Can Artificial Intelligence Tools Assist Educators to Solve Bullying Incidences in the School Context?

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Abstract: This paper deals with the phenomenon of school bullying under the spectrum of prevention, bringing to the forefront the use of AI tools, with a view to redefining the approaches already implemented as strategic against bullying. More specifically, a brief comparison between the practices proposed by the tools of AI and some effectively implemented international programs will be attempted. Simultaneously, alternative good practices will be depicted such as listening to Mozart music, the teaching of kindness, travel pedagogic and last the use of VR technology to enhance students' empathy. This paper focuses on secondary education given the fact that during puberty the incidence of school bullying is much higher. The discussion at the last section of this project converges to the constructive implementation of AI tools for the benefit of the educational community.

Key words: school bullying, adolescence, prevention, artificial intelligence (AI)

1. Introduction: General Information about School Bullying

School violence has now been recognized as a major public health issue (Chester et al., 2023), and the escalation of this phenomenon requires further investigation (Johansson, 2023). As Professor Norman (2022) notes, one in three students experiences bullying at school every month worldwide. School violence can have long-term effects on students' safety, physical and mental health, and their educational outcomes (Milosevic et al., 2022). A study conducted in Stockholm among secondary school students aged 15 to 18 by Källmén & Hallgren (2021) in the years 2014, 2018, and 2020 found a positive correlation between bullying and mental health issues. UNESCO (2024) emphasizes the necessity of redefining the concept of bullying, while at the Global Forum Against School Bullying in October 2023, it was highlighted that "School bullying is a harmful social process" (World Antibullying Forum, 2023).

1.1 Psycho-social Changes in Adolescents

Adolescence is characterized by significant changes at biological, social, emotional, and cognitive levels (Grigoriou, 2020). According to Piaget, during adolescence, individuals gain new experiences and develop critical thinking skills (Siniouros & Spanakaki, 2020). Adolescents are in confrontation with the "hypocritical world" of adults, and their search for identity occurs through new value standards. Furthermore, emotional and

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psychological development is influenced by the social context, as adolescent friendships take the form of cliques, providing security and social identity, while the absence of relationships leads to isolation (Lightfoot et al., 2014). Finally, adolescents are significantly influenced by their relationship with their parents, as they find themselves in a state of both independence and interdependence with them (Chrysomallidi, 2024).

2. Main Part

2.1 ChatGPT Tool Guidelines for Addressing Bullying Incidents

The following paragraphs present "the advice" — without any editing from the authors — given by the ChatGPT tool of Open AI after being fed the following scenario, on three different electronic devices (mobile phones, computers) and at different times.

"I am a secondary education teacher and I teach teenage students. However, I have noticed that there is an incident of bullying in my class. What would you advise me to do?"

2.1.1 Advice 1

(1) Education and Awareness
- Awareness Programs: Implement programs that inform students about what bullying is, its consequences, and how they can recognize it. Awareness can be raised through interactive workshops, theatrical performances, or class discussions.
- Collaboration with Experts: Bring in school psychologists or social workers who can educate both students and teachers on how to prevent and address bullying.

(2) Creating a Safe Environment
- Promotion of Positive Values: Foster the creation of a school culture that promotes friendship, acceptance, and respect. Educators can lead by example through their behavior and reward positive actions from students.
- Clear Rules and Procedures: Establish clear behavioral rules that include zero tolerance for bullying. Inform students and parents about the consequences of inappropriate behavior and the ways they can report bullying incidents.

(3) Effective Intervention
- Immediate Response: When a bullying incident occurs, educators must act quickly to stop the aggressive behavior and support the victim. The intervention may include dialogue with the involved students, informing parents, and collaborating with the educational community.
- Support for Victims: It is crucial to provide psychological support to bullying victims, either through individual counseling or support groups at school. Students should feel they can speak openly and that their concerns will be taken seriously.

2.1.2 Advice 2

(1) Encouragement of Open Communication
- Creating a Safe Environment: Foster a school environment where students feel comfortable talking about their problems. Encourage students to express their concerns either to educators or a trusted adult.
- Conflict Resolution Training: Teach students how to manage conflicts without violence. Provide them with tools and strategies for negotiating and resolving disputes peacefully.

(2) Strengthening Social Cohesion

- Inclusion Activities: Organize group activities that promote collaboration and solidarity among students. This can include team games, projects, and discussions that enhance the sense of community.
- School Campaigns Against Bullying: Organize campaigns that promote mutual understanding and acceptance of diversity. These campaigns can help shape a positive school climate.

(3) Collaboration with Parents and Community

- Informing and Involving Parents: Hold regular meetings with parents to inform them about the school's bullying policies and to educate them on ways to recognize and address the phenomenon.
- Creating Support Networks: Collaborate with local communities, organizations, and specialists to provide support to students and ensure there is a strong support network both inside and outside the school.

2.1.3 Advice 3

(1) Establishing a School Anti-Bullying Policy

- Creating Clear Rules: Establish and enforce a strict anti-bullying policy that is clear to all students, parents, and school staff. These rules should be well-known and include specific consequences for those participating in bullying.
- Regular Updates and Training: Continuously inform students and parents about school policies and the consequences of bullying through informational meetings and educational programs.

(2) Monitoring and Timely Intervention

- Monitoring the Classroom and Common Areas: Educators need to be attentive and observe any signs of bullying, such as changes in student behavior or the isolation of a child. Presence and observation in the school's common areas can prevent incidents.
- Immediate and Discreet Intervention: If a bullying incident is observed, it is important to intervene immediately with respect to the involved parties. The approach should be supportive of the victim and include conversation with the perpetrator to understand the mistake and its consequences.

(3) Support and Empowerment of students

- Promotion of empathy and mutual support: Encourage students to develop empathy and support their peers. Teach them the importance of solidarity and friendship through activities and discussions in the classroom.
- Creation of support groups: Establish student groups that function as supporters for their classmates, thereby creating a safety net and preventing bullying incidents before they escalate.

2.2 Intercontinental Report on Best Practices Anti-Bullying Models

This section of the paper includes a brief overview of applied prevention models against school bullying in America, Europe, and Australia, with positive results, for a multidimensional approach to the problem.

2.2.1 The Olweus Prevention Program in Colorado, USA

The Olweus Bullying Prevention Program (OBPP) is a comprehensive program aimed at elementary, middle, and high school students at four levels: school, classroom, individual, and community. The curriculum includes lessons for developing skills to cope with disrespect and other forms of bullying. Additionally, it provides guidance to staff on rewarding desired behaviors and addressing student reports of bullying. The program is

combined with Expect Respect and the School Safety Bullying Prevention Unit (SS-BPU) for a comprehensive approach to the problem (CDE, 2024).

2.2.2 The KiVa Program in Finland

The KiVa program is an anti-bullying initiative developed at the University of Turku in Finland and is intended to serve as a toolkit for schools (KiVa Program, 2024). It has been evaluated as effective outside of Finland in several countries such as the Netherlands, Estonia, Italy, and Wales (E.C., 2021).

The program has been shown to significantly reduce bullying and victimization (Kärnä et al., 2011), including verbal, relational, physical, and cyberbullying (Salmivalli et al., 2011). Additionally, positive effects have been reported on students' perceptions of school, academic motivation, and performance (Kärnä et al., 2011), while it seems to reduce anxiety and depression (Garandeau et al., 2021).

2.2.3 The European Network against School Bullying

The European Network against School Bullying (EAN) was established in 2014 with 22 active members from 15 European countries, committed to combating school and cyberbullying. The network is organized around four pillars: creating infrastructures, developing methods, raising public awareness, and advocating for the strengthening of national and European anti-bullying policies (EAN, 2021).

2.2.4 The Friendly Schools Friendly Families (FSFF) Program in Australia

Since 1999, the Friendly Schools research team has conducted extensive studies in schools and communities across Australia, involving more than 40,000 children and adolescents. These projects have led to practical actions, training, and digital tools that help schools enhance students' social and emotional well-being and thus reducing bullying, including cyberbullying (Jadambaa A., Graves N., Cross D. et al., 2022).

2.3 Comparison of Methods

ChatGPT provides different solutions for the same problem, which can be seen as positive because it gives educators alternative options. However, these solutions are neutral and require the intervention of the human educator to adapt to specific circumstances and the complexity of human nature. The solutions offered by artificial intelligence are technocratic and methodical, but they lack emotion and differentiation regarding ethnicity or the ethical principles of the community.

Nevertheless, there is convergence regarding the importance of prevention, monitoring the school climate, and engaging the wider community and students. In contrast, traditional methods focus on each specific case, taking into account the micro- and macro-environments of those involved, as well as the emotional state of all. Therefore, classical practices are more human-centered than technocratic.

In conclusion, artificial intelligence is an evolving science that still lacks emotional intelligence. In the coming years, it is expected to be enriched with elements that enhance inclusion and acceptance of diversity, leading to the empowerment of the educational community.

2.4 Alternative Approaches to Addressing Bullying

At this point in the paper, a presentation of alternative ways to prevent school bullying is made as a result of a literature review.

2.4.1 The Effect of Mozart's Music (Mozart Effect)

Neuroscientific research has created models to explain the behavior, development, and musical choices of adolescents (Thomas, 2016) and how music could serve as a means of prevention against school bullying and school violence in general. For example, classical music affects the autonomic nervous system, a network that controls certain involuntary processes such as breathing, heart rate, and emotions, and thus with long-term exposure to music, a person's neurons will lead to the formation of new communication pathways (Eck, 2024).

Increasing evidence shows that listening to Mozart's Sonata for Two Pianos in D Major may reduce the frequency of epileptic seizures (Eck, 2024) and can improve other psychological conditions and diseases, such as depression (Fagan, 2022). As Heshmat (2022) argues, music is a tool that can alleviate negative emotions and enhance positive feelings, helping people cope with anxiety or outbursts of violence.

One suggestion would be to play Mozart's music in the common areas of the school during breaks. This could be studied regarding its effect on the psychology and behavior of adolescents. AI and VR tools could help explore this musical world and encourage students to engage in activities contrary to violence.

2.4.2 Teaching Kindness

As society changes, fundamental skills such as kindness are being sidelined. Many traditional anti-bullying programs focus on the negative actions that cause stress in children. Students should be taught instead of the aforementioned about how to change their thoughts and actions with kindness and compassion, and thus encouraging positive behavior (Currie, 2014). O' Grady (2013) states that kindness changes the brain through the experience of kindness. Positive feelings activate areas of the brain that produce endorphins, substances associated with pleasure, social connection, and trust.

These feelings of joy are proven to be contagious, encouraging more kind behavior. It has been reported that even small acts of kindness enhance our sense of well-being, increase energy, and provide a wonderful feeling of optimism and self-esteem (Currie, 2014). At the same time, kindness increases our ability to create meaningful relationships with other people (Layous et al., 2012). Clark and Marinak (2010) emphasize the incorporation of kindness programs to address bullying as a counter to the pedagogy of hate that can lead to more democratic and inclusive societies (Stopbullying.gov, 2024).

2.4.3 The Use of Virtual Reality (VR) to Enhance Empathy

Given that modern life is increasingly organized around and within a digital environment, it is inevitable to mention the use of new technologies, such as virtual reality (VR), in the prevention of bullying, not only physical but also online, which takes place indirectly and anonymously (Gabrielli et al., 2021; Polanin et al., 2022) using various communication platforms, public or private social networks (Cunha et al.,2024).

To date, the main purpose of using virtual reality (VR) has been to enhance learning and facilitate the educational process in a realistically simulated environment. VR creates an artificial environment that transmits synthetic sensory information, and a VR scenario designed according to the research purpose can be reproduced immediately according to emerging needs (Pan & Hamilton, 2018).

In a pseudo-randomized trial of a bullying prevention program titled "Stand Up Virtual Reality to Activate Bystanders Against Bullying", enhanced with VR among middle school students in the USA conducted by Ingram et al. (2019), it was found that compared to the control group, students in the VR group showed a higher level of change in empathy, which then increased their willingness to intervene (Liu et al., 2022). Furthermore, Barreda-Ángeles et al. (2021) used an experimental design for secondary school students to explore whether the VR presentation function was more effective in provoking more feelings of empathy towards victims.

Finally, a pilot program will be implemented by INOVA+ and is funded by the #ErasmusPlus program, serving as an example of the European Union's initiatives and services for digital innovation and transformation. The project is called VR4Empathy | Virtual Reality for Empathy in Education — The use of virtual reality for inclusive and action-oriented empathy in schools (number 101132844) and supports collaboration between schools and EdTech companies for the joint development and provision of virtual reality resources for education. As part of the virtual reality resources, the consortium will prepare a set of videos and guidelines to be used in various educational environments in Portuguese, Greek, and Slovenian schools. The project's videos will focus on European themes such as history, social values, citizenship, and diversity, aiming at analysis, discussion, and idea exchange among upper secondary school students, enhancing their empathy. The project is in its initial stages, and promotional events are planned in the coming months, detailed information about the project is available on the website https://virtualreality4empathy.eu/ and all updates will be published on the project's LinkedIn page https://www.linkedin.com/company/vr4empathy (Monteiro et al., 2024).

2.4.4 Travel Pedagogy (T.P.)

The learning impact of travel remains a relatively under-researched area in the social sciences (Brown, 2009; Falk et al., 2012). By extending the classroom into natural environments, historical and cultural sites, and real-life scenarios, educational trips can provide a holistic framework for school education (Li & Liang, 2020), promoting mental health (Chapman, n.d.). An online study by Chau & Ren (2024), based on social constructivism theory (Adams, 2006) and self-determination, highlighted the necessity for the development of educational travel activities and programs.

In Greece, following the COVID-19 pandemic, actions concerning an autonomous scientific/pedagogical approach of T.P. were organized by Aristotle University of Thessaloniki (Thermidis, 2021). T.P. focuses on familiarization, hiking, and engaging children in urban, peri-urban, and natural environments, aiming to teach life skills outside the school context (Alfavita, 2021), allowing the development of Gardner's naturalistic intelligence through systematic observation (Sadiku et al., 2020).

The ultimate goal of T.P. is the psychological empowerment of children through education in teamwork, collaboration, seeking help, and negotiation in crisis and conflict situations. In this way, they acquire skills such as empathy, self-awareness, and a positive attitude towards life (Edweek, 2024). Furthermore, as suggested by Low (2022), T.P. can serve as an educational approach that teaches the importance of mindfulness, cultivating particular abilities in individuals to cope with situations such as incidents of school bullying.

3. Discussion

Although bullying has been identified for decades, it remains a problem in education and society. Prevention programs have reduced but not eliminated the phenomenon, possibly due to rapid global changes. Artificial intelligence is a reality, but it lags in emotional intelligence compared to traditional bullying intervention practices. Alternative proposals, such as music, kindness, and travel pedagogy, can help change students' attitudes and perceptions. However, more quantitative research is needed to assess the effectiveness of both technological and alternative methods in preventing school bullying.

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