

Teachers' Experience Regarding Digital Threats for Children and Teenagers

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Abstract. In a time embossed by increasing technology integration, digital security has become crucial, particularly for children and teenagers in primary and secondary school levels who extensively use digital media and devices on a daily basis. Austria's cybercrime incidents have almost been six-fold in the last ten years, highlighting the need for developing competencies in the field of digital security. This study focuses on teachers' experience in regards of threats pupils have to cope with. The study establishes a structured approach to address digital security concerns among children and teenagers. This informs teachers about potential threats and unveils possible competency gaps for pupils. An interesting finding is the ranking of threats from teachers' point of view based on their experience in reference to digital threats for children and teenagers.

Keywords: Digital Threats · Research in Informatics Education · Curriculum Gaps · Competencies for Children.

1 Introduction

Digital media and services are omnipresent in our society which has revolutionized the way we access information, interact, and communicate with others. These technologies have become a part of our daily routines and accompany many of us in many areas like education, profession or leisure. At the same time there is a significant increase in the frequency of individuals becoming involved into criminal cases within the digital area [1]. With increasing and early integration, however, potential threats to children and teenagers also become more relevant [2–6]. These threats range across various domains, such as inappropriate or illegal content, social environment and interactions, data and its protection, as well as potential addictive behavior. In order to determine the most significant threats, these need to be examined from different perspectives. This article focuses on taking a closer look at the perspective of teachers in regards of their personal experience with digital threats children and teenagers have to cope with.

2 Study regarding Teachers' Experience

In the course of this contribution, results of an empirical study with teachers in Austria are demonstrated. During the study, conducted between April and May 2023, teachers were asked about their experiences with regard to selected threats in the context of digital security among children and teenagers. In total 1.153 schools have been contacted to ask teachers for participation. Apart from the federal state of Salzburg, teachers from all over Austria took part in the study. The results reflect answers of 708 surveyed teachers of primary and secondary school levels. Among other parts, the questionnaire covered questions regarding threats in the digital realm. Based on their assessment, teachers were asked to rank a set of predefined threats within four groups based on the frequency with which young people are confronted with them. Furthermore, they were asked how they experienced children and teenagers being exposed to specific threats. In terms of experience, three options are distinguished. First-hand experience, which means that teachers have personally experienced or witnessed that children or teenagers have been confronted with digital threats. Indirect experience, meaning teachers at least know someone who experienced such cases. Finally, there is the possibility that teachers have not yet had such an experience or know a person who has.

3 Discussion

Existing publications already mention many threats and problem areas in the digital realm. These are already sufficiently documented, but they are scattered across several publications. What is missing, however, is a ranking of these threats in relation to the frequency with which children and teenagers are confronted with them. This ranking can be used, for example, to prioritize defining competencies. For this reason, this study was carried out to receive a sequence of threats in the digital context from teachers' point of view for the first time in Austria. Regarding the number of threats collected, they have been divided into four groups for easier ranking. In order to find suitable groups, threats were analyzed to determine any similarities. During the questionnaire teachers have been asked about their personal experience in regards to selected threats in reference to children and teenagers. The weighting of each threat is composed of teachers' first-hand and indirect experience. Table 1 illustrates the ranking of the threats according to teachers' first-hand experience.

Some potential sources of bias concerning the internal validity of the collected data have been considered. For instance, teachers may tend to pick their responses in accordance with societal expectations, possibly leading to an overrated or underrated result for specific threat rating. Furthermore, teachers may have difficulties recalling certain occurrences or events, especially those that took place in the past. This could lead to distortions in responses respective to personal experiences with diverse threats. Furthermore, the distribution of teachers across gender conforms to the population, which strengthens representativeness.

The circumstance that the education directorate of the state of Salzburg did not permit teachers in Salzburg to participate in the study is not expected to be a substantial source of error.

Moreover, in regards of the external validity some considerations have been considered. First of all, the sample of teachers was randomly selected, encompassing schools as well as individual teachers, with no targeted selection. Also, the data indicates a corresponding distribution, particularly in regards of teachers' gender, aligning with the general population. Hence, the sample is representative and applicable to the target audience. It is worth noting that voluntary participation could introduce a bias, favoring teachers with specific opinion or experience. To minimize systematic errors, the online questionnaire enforced active response for all questions by not providing default values. Teachers were not forced to participate at a specific time and no rewards have been promised for taking part in the study.

Table 1. Threats ranked according to teachers' first-hand experience (rounded to two decimal places)

Threat	First-Hand Experience	Indirect Experience
Information Overload	47.32%	16.81%
Social Media Addiction	43.93%	30.37%
Gaming Addiction	40.54%	34.32%
Fake Information	38.42%	23.02%
Cyber Mobbing	36.16%	38.84%
Inappropriate Content	30.93%	32.20%
Computer/Data Damage	18.50%	20.20%
Illegal Content	17.37%	26.84%
Reputation	16.95%	29.38%
Copyright	15.82%	15.40%
Cyber Stalking	15.82%	30.65%
Data Breach	15.68%	19.63%
Violence/Crime Incitement	11.44%	23.31%
Injury Trivialization	10.17%	19.77%
Contact Strangers	8.62%	16.10%
Personal Privacy	8.19%	18.64%
Shopping Addiction	7.91%	19.21%
Purchase Illegal Substances	7.91%	15.11%
Happy Slapping	6.78%	18.08%

4 Conclusion and Outlook

The majority of existing publications mostly concentrate on digital threats, explaining their characteristics and implications. While a limited subset of these address the topic of digital competencies, their focus primarily relates to competencies required for using digital media, rather than encompassing strategies

for mitigating threats within the realm of digital security. In the context of educational curricula, regional differences become visible. Some countries follow centralized while others prefer decentralized approaches in regards of responsibilities for curricula. Consequently, a multitude of curricular frameworks result, often characterized by loosely defined requirements in regards to competencies in the area of digital security. These circumstances make it challenging when it comes to evaluating the extent to which competencies addressing digital threats are being considered. In any case, there is a need to catch up in this area, so children and teenagers can improve and develop competencies in the field of digital security. With this contribution, we want to comprehensively examine digital threats for children and teenagers and point out that teachers are aware that pupils are confronted with them. Our research findings confirm the presence of a multitude of digital threats that children and teenagers encounter. Moreover, this study is the first of a kind engaging Austrian educators in a discourse concerning threats within the realm of digital security. By disclosing their perspectives on the challenges confronting children and teenagers, a unique insight was created. The next step is to ask children and teenagers as well as parents about their experiences in subsequent studies. While this has already been partially done by previous studies, these mostly covered only a small part related to digital threats. The upcoming acquisition of complementary data is expected to unveil the major threats children and teenagers have to cope with from different perspectives. In the course of a dissertation, exploring this issue will involve investigating the relevant threats faced by children and teenagers across different age groups. Furthermore, the focus will be on defining competencies required to effectively encounter these threats.

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