has been proven to mitigate cyberbullying (Yang, Chen, Ling & Chan, 2021). From existing literature on Social Emotional Learning (SEL), different frameworks have emerged describing the different core dimensions of SEL and SEL competencies (Zins, Weissberg & Wang., 2004). One of the most used theoretical frameworks in the literature from the 21$^{st}$ century that discusses SEL is Collaborative to Advance Social and Emotional Learning's SEL framework. CASEL was founded in 1994 and aims to advance the science of SEL and to create scientifically sound school-based practices for worldwide use (Graczyk et al., 2000).

SEL is closely tied to teaching and learning social competencies, and in CASEL's SEL framework defines social emotional learning "as the process through which children and adults acquire and effectively apply the knowledge, attitudes and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships and make responsible decisions" (CASEL, n.d.). The goal of SEL according to CASEL is to advance educational excellence as well as educational equity through school-family-community partnerships, and to address various inequities, as well as empower the creation of thriving schools and contributing to safe and just communities (CASEL, n.d.). However, it must be noted that SEL is seen in literature more as a key component of school-wide anti-bullying and anti-cyberbullying interventions (Smith & Low, 2013) and not as the best practice for preventing bullying behaviour.

In a meta-analysis conducted in 2011 that looked at over 270 00 students, SEL was shown to positively influence student performance, reduce students' levels of depression and stress, and to improve the attitude of students towards school (Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011). In the same meta-analysis, it was suggested that SEL programs featuring aspects such as responsible decision-making, prosocial behaviour, self-awareness, social-awareness and self-management practices could be a possible way to improve students' attitudes, social emotional skills and behaviours (Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011). These are the same skills to also have been identified by CASEL's SEL system as the main five competencies when it comes to developing SEL (Davenport-Kellogg & Stevenson, 2022). In the CASEL SEL framework, these five competencies are referred to as the CASEL 5 (CASEL, n.d.) and are categorised into 1) self-awareness, 2) self-management, 3) social awareness, 4) relationship skills, and 5) responsible decision-making.

In a cross-sectional questionnaire study conducted in Germany, analysis of many different combinations of covariance only revealed that adolescents with special educational needs in emotional-social development were significantly more often those who perpetrated bullying in schools (Schütz, Schipper & Koglin, 2022). However, interestingly, the same study found no statistically significant differences between groups with and without special educational needs in emotional-social development when it related to cyberbullying perpetration. In addition, a study that looked at the connection between emotional intelligence and different cyberbullying roles of bully, victim and bystander, there was no statistically significant correlation found between level of emotional intelligence and any specific cyberbullying role of high school students (Razjouyan, Mobarake, Sadr, Ardestani & Yaseri, 2018). However, there is no scientific

consensus on the role of social emotional skills on perpetrating cyberbullying. In a study conducted in 2021, researchers found that low self-management and motivation was a significant individual predictor of cyberbullying perpetration. (Lorent, Farrington & Zych, 2021).

From a review of literature on SEL and literature on cyberbullying prevention, it appears that the most effective way of preventing cyberbullying in schools is to have a school-wide cyberbullying prevention program. Research shows that prevention programs at the school level have a significant effect on frequency of cyberbullying perpetrated (Gaffney, Farrington, Espelage & Ttofi, 2018). A meta-analysis of the effectiveness of cyberbullying prevention programs in schools and a systematic review of programs aimed at reducing cyberbullying found that programs effectively reduce the perpetration of cyberbullying as well as cyberbullying victimisation in the student population (Gaffney, Farrington, Espelage & Ttofi, 2018). In the meta-analysis conducted in 2018, it is stated that "results indicate that anti-cyberbullying programs can reduce cyberbullying perpetration by approximately 10%–15% and cyberbullying victimization by approximately 14%" (Gaffney, Farrington, Espelage & Ttofi, 2018).

Over the years, SEL has been a key component of many cyberbullying prevention programmes that have been scientifically proven to lessen cyberbullying once enacted, such as ConRed which lists developing students' social competences through curriculum-based work as one of its three main elements (Del Rey, Casas & Ortega, 2016). Also, school-wide SEL has been shown to have a mitigating effect on cyberbullying (Yang, Chen, Ling & Chan, 2021). However, SEL alone will not be enough to solve an issue as complicated as cyberbullying. It is important to continue to research cyberbullying programs more in the future to create evidence-based anti-bullying programmes that can be utilised in schools effectively to intervene in ongoing bullying and to prevent future bullying from occurring.

There is some evidence indicating that at least certain anti-bullying programmes that have not focused on cyberbullying specifically have still had an impact on preventing cyberbullying such as the ViCS social competence program (Gradinger, Yanagida, Strohmeier & Spiel, 2016) In a study in 2016, the ViCS social competence program had succeeded effectively and sustainably prevented cyberbullying and victimisation of cyberbullying (Gradigner, Yanagida, Strohmeier & Spiel, 2016). The ViCS program has no anti-cyberbullying elements despite being a primary preventative anti-bullying program. In fact, the ViCS Program has an emphasis on reducing bullying and aggressive behaviour in school and practicing social and intercultural competencies (Strohmeier, Hoffmann, Schiller, Stefanek, & Spiel, 2012). There is a lack of research

focusing on the impacts of anti-bullying programs on cyberbullying perpetration. However, the results of the study that looked at the impact of ViCS Program on cyberbullying (Gardigner, Yanagida, Strohmeier & Spiel, 2016) suggests there to be a link between traditional bullying perpetration and cyberbullying perpetration. If that is the case, it can be argued that both traditional bullying and cyberbullying share overlapping characteristics or function in similar ways. This could also in part begin to explain why the people who are victimised via traditional means and cyberbullying are often the same people.

Despite existing research on the connection of cyberbullying and SEL, the role SEL in cyberbullying prevention has not been studied widely enough, and hopefully new research in this area will be conducted in the future.


## 2.2 Ecological Systems Theory as a Basis of Cyberbullying Prevention

Anti-cyberbullying programs are widely accepted as the most effective way to actually decrease the incidence of cyberbullying within a school community (Gaffney, Farrington, Espelage & Ttofi, 2018). In scientific literature that is about cyberbullying prevention programs, this is often linked to the ecological systems theory originally introduced by Urie Bronfenbrenner in the 1970's and then detailed further in his book called "The ecology of human development: Experiments by nature and design" (Bronfenbrenner, 1977, 1979). Bronfenbrenner's theory states that there are multiple overlapping systems that can illustrate the effects on human behaviour by both immediate and indirect factors. Children and young people's interactions with their immediate surroundings such as school and home can be, in Bronfenbrenner's ecological framework, considered to be a part of the microsystem. The different parts of the microsystem effect each other on a level known as the mesosystem. Meanwhile, the exosystem is further removed from the subject's life and includes the contexts that effect the child but that the child has no immediate contact with such as the school administrators and the parents' place of employment. The political and larger societal contexts in which the child exists are called the macrosystems, the values and norms of which affect the child's environment, but that the child is not even necessarily aware of (Gaffney, Farrington, Espelage & Ttofi, 2018).

In research surrounding anti-bullying and anti-cyberbullying methods, the social ecological framework is mentioned as "arguably the most validated heuristic model for understanding and preventing bullying perpetration and victimization" (Smith & Low, 2013). In order for an ecological framework to address cyberbullying behaviour, it has been suggested that it would need

to "target the ecological, social and psychosocial risk and protective factors that can be regulated or mediated at the individual, family, peer, online and community levels, as well as recognise the seamless online/offline social context of young people's lives and the means by which they engage with others in online contexts" (Cross et al., 2015).
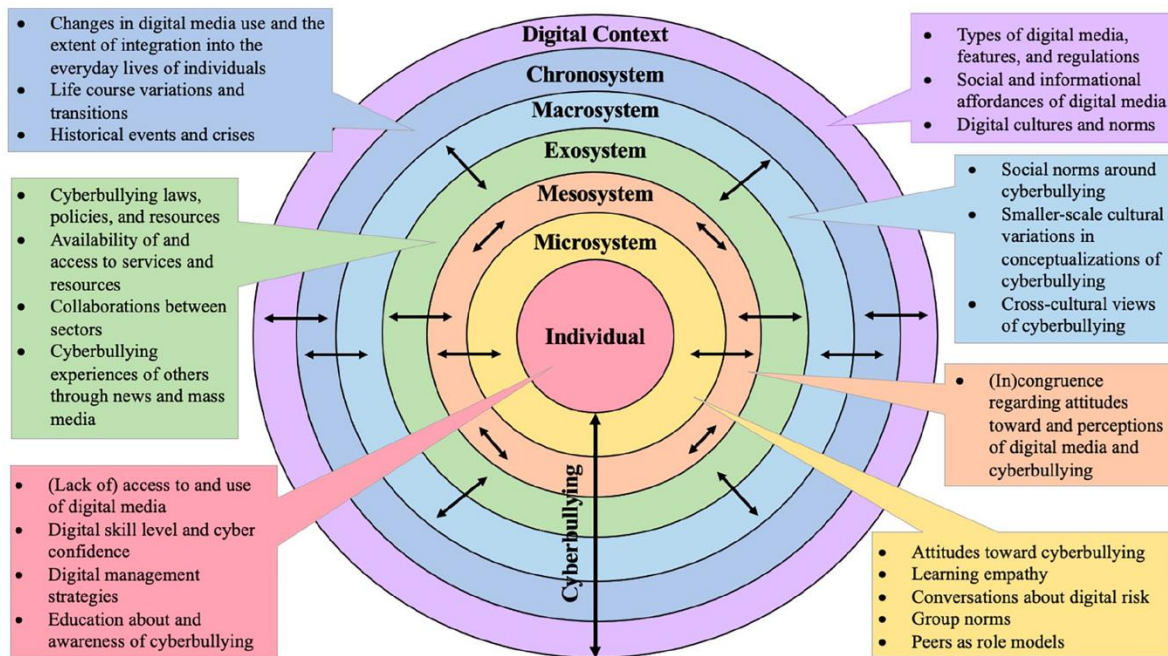


fig 1: cyberbullying in the ecological framework. Refernce: Patel, M.-G., & Quan-Haase, A. (2022)

While the ecological framework is widely considered to be useful in understanding cyberbullying victimisation and perpetration, it is not without its flaws. For one, ecological systems theory was created before the internet existed; thus, the effects on the internet on the developing minds of children was not considered by Bronfenbrenner. Television was considered to be a microsystem influence (Bronfenbrenner, 1977) and in current literature, researchers have considered the Internet likewise to be microsystems influence due to children's direct interaction with it. However, it is not the only suggested way of viewing the Internet in the context of the ecological systems theory. Already in 2008, it was suggested that the Internet, instead of being an influence in the microsystem, would in fact be classified as the techno-subsystem of the ecological microsystem in which interactions between individuals via non-human means are also included (Johnson & Puplampu, 2008).

Ecological systems theory is a useful tool in understanding cyberbullying and cyberbullying prevention. It is widely used in research pertaining to anti-cyberbullying programs as a starting point in understanding the connective tissue between different parts of the school's and child's

life. However, it does not mean that it is the only tool needed to solve cyberbullying. Also, while anti-cyberbullying programs have been proven to be the most effective way of preventing cyberbullying in the school context, The Cyber Friendly Schools Project studied in Australia over the period of three years does not find conclusive evidence of impact on cyberbullying perpetration by an anti-cyberbullying project that was built specifically to answer to the different kinds of problems posed by looking at cyberbullying through the lens of the social ecological framework (Cross et al., 2015). This is not to say that there is no impact, or that the ecological systems theory is not valuable in preventing cyberbullying, but further research on such programs is needed.

## 2.3 Effects of School Policies and Perceived School Climate on Cyberbullying

Research has consistently shown that perceived school climate influences the frequency of cyberbullying perpetration within the school (Acosta et al., 2018). Continuing from the ecological systems theory and the findings of research on school-wide anti-cyberbullying programs (for example: Yang, Chen, Ling & Chan, 2021), the role of school policies and school climate on either preventing cyberbullying or exacerbating cyberbullying becomes a point of interest. Especially, the importance of perceived school climate has been studied in recent years.

Students who in questionnaires report a better school environment are also much more likely to report cyberbullying (Acosta et al., 2018). In addition, students in schools with a positive perceived school climate have reported to have "greater levels of school connectedness, peer attachment, and social skills, which in turn predicts less bullying" (Acosta et al., 2018). Studies also report a negative association between school climate and cyberbullying victimisation (Holfeld & Leadbeater, 2017)

In recent studies, promoting a positive school environment through school climate policies appears to have a negative correlation with cyberbullying perpetration (Lorent, Farrington & Zych, 2021). This connection between perceived school climate and cyberbullying perpetration could partially be explained by Social Learning Theory (Bandura, 1977) which states that people learn through observing and imitating the actions of others, which could indicate that students who witness others perpetrate cyberbullying may be more likely to take part in cyberbullying perpetration.

When considering the efficacy of school policies and the documentation of those policies in reducing the frequency of cyberbullying perpetration, it must be noted that schools do not always follow their own documents, and even when they attempt to do so, it is challenging to perfectly execute what has been planned. In addition, researchers have suggested that schools may create policy documents because of bureaucratic requirements, and do not follow said documents in daily practice (Lorent, Farrington & Zych, 2021). Therefore, studying perceived school climate through the policy documents may not be the most accurate way of going about such research. Another difficulty in studying a wide pool of school policy documents can also be that even within the confines of the law, the quantity and quality of such documents can vary greatly (Lorent, Farrington & Zych, 2021)

## The importance of Digital citizenship in the prevention of cyberbullying

Now more than ever, the web is becoming a playground for harmful and risk-taking activities. This is normalized when there is a disregard for the responsibilities one must maintain when using the internet. These responsibilities include engaging the digital environment in a safe and responsible manner. More specifically in a manner that demonstrates dignity and respect. When one chooses to not acknowledge these responsibilities, this poses a risk not only to themselves but to the people sharing this digital platform.

Teaching digital citizenship in schools can help combat this issue by equipping students with the knowledge, skills and practices needed to safely and responsibly use the digital environment. Digital citizenship can be defined as "the norms of appropriate and responsible behaviour with regard to technology use" (Ribble, 2004, p.7, as cited in, Choi, 2016). According to Choi (2016), the term can be divided into four ways: digital citizenship as Ethics, Media, and Information Literacy (MIL), Participation/Engagement (P/E), and Critical Resistance (CR). Cyberbullying can best be prevented when schools focus on the digital citizenship as ethics factor. This factor is centred on demonstrating ethical behaviour with respect to the use of technology (Choi, 2016). It recognizes virtual communities as new spaces where people live, interact and communicate with each other on a regular basis (Choi, 2016). This aspect of digital citizenship concerns itself with digital awareness, responsibilities and rights and these three aspects can be developed to help prevent cyberbullying perpetration (Choi, 2016). When an individual is aware of the values and responsibilities of the digital world, then they can learn to adhere by them. Similarly, when one is also aware of their rights- such as protecting privacy, copyright protection and respecting self, others and community- then they can explore the digital world while being mindful of it.

The significance of digital citizenship awareness in schools and the greater communities is becoming more prominent. This is largely owed to how the conversation about digital citizenship has started to revolve around important contemporary issues like preventing cyberbullying and creating safe & secure communities in the online world. Education on digital citizenship as ethics can help students gain the perspectives needed to learn how to form healthy social relationships and help build a positive online community. It is when these skills are taught in schools, that a collective effort is created through cyberspace.

An example of a prevention program that aims to teach students about the importance of digital citizenship and media competence is Surf Fair. Surf fair is a German based prevention program

aimed to prevent cyberbullying and negative incidents on the internet (Pieschl & Porsch, 2012). It focuses on the development of (particularly ethical and critical) media skills in students through guided implementation and reflection on the content (Pieschl & Porsch 2013). In the curriculum, there is one 90 min session option or two 90-minute session options. There are 17 exercises in the program and all these exercises are intended to help students reflect on different perspectives of cyberbullying (perpetrator, bystander, and victim) (Pieschl & Porsch, 2012). The effectiveness of the prevention program was tested in 2010 (Pieschl & Urbasik, 2013). Pupils from six grade were divided into three groups (Pieschl & Urbasik, 2013). Two of the groups were intervention groups and one was a control group (Pieschl & Urbasik, 2013). One of the intervention groups were taught through one 90-minute class of the "surf-fair program" (Pieschl & Urbasik, 2013). The second intervention group were taught through two 90-minute classes while the control group were not taught through the program at all (Pieschl & Urbasik, 2013). Standardized questionnaires were given before the implementation of the measure, directly after and 2 months later (Pieschl & Urbasik, 2013). Results showed that cyberbullying (whether perpetrator or victim) had decreased significantly in the intervention group which had the two 90minute lessons (Pieschl & Urbasik, 2013). The control group showed increased levels of cyberbullying (Pieschl & Urbasik, 2013).

The surf-fair study provides as evidence for the benefits of teaching digital citizenship and media skills. When schools can align their educational curriculums with a similar curriculum like the Surf Fair, it can demonstrate positive outcomes for all the students involved. The students gain knowledge and skills that allow them to re-evaluate the actions they make in the digital environment and can help them in decision making in present and future life.

## 3.1 The use of technology in preventing cyberbullying

The use of technology can play a key role in the prevention of cyberbullying in schools. Despite the technology, itself, being an asset in the creation of cyberbullying, it can also be successful for helping to prevent it.

Technology can be used in different ways to prevent cyberbullying. These different ways are rooted in different viewpoints of the phenomenon. This section addresses the viewpoint of cyberbullying as a relational problem and technological problem. Firstly, the viewpoint that cyberbullying is a relational problem argues that the prevention of cyberbullying is possible only through equipping the users with the preventive psychological characteristics, rather than

restricting them from the access of technology (Topcu-Uzer & Tanrikulu, 2018 p.34). This viewpoint supports the notion that the motivation behind cyberbullying is largely owed by negative emotion regulation and interpersonal factors. The second viewpoint argues that technology has a role to play in cyberbullying. It argues that cyberbullying can be considered as "Problem emerging from the relation between the affordances that the information and communication technologies (ICT) enable and the ICT's user's intentions" (Topcu-Uzer &Tanrikulu, 2018, pg.34). Therefore, a determinative factor in the use of an object like the internet is not just the intent of the user but also the services that the object provides. Through this lens, it can be understood that certain technologies have provided people the opportunity to cyberbully due to the possibilities that have been offered by them. Hence one can argue that the technological aspect holds responsibility because it is the object that provides the person with the opportunity to bully while the intention similarly bears responsibility because one's intentions influences their actions. To summarize, cyberbullying can be considered as a problem emerging from the relation between the affordances that the ICT's enable and the ICT's users' intentions. For this reason, it is important to know the technology tools that have developed to help prevent this problem and be a catalyst in the educational field.

### 3.1.1 Cyberbullying as a technological problem

Regarding solving cyberbullying as a technological problem, application software programs can be a viable asset. Application software programs, or apps can be defined as "a computer program designed to perform a group of coordinated functions, tasks or activities for the benefit of the user" (Daniel, 2017). These apps are useful for increasing awareness of cyberbullying, providing practical information about the nature of cyberbullying, and helping to prevent cyberbullying before occurring. An example of one of these apps is Rethink. From a technological viewpoint, Rethink is an app that schools can use as a catalyst to help reduce and prevent cyberbullying occurrences. Rethink is a non-intrusive patented app that effectively detects any negative online hate and prompts the user to reconsider their actions (Topcu-Uzer & Tanrıkulu, 2018). The software displays a disagreement for negative actions which encourages the child to realise that the technology, itself, is not an enabler of this form of behaviour. By not condoning the behaviour, the technology is aiming to positively impact people's ethical decision making. The app understands that people hold the responsibility to make ethical decisions online. It helps influence these ethical decisions by bringing awareness to negative actions and promoting positive interactions. Rethink has been adopted in schools all over America and

around the world. As of 2021, 91,000 schools in America had adopted the programme (Sermax-haj, 2021). If technological apps like Rethink are introduced to schools through the teaching of online safety, then it could pose as a possible viable tool for helping to prevent cyberbullying.

Another example of a technological software aiming to prevent cyberbullying is Netsupport DNA, which can be used by school IT administators to monitor for cyberbullying. One of the many aims of Netsupport DNA is to provide a protected online environment that ensures students are safe (Netsupportdna.com). This includes an online safety toolkit with proactive and reactive tools built with the latest requirements in mind and with the use of contextual intelligence to help protect students (Netsupportdna.com). This IT intelligence allows the software to track exact keywords and phrases, that are on targeted devices, that can be linked to cyberbullying (Netsupportdna.com). These functionalities allow teachers to monitor and implement restrictive technological measures once the information about the terms is collected. The software has a "report a concern" feature that allows students to quickly report any problem that they might have encountered to a staff member that they trust (Netsupportdna.com). There are several advantages of this software pertaining preventing cyberbullying. The detecting software can be an asset in preventing cyberbullying because it ensures the student is aware that the technology will intervene by reporting and monitoring cyberbullying behaviour. This way the student acknowledges that the technology does not align with negative actions like cyberbullying. This is technology that should be implemented in schools worldwide because it provides schools with the data, they need to help prevent cyberbullying.

### 3.1.2 Cyberbullying as a relational problem

When cyberbullying is viewed as a relational problem, the purpose of prevention is to help equip students with socio-emotional skills and knowledge that can positively impact the decisions students make online. In this context, the most common technology assisted prevention strategies are video games or digital strategies. There are currently existing technologies that are being used by schools however these technologies are not prominent worldwide. Hence, it is important the discussion on technology as a cyberbullying prevention tool is promoted in schools.

*Video games*

A common form of technology used in the prevention of cyberbullying is video games. A video game can be defined as an electronic game that can be played on a computing device (Clement, 2022). There are several video games that are used in the prevention of cyberbullying. Cooperative Cyberbuca 2.0 is a cooperative video game which was created as a part of an intervention proposal. According to Garaigordobil & Martinez-Valderrey (2018), the aim of the video game is to help prevent and reduce cyberbullying through the cooperative nature of the game that promotes prosocial behaviour and enhances group cohesion. The video game is a trivial pursuit that consists of questions and answers that revolve around the topic of cyberbullying (Garaigordobil & Martinez-Valderrey, 2018). In the game, the characters are construction guilds whose aim is to build fantasy worlds (Garaigordobil & Martinez-Valderrey, 2018). The guilds can create fantasy worlds by cooperating with each other by answering questions (Garaigordobil & & Martinez-Valderrey, 2018). The game is won when all the characters achieve their goals by answering all of the questions and rebuilding the worlds through cooperation and unity (Garaigordobil & Martinez-Valderrey, 2018). The questions are based on cyberphenomena, cyber computer technology and security, cybersexuality, consequences of cyberbullying and coping with cyberbullying (Garaigordobil & Martinez-Valderrey 2018). The game had been tested in an intervention program in school for children between the ages of 13-15 (Garaigordobil & Martinez-Valderrey, 2018). The results of this intervention had shown that there was a reduction in cyberbullying behaviours, improved perception of school violence, a decrease in aggressiveness, and an increase in the positive social behaviours assessed (Garaigordobil & Martinez-Valderrey, 2018. P.10). This was largely due to the characteristics of the activities in the intervention. These characteristics included the 1) promoting of empathy toward the victim, 2) analysis of the consequences for all those involved in cyberbullying 3) mobilization of the observers to defend the victim and denounce what they are observing (Garaigordobil & Martinez-Valderrey , 2018, p.11). Most importantly, these activities are important because they help to develop the human in a positive way by developing their affective, emotional and social developmental processes. Through developing these processes, the student can improve their skills in prosocial behaviour and most importantly in empathy. However, it is also important to keep in mind that this cooperative video game is not appropriate for all ages due to the nature of the questions involved and therefore this preventative measure is not applicable for all classrooms in schools.

*Serious games*

Serious games pose a possible solution to preventing cyberbullying. Serious games are a sub-genre of serious storytelling, where storytelling is applied outside the context of entertainment, where the narration progresses as a sequence of patterns impressive in quality... and is part of a thoughtful progress (Lugmayr, 2016). Hence, serious games are intended for a primary purpose as opposed to simply entertainment. These sorts of games have various benefiting factors for educational learning. Firstly, serious games can provide authentic learning environments that help to break the student 10-minute limit to attention to a traditional lecture (Susan Weinschenk, 2011). Other benefiting factors include the engaging and interactive nature of the games, the opportunities for reflexivity and collaboration. These are all vital qualities that can motivate students to participate in this type of prevention strategy.

Pertaining the prevention of cyberbullying, serious games can be regarded as an educational tool that can be used in schools to help prevent cyberbullying by bringing awareness to cyberbullying and evoking a positive and constructive conversation around cyberbullying in the class. Through the experience, students can be aware of the complexity of cyberbullying including the consequences and the harm it can cause to the victim. *Conectado,* is a serious game, that is a graphic adventure where the player is put in the situation of a bullying victim, where he/she is experiencing bullying daily (Calvo-Morata, Alonso-Fernández, Freire, Martínez-Ortiz, & Fernández-Manjón, 2019). The player experiences this for 5 days where he goes through experiences of online and face-to-face bullying including being betrayed by his initial friends (Calvo-Morata et al, 2019). Through the game, students can have a free exploration of simulated domains where students can test and apply their knowledge and can experience the results of different decisions (Calvo-Morata et al, 2019). All the player's information about their interactions is collected, anonymised, and sent as traces to a game analytics server (Calvo-Morata et al, 2019). This data is utilized to create a dashboard that basically summarizes the activity of the player including how long they been playing, the kinds of interactions they have with other players, the quality of the game etc (Calvo-Morata et al, 2019). This sort of data is highly significant because when received by the teacher, it allows the teacher to gain an insight into the sort of relationships that were formed during the game and assures the teacher that the student has played the game. Games like Conectado are beneficial prevention strategies for students when it is age appropriate. Considering the game puts the child in the shoes of a cyberbullying victim, it is ethically wrong to have children experience this if they are not at the age where they are psychologically, mentally and emotionally ready.

With the help of the gaming analytics module and an open questionnaire, a study was done on the applicability of Conectado in schools. The main aim of the study was to test the applicability of the serious game as a teacher tool that can help prevent & reduce cyberbullying (Calvo-Morata et al, 2019). The game was tested with 93 actual teachers in 8 different schools in Spain, and with 118 educational sciences students in 2 university centres in Madrid (Calvo-Morata et al, 2019). The study was divided into five phases with the first stage being an initial questionnaire where teachers were asked questions about cyberbullying to test their awareness of cyberbullying (Calvo-Morata et al, 2019). The second phase was the game session where the teachers and university students participated in the game (Calvo-Morata et al, 2019). The third phase was the post-game questionnaire to assess their cyberbullying awareness, their use of social networks, their opinion and what they have learned from the experience (Calvo-Morata et al, 2019). In the fourth phase, the teachers and the students are given the opportunity to express their opinion on the game and their opinion on its applicability in the classroom as a teacher tool and the extent to which they would use the game in their class (Calvo-Morata et al, 2019). The fifth part of the study was largely for the teachers and students to reflect on the game (Calvo-Morata et al, 2019). The results showed that the clear majority felt that the game was a useful tool in the classroom to help prevent cyberbullying by increasing awareness and promoting a conversation around this important topic (Calvo-Morata et al, 2019). Considering the participants also include teachers with experience and who are aware of the dynamics of running a classroom, the findings demonstrate a positive outcome in knowing that teachers find this sort of preventive measures well suited to a classroom setting. This provides as hopeful research that can help push forward the message of using technology to prevent cyberbullying behaviours.

*Digital Strategies*

Another method that is used to help prevent cyberbullying is digital strategies. Different nations have already implemented digital strategies in different ways. For example, in Spain, a program called the Safety.net had been tested with a pilot sample to see if it is effective in preventing internet risks; these internet risks include cyberbullying, sexting, online gaming, cyber dating abuse, problematic internet use, nomophobia, internet gaming disorder, and online gambling disorder (Ortega-Barón, González-Cabrera, Machimbarrena, & Montiel, 2021). The program consisted of 16 one-hour sessions to address internet risks (Ortega-Barón, González-Cabrera, Machimbarrena, & Montiel, 2021). Each session structure is information about the risk or the

construct, awareness, an individual or group activity that seeks to make the necessary changes in their attitude and behaviour, offer recommendations labelled as "cyber tips" and group reflection on what they have learned (Ortega-Barón, González-Cabrera, Machimbarrena, & Montiel, 2021, p.4). For the assessment, a repeated measures design was used with a control group and intervention group (Ortega-Barón, González-Cabrera, Machimbarrena, & Montiel, 2021). 120 adolescents were assigned to the intervention group and 45 to the control group (Ortega-Barón, González-Cabrera, Machimbarrena, & Montiel, 2021). The program showed to be effective in preventing the increase of most of the assessed risks and that it reduced some of them with a smaller number of sessions (Ortega-Barón, González-Cabrera, Machimbarrena, & Montiel, 2021). Nevertheless, there are limitations in this study arising from how the results are collected which affects the reliability and applicability of this program. Firstly, this program was largely based on self-reports that could have included response bias. Secondly, this program was implemented during the time of the pandemic and thus the pandemic context may have added additional variables to the study.

Kiva Koulu, an evidence based antibullying program developed in University of Turku, also uses technology as a catalyst to help prevent cyberbullying. Kiva Koulu has shown to be effective in helping to minimize cyberbullying behaviour through empirical evidence. An investigation of KiVa examined the program's influence on cybervictimization through self-reports and found positive intervention effects (Salmivalli, Karna & Poskiparta, 2011). The Kiva program core goal is to prevent and reduce bullying/cyberbullying with their core message *"Everyone is responsible for common wellbeing, and everyone can also influence it"* (KivaKoulu, 2023, p.8). Kiva Koulu helps minimize all bullying by tackling it through versatile practical materials, involvement of students and parents, prevention and intervention, monitoring the situation of the school, and through digital tools and learning environments (KivaKoulu, 2023).

A digital tool that is used by Kiva Koulu to help prevent cyberbullying is their "Kiva Games". This collection of games is intended to develop student's socio-emotional and awareness skills through teaching the students how to 1) recognize and process emotions 2) recognize bullying situations 3) recognize the different roles in bullying situations (Kivakoulu.fi, 2023). The game is divided into different levels for each grade and each game contains tasks related to anti-bullying activities (Kivakoulu.fi, 2023). The games ensure the students remember the kiva rules with the use of surveys by having the games include surveys where the students write down how much they have followed the rules and they can see their progress (Kivakoulu.fi, 2023).

## Discussion

Despite an increase in studies about cyberbullying in recent years, cyberbullying as a whole remains an understudied subject in the sense that there is a lack of theories that seek to explain cyberbullying perpetration. Cyberbullying research has been quite focused on identifying risk factors that predict perpetration of cyberbullying or victimisation by means of cyberbullying (Barlett, Chamberlin, Zachary, 2016), and it seems that formulating theories that seek to explain cyberbullying perpetration has not been done to the extent that it has been done for example with traditional bullying. The learning based BGCM (Barlett and Gentile Cyberbullying Model) is the only scientific theory of cyberbullying perpetration at the present time.

Studying cyberbullying in school settings does pose some unique challenges. Firstly, cyberbullying is often underreported (Aboujaoude, Savage, Starcevic & Salame, 2015) which may be due to embarrassment, fear of retaliation or a lack of trust in the efficacy of the reporting mechanisms. Data collection may also be a factor in why studying cyberbullying in schools is challenging. While there are many ways to collect data when studying cyberbullying, such as questionnaires and interviews, researchers may struggle to obtain accurate data because of factors such as privacy concerns and legal limitations. There are also ethical concerns such as identity protection of participants that need to be taken into consideration when studying cyberbullying.

There is a considerable gap when it comes to the amount of cyberbullying research there is and how much traditional bullying research there is. We feel this is important to highlight, as cyberbullying as a phenomenon is here to stay at least for the time being. Perhaps in the future, with artificial intelligence becoming more advanced, there will be ways of preventing cyberbullying that we are yet unaware of or unable to imagine. However, for now we are left to contend with the reality of cyberbullying.

One of the realities of cyberbullying is its potentially life-altering impact on those who experience it. Therefore, we maintain that professionals within the field of education have a responsibility to their students, to protect them and their development and learning to the best of their ability. We argue that to provide holistic education that prioritises the students' physical and mental well-being, safety, and healthy development, it is necessary to intervene in all possible cases of cyberbullying that have been brought to the professionals' attention. Also, when discussing cyberbullying prevention in schools, several factors need to be considered to ensure that prevention efforts are effective and sustainable. One of these factors is age appropriateness. For example, prevention efforts for elementary school could focus on SEL and basic internet

safety, while in higher grades certain sensitive topics like online privacy and sexting could be discussed together with the students. It should also be noted that parents, or other adults in the students' homelives, play and important role in preventing cyberbullying, and cyberbullying efforts should involve and engage the caregivers in the process. It is therefore important that there is good and continuous communication between the school and home. Technology considerations should also be considered when tackling cyberbullying in the school context. Technologies pose as viable solutions for both positively developing student's psychological characteristics as well as limiting cyberbullying through restrictive technologies measures. Nonetheless, it is also important to keep in mind that the technologies used as preventative measures should be age appropriate and applicable to the classroom setting. Technology Prevention efforts must stay up to date with online trends and new technologies to ensure that they remain effective in addressing emerging forms of cyberbullying.

While there has been significant progress in research on cyberbullying prevention, there are still several areas that require further research. By addressing gaps in knowledge, it should be possible to better understand how to prevent and address cyberbullying in all its forms.

Cyberbullying prevention strategies are a rather studied subject within the field of cyberbullying research. There are many meta-analyses of the efficacies of different types of cyberbullying prevention programs (for example, Gaffney *et al*, 2018). It would be our suggestion in the light of our research that subjects such as the impact of traditional anti-bullying programs as well as the impact of school policies on cyberbullying be studied further. Also, much of cyberbullying research is based on questionnaires and other such quantitative methods, which can be useful especially when seeking to understand and prove the efficacy and effectiveness of cyberbullying programs that have been enacted. Despite this, we would also like to see more qualitative research about cyberbullying. We understand that the reason for this relative lack of qualitative research on cyberbullying can be caused by many factors, such as ethical concerns and data security issues. We also suggest that further research on the long-term effects of cyberbullying is needed. While research suggests that cyberbullying has immediate and long-term negative effects on the victims (Fahy et al, 2016, as cited in, Gazdek, 2021), there is still much to learn about the lasting impacts of cyberbullying on the victims. We also think it would be beneficial to study the role of bystanders in cyberbullying situations. Most studies focus either on the victims or the perpetrators of cyberbullying, and the bystanders are left without much attention

in current literature. Little is therefore known about the factors that influence bystander behaviour and the effectiveness of bystander intervention. It could be studied further how bystanders can effectively be engaged in preventing cyberbullying.

When it comes to cyberbullying programs and prevention strategies, it must be noted that some programs cannot easily be transferred due to differing cultures. Intervention programs might not always be transferable and suitable in an international context (Nocentini & Menesini, 2016). Every country has its own culture and customs, and this will naturally affect the implementation process of any given program. According to Sundell et al (2014), the differences might occur because of poor cultural adaptation, different contextual influences or poor treatment adherence. Original policy makers of the program should work and collaborate alongside the policy makers in the new country. This would be preferable because then the main goals and the vision of original program can remain whilst several modifications can be made if needed for cultural adaptation. This would not only benefit all involved persons, but it would also ensure that cyberbullying prevention research is also more readily available in other cultural contexts, besides the western context.

Cyberbullying can also intersect with other forms of discrimination such as homophobia, racism and sexism. In this way cyberbullying can function as an amplifier for discrimination. The anonymity aspect can also make the bully feel safer when cyberbullying someone of a marginalised identity. However, there is limited research on how intersecting identities impact experiences of cyberbullying and cyberbullying prevention efforts. More research is needed to understand how intersectionality influences cyberbullying behaviour and prevention efforts.

In conclusion, we believe that by implementing proactive prevention measures, promoting a positive school climate, and educating students and staff, schools can contribute to the mitigation of cyberbullying within their communities. Utilising technology and a better theoretical understanding of cyberbullying and cyberbullying perpetration could be beneficial in creating new ways of preventing cyberbullying among youth.

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