

Digital Tools for the Prevention of Child Cyberbullying at School to Support Extracurricular and Out-Of-School Activities

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Abstract: This study examines the possibilities of using digital tools in the prevention of child cyberbullying through extracurricular and extracurricular activities. Modern digital platforms and applications that support the formation of digital literacy, safe behavior on the Internet and socially responsible communication among students are analyzed. A classification and systematization of the main groups of digital tools according to their educational purpose and preventive potential are presented. The possibilities for their application in various forms of non-formal education, as well as the advantages and limitations of their use are considered. It is concluded that the integration of digital technologies in extracurricular and out-of-school activities creates conditions for building sustainable attitudes for safe online behavior and for the formation of an active civic position against manifestations of cyberbullying.

Keywords: *cyberbullying, digital literacy, digital tools, extracurricular and out-of-school activities, online safety.*

1. Introduction

Modern society's digitalization relies on sharing local and global resources within communities through applications for remote and local access [1]. So, digitalization is transforming how children communicate, learn, and build social relationships. Along with the undeniable opportunities for access to information and participation in global communication networks, the Internet also creates new

risks, with cyberbullying occupying a special place [2], [3]. This phenomenon is characterized by the use of information and communication technologies for the systematic exercise of psychological pressure, insults, threats, discrimination or social isolation.

Cyberbullying is a serious socio-pedagogical problem due to its impact on adolescents' mental health, social adaptation, and academic development. According to Hinduja and Patchin, cyberbullying is formed as a result of the complex interaction between technology, adolescent characteristics, and the social environment [4]. Cyberbullying is a more common and serious problem among students, which is an indicator of the importance of its prevention. The authors Saljic & Senic-Ruzic [5] show that students attribute the greatest preventive potential to appropriate support and a positive school climate, and perceive restrictions as less effective. In this context, the preventive function of the school is becoming increasingly important. A particularly favorable environment for building a digital culture are extracurricular and out-of-school activities, which provide learning opportunities through experience, collaboration and practical application of knowledge. The integration of digital tools into these activities allows for the creation of an educational environment aimed at forming skills for safe online communication and responsible digital citizenship [6].

2. Research methodology

The aim of this study is to analyze the possibilities for the application of digital tools in the prevention of child cyberbullying in extracurricular and out-of-school activities. The following research methods have been used to achieve this goal:

- theoretical analysis of scientific literature on the problems of cyberbullying and digital safety;
- comparative analysis of existing digital tools and platforms;
- systematization and classification of technological solutions according to their functional characteristics;
- analysis of good practices in the use of digital tools in an educational environment.
- analysis of the results of a survey with primary and junior high school students on the digital tools used in their education for extracurricular and out-of-school activities.

The research is qualitative and is based on an interdisciplinary approach, combining concepts from pedagogy, information technology and cybersecurity.

3. Theoretical foundations of the use of digital tools for the prevention of cyberbullying

Cyberbullying takes many forms, such as harassment and the spread of misinformation, all of which cause severe emotional and psychological harm [7]. In this regard, developing ethical generative AI models to combat cyberbullying on social platforms is paramount. Using artificial intelligence to identify and mitigate harmful content is imperative, as are ethical considerations such as fairness, confidentiality, and transparency [8]. Modern techniques and strategies such as natural language processing, machine learning, and deep learning can be used to detect harmful online behavior [9]. In modern educational theory, digital tools are seen as tools to support active learning, communication and collaboration. Their potential for the prevention of cyberbullying is determined by the ability to create an interactive and controlled environment in which students can acquire knowledge and practical skills for safe participation in the digital space.

Of particular importance is the concept of digital citizenship, which brings together the knowledge, skills and values necessary for ethical and responsible participation in online communication. The development of digital citizenship competence includes the formation of critical thinking, respect for differences, protection of personal data and the ability to recognize various forms of online aggression.

Several studies have demonstrated the relationship between the social environment in the classroom and participation in aggressive behavior at school [10]. It should be noted that extracurricular and after-school activities create opportunities to develop these competencies through practical tasks, project-based learning, and teamwork, which would increase the effectiveness of preventive initiatives.

4. Systematization of digital tools for the prevention of cyberbullying

The results obtained allow digital tools to be combined into five functional areas:

4.1. Communication and cooperation tools

Microsoft Teams, Google Meet, Zoom, Viber and WhatsApp support the organization of training initiatives, discussions and group activities aimed at safe online behavior. Through case studies, individual or group work, students learn to communicate with respect and empathy in a secure online space. These channels could also serve when students need to quickly inform about a specific risk, as well as when there is a need for urgent coordination with stakeholders to resolve

it. Their main advantage is the quick connection between different users or groups of people in real time – through chat, conversation with or without video connection, sending and/or presenting files. Their automatic reminder to start an organized calendar meeting makes it easy for students, teachers, parents, and partner organizations to interact.

4.2. Training and activity management tools

Microsoft Teams for Education, Moodle, Google Classroom and Canvas support the planning, implementation and evaluation of educational activities related to cybersecurity. The ability to analyze students' results from played cases, tests, etc., allows educators to identify topics on which children experience some hesitation and need follow-up training and discussions.

4.3. Tools for creating educational content

Canva, Genially, PowerPoint and Adobe Express allow the development of interactive materials aimed at raising awareness about cyberbullying. The creation of visual content by each student supports their ability to think critically regarding the impact of digital content on adolescents, intellectual property protection.

4.4. Interactivity, STEM and innovation tools

Kahoot!, Quizizz, Scratch, Micro:bit, Arduino and CoSpaces Edu support learning through experiential and practical problem-solving. They increase students' motivation and engagement by transforming theoretical learning content into a game (gamification). There is a wide selection of different types of exercises that can be used according to the individual capabilities and preferences of students. They make it easier for teachers to create tests and quickly check them, as well as to analyze students' difficulties, strengths and weaknesses.

4.5. Tools for the organisation and promotion of results

School websites, YouTube channels, blogs and social networks provide opportunities for the dissemination of student initiatives and campaigns against cyberbullying. Through them, developed products and finished projects can be quickly distributed to an unlimited number of people, as well as stimulate the exchange of ideas and cooperation between them in real time.

5. Analytical assessment of preventive potential of digital tools

The application of digital tools in extracurricular and out-of-school activities significantly expands opportunities for learning through experiential, creativity, and teamwork outside the traditional classroom. This can be achieved by using

modern information technologies to develop new learning tools that improve understanding of learning materials [11]. Digital tools, on the other hand, help teachers and interest group leaders track students' progress and foster autonomy and creativity in an informal environment that helps each child unleash their potential [12]. Therefore, the problem of how to support teams to be remote and productive is still actual [13].

However, digital tools differ in their impact on the main components of cyberbullying prevention, as shown in Table 1.

Table 1. Preventive potential of digital tools

Tool Group	Preventive effect	Main results
Communication platforms	High	Improve communication and identify problems early
LMS Platforms	High	Systematic training in digital safety
Gamified tools	Medium to High	Increase engagement and motivation
Creative Tools	High	Development of empathy and active citizenship
STEM Tools	Medium	Development of logical and critical thinking
Promotion platforms	High	Forming positive digital culture

The analysis shows that the highest efficiency is observed in the combined use of different categories of tools within a comprehensive school prevention strategy.

6. Analysis of survey results

A total of 124 of the students in primary and junior high school (4 - 7 grade) of “Hristo Botev” Secondary School in the town of Septemvri took part in the survey in the period from 29.04.2024 to 27.05.2024. The anonymous survey aimed to analyze the level of implementation of digital tools in extracurricular or out-of-school activities. More than a third of the respondents regularly use digital tools for: “doing homework (39.5%)”, “supporting homework completion (33.9%)” and “communicating during the lesson (35.5%)” (see Fig. 1).

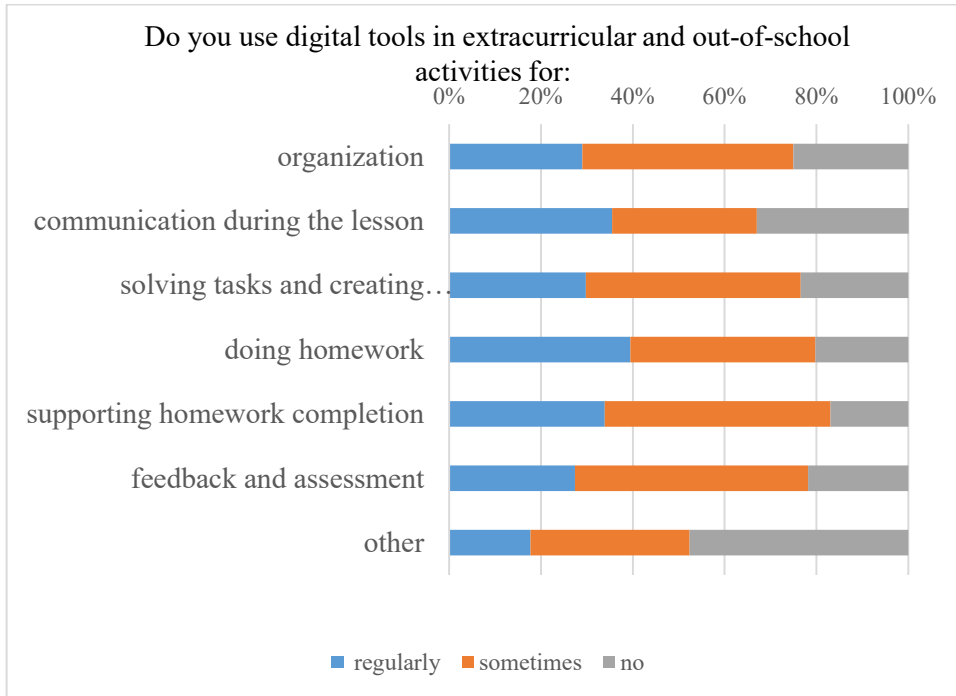


Fig. 1. Extracurricular and out-of-school activities where students in grades 4-7 use digital tools

The two most used tools for communication by students are “Google Hangouts Meet (55.5%)” and “Microsoft Teams (35.5%)” (Fig. 2).

They remained preferred throughout and beyond the period of widespread remote electronic education. Less than 5% of all respondents do not use any of these tools. Under “other (44%)”, students in grades 4-7 recorded Viber, Messenger, Ten Ten, Instagram, Tik Tok, FaceTime, Snapchat, Discord and others. A total of 63.4% of the respondents report improved communication with classmates and friends as a result of participation in extracurricular or out-of-school activities. Development of their own skills and/or qualities 46.8% of respondents report. As examples, they indicated the acquisition of new knowledge and creative skills, as well as the development of the so-called soft skills. Almost half of the students in grades 4-7 (48.4%) report an improvement in their communication with teachers. They left a variety of answers when giving examples in this regard. They are most often expressed in an improved environment for sharing and the presence of stronger friendships.

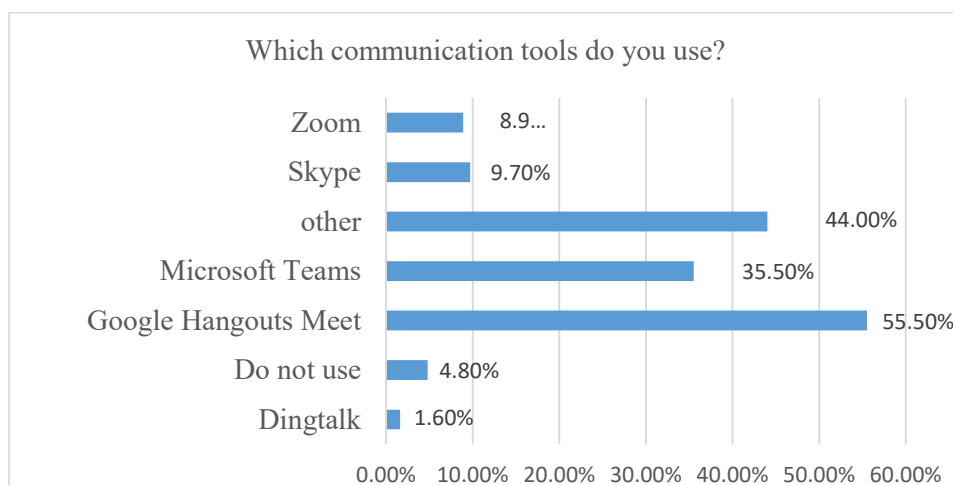


Fig. 2. Communication tools used by students in grades 4-7.

7. Discussion

The results of the analysis confirm that digital tools should not be considered solely as a technical means of communication or training. Their educational value is manifested through their ability to support the development of socio-emotional competences, critical thinking and responsible participation in the digital environment.

The use of digital tools in extracurricular and out-of-school activities significantly increases students' desire to actively engage in activities of interest. The advantages of using technological applications and tools are expressed in: increasing students' motivation and engagement; developing key competences of the XXI century; improving teamwork and communication; promoting creativity and innovation; ensuring equal access to online resources and information; facilitating the organization and management of activities [14]).

Digital tools undoubtedly have great benefits for the effective conduct of extracurricular and out-of-school activities, but their implementation in an educational environment is associated with a number of serious shortcomings. The main challenges for teachers and students stem from: insufficient technical support; limited access to the Internet; lack of digital skills; risks related to online safety; need for training of teachers and students.

The effectiveness of preventive activities depends not so much on the specific tool as on the pedagogical model of its application. Successful practices are characterized by active participation of students, cooperation between school and family and integration of cybersecurity topics into a wide range of educational activities.

8. Conclusion

The analysis confirms that digital tools have significant potential for the prevention of child cyberbullying in the context of extracurricular and out-of-school activities. Their application contributes to building digital literacy, developing social and communication skills and forming a responsible attitude towards the online environment.

Especially important is the transition from passive acquisition of knowledge to active participation of students in the creation of digital content, campaigns and educational resources aimed at combating online violence. In this way, technology ceases to be the only possible source of risk and becomes a means of building a sustainable culture of digital safety.

Specialized software platforms and applications for the prevention of child cyberbullying play an important role in this process. The integration of emotional speech recognition filters, simulators of online situations and applications for anonymous reporting turns extracurricular clubs into a safe place for digital safety and learning. Instead of using ready-made content, in these activities students learn how to use technology as a mechanism against online aggression. In this way, digital prevention tools not only protect students in real time, but also educate them – in empathy, responsible civic behavior and intransigence towards virtual violence. In future research, it would be useful to develop empirical models to assess the effectiveness of specific digital tools in reducing cases of cyberbullying in school environments.

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