

The Relationship Between Digital Competence and Cyberbullying in Fourth-Grade Students

Dr. Derya Uygun

Ministry of National Education, Eskisehir, Turkey

derya.u1@gmail.com

ORCID: 0000-0001-6423-1914

Abstract

Digital natives, who encounter technology from the moment they are born, are individuals whose lives revolve around new technologies. Children must stay safe in online environments. Understanding the relationship between their digital competencies and cyberbullying can assist in developing effective strategies to enhance online safety. This study aims to examine the relationship between children's digital competencies and cyberbullying using data obtained from 108 fourth-grade students. In the data collection process, a scale was used to determine digital competencies, and two different scales were used to measure children's cyberbullying behaviors and exposure to cyberbullying. The data obtained were analyzed using a correlation test. The findings of the study show that there is a negative relationship between children's digital competence levels and cyberbullying. The findings suggest that students with higher levels of digital competence are less likely to experience cyberbullying and exhibit fewer cyberbullying behaviors. This study is an important step toward understanding the relationship between children's digital competence and cyberbullying. Furthermore, a detailed analysis of 4th-grade students' digital competencies is also presented. As a result of this analysis, it was found that children's digital competencies were at a medium level. The findings may be the basis for preparing educational programs to increase children's digital competencies. Despite its contributions, the study is limited by the relatively small sample size, and the reliance on self-reported data, which may introduce response biases.

Keywords: Digital competence, Cyberbullying, Children, Fourth-grade, Online safety, Correlation analysis, educational programs

INTRODUCTION

In today's digital landscape, children's interactions with technology significantly shape their experiences and social interactions. The 'Survey on Children's Use of Information Technologies' was conducted regarding the computing technologies used by children. Internet usage among children aged 6-15 reached 82.7% in 2021 (TUIK, 2021). This high level of internet usage emphasizes the critical role of digital competency in enabling children to navigate the digital world effectively and safely.

The European Commission (2017) defines digital competencies as the confident and critical use of information and communication technology for work, leisure, and communication. This includes navigating digital interfaces, using software applications, understanding digital communication tools, critically evaluating online content, managing digital privacy and security, and responsibly participating in online communities (Livingstone & Helsper, 2007). Overall, digital competencies enable children to engage productively and confidently in the digital world while minimizing risks associated with online activities.

In the contemporary digital landscape, children's interactions with technology have become increasingly ubiquitous, shaping how they communicate, learn, and navigate the world around them. With the proliferation of digital platforms and online communication channels, children are not only exposed to vast opportunities for learning and socialization but also face new challenges, including the risk of cyberbullying. Cyberbullying can be defined as the deliberate and repeated use of digital communication platforms, such as social media, websites, and messaging apps, to intimidate, harass, or harm others (Hinduja & Patchin, 2015). The anonymity and accessibility of digital platforms make cyberbullying particularly pervasive and harmful.

It may be important for children to be digitally competent to prevent them from engaging in cyberbullying behaviors and experiencing victimization in this regard. Therefore, this study aims to examine the relationship between children's digital competencies and cyberbullying. This research is guided by the hypothesis that children with higher levels of digital competencies may be better equipped to navigate online environments safely and responsibly, reducing their vulnerability to cyberbullying. Conversely, children with lower digital competencies may face heightened risks of encountering cyberbullying or engaging in problematic online behaviors.

Literature Review

The prevalence of cyberbullying among children and adolescents has raised significant concerns regarding their well-being and safety in the digital realm. Understanding the intricate relationship between children's digital competencies and cyberbullying experiences is crucial for developing effective preventive measures and interventions. This literature review synthesizes existing research to explore the interplay between children's digital competencies and the levels of cyberbullying they encounter.

Research has indicated that young children can start operating digital devices from early childhood (Moriguchi et al., 2020). Furthermore, exposure to digital devices has been linked to positive and negative outcomes in children, such as better digital skills and potential language skill deficits (Moriguchi et al., 2020; Operto et al., 2020). The use of technology increases significantly after age 10, suggesting a critical period for developing children's digital competencies (Iwanicka, 2021).

For that reason, numerous studies have been conducted on digital competence and its correlation with cyberbullying. Seçkin-Kapucu, Özcan, and Karakaya-Özer (2021) examined the relationship between middle school students' digital literacy levels, social media usage purposes, and the frequency of experiencing cyberbullying. A relational model was used in the research. The study sample consists of 476 middle school students aged 10-13. The "Digital Literacy Scale," "Social Media Usage Purposes Scale," and "Cyberbullying Threat Level Scale" were used to obtain the data. As a result, digital literacy had a weak positive relationship with being exposed to and witnessing cyberbullying. The concepts of digital literacy and digital competence are distinct, with digital literacy typically encompassing more general knowledge and skills related to information retrieval, critical thinking, and basic digital tool usage. On the other hand, digital competence emphasizes technical skills and the ability to use digital technologies meaningfully in various contexts, including work, education, and daily life.

A study by Zhou (2023) investigated the digital competence levels of Chinese higher education students and identified significant variations in digital competence among students in different academic years. The study focuses on university students as participants, with no existing research available on the digital competence levels of children.

The study by Singh and Kumar (2023) attempts to unveil the relationship between digital competence and cybercrime victimization among university students. The data for the study was collected from 150 participants. The two variables were found to be negatively correlated. The results of the study imply that individuals who are high on digital competence encounter less cybercrime victimization. The study was conducted with university students. However, it should not be forgotten that the age of starting to use digital tools, and the internet has decreased. It is necessary to investigate digital competence in children.

Su and Yang (2024) analyzed 23 articles on digital competence published between 2012 and 2022. As a result, most participants in the studies were pre-service teachers, and the primary research goals were to evaluate children's or teachers' achievements and participants' views on digital competence. Most studies adopted quantitative methods, and their findings were linked to achievements in digital competence, positive and negative perceptions, the effectiveness of teaching strategies, and factors contributing to the development of digital competence. Su and Yang (2024) did not report any articles examining the relationship between children's digital competence and cyberbullying.

The increasing prevalence of young children's use of digital devices underscores the importance of understanding the relationship between children's digital competence and cyberbullying. Understanding how digital skills influence cyberbullying incidents can aid in developing effective prevention strategies and interventions to create a safer online environment for children (Jones et al., 2023). Given the significant impact of cyberbullying on children's mental health and well-being, investigating the role of digital competencies in cyberbullying can provide valuable insights for educators, parents, and policymakers.

Despite the growing concern over cyberbullying, there is a gap in understanding how 4th-grade students' digital competencies relate to their involvement in cyberbullying incidents (Chen et al., 2021). The lack of research focusing specifically on this age group and their digital skills hinders the development of targeted interventions to address cyberbullying among younger students (Aizenkot & Kashy-Rosenbaum, 2020). An in-depth exploration of children's digital competencies in research can provide valuable insights into enhancing their digital literacy skills. For these reasons, the primary aim of this research is to investigate the relationship between 4th-grade students' digital competencies and cyberbullying behaviors, including both perpetration and victimization.

Furthermore, the study seeks to offer a comprehensive descriptive evaluation of the digital proficiencies exhibited by fourth-grade students.

METHOD

Research Model

The survey model was employed in this research to determine the existence and degree of relation between 4th-grade primary school students' digital competencies and cyberbullying, and it also aimed to provide a detailed descriptive analysis of the students' digital competencies. Survey models are models that have existed in the past or are research approaches that aim to describe an existing situation as it exists. Survey models also determine participants' views on a subject or their interests, skills, abilities, attitudes, etc. (Karasar, 2012). The research conducted on fourth-grade students did not involve any experimental intervention, biological data collection, or violation of human rights; therefore, ethics committee approval was not required.

Participants

The purposive sampling method, one of the non-random sampling types, was used to determine the research study group. The purposive sampling method is carried out on individuals with certain limiting characteristics and individual characteristics that are difficult to reach from the universe (Erkuş, 2005). The purposive sampling method subjectively selects sample units while selecting a sample that has the power to represent the universe (Büyüköztürk et al., 2010).

G power statistical program was used to calculate the sample size (Effect size: 0.3, $\alpha = 0.05$, Power (1- β err prob) = 0.95, Number of Group = 1) and as a result of the analysis, the sample size was calculated as 111. The study was conducted between 2023 and 2024 with a total of 108 students (54 female- 54 male); attending the 4th grade in a primary school affiliated to the Ministry of National Education in Tepebaşı district of Eskişehir. Before commencing data collection, parental consent was acquired for the participation of 10-year-old individuals.

Data Collection Tools

1. The Digital Competency Scale

The scale developed by Tüfekçi, and Ceylan (2022) was used to determine the digital competencies of 4th grade primary school students. To determine the validity and reliability of the scale, the scale was applied to 270 4th-grade students from 3 different schools. Exploratory factor analysis (EFA) revealed a structure with 4 factors and 14 items. Confirmatory factor analysis (CFA) revealed that the 4-factor structure; academic life, extracurricular activities, interaction with the environment, and commerce; was compatible. The Cronbach Alpha internal consistency coefficient for the whole scale is 0.71. It can be stated that the scale is valid and reliable. The 14 questions in the scale were graded from 1 to 3 on a scale of "1=Never", "2=Sometimes", "3=Always".

2. The Cyberbullying Scales

Cyberbullying is a multifaceted concept involving both the act of disturbing others and being disturbed by others. On one end, it encompasses the behavior of causing discomfort or harm to others, while on the other end, it involves experiencing discomfort or harm inflicted by others. Therefore, in this study, two scales related to cyberbullying have been utilized. The cyberbullying scales developed by Küçük (2016) and Arıcak, Kınay, and Tanrıku (2012) were utilized in this study.

The Cyberbullying Scale was developed by Stewart et al. in 2014. This scale is a tool used to determine the victimization aspect of cyberbullying. Küçük (2016) adapted this scale into Turkish. The scale was initially translated from English to Turkish by Küçük (2016) and then reviewed by two English linguists and a psychologist proficient in English. Subsequently, another English linguist translated it back to English. Discrepancies were compared with the original, and adjustments were made in collaboration with forensic sciences and forensic medicine experts, as well as a linguist proficient in English. In determining the validity and reliability of the scale, the 14-item Cyberbullying Scale was applied to 633 students aged between 10 and 18. The construct validity was examined by EFA, and it was seen that the scale showed a two-factor structure; emotional harm and humiliation, and exclusion and violence. The internal consistency reliability coefficient of the scale was tested with Cronbach's alpha analysis and .87 was found as a result. It can be stated that the scale is valid and reliable. 14 questions in the scale were graded from 1 to 3 on a scale of "1=Never", "2=Sometimes", "3=Always".

The cyberbullying scale developed by Arıcak, Kınay, and Tanrıku (2012) aims to determine cyberbullying behaviors in children. The content validity of the scale was examined by three experts working on this subject. In the study conducted to determine the validity and reliability, the participant group consisted of 515 students (247 boys and 268 girls) aged between 11 and 18. The construct validity was examined by EFA, and it was seen that the scale showed a single-factor structure. The Cronbach's alpha coefficient was .95 and the test-retest reliability coefficient was found to be .70. The data obtained indicate that the psychometric findings of the Cyberbullying

Scale are valid and reliable. 24 questions in the scale were graded from 1 to 3 on a scale of "1=Never", "2=Sometimes", "3=Always".

Data Collection and Analysis

Three different scales were applied to examine the relationship between children's digital competencies and cyberbullying. The scales were administered by the researcher at 2-week intervals in the spring semester of 2023-2004 to 108 students attending the 4th grade in a primary school. The scales were printed out, distributed to the students, and administered under the researcher's supervision. After completing the scale, the answer sheets of the students were collected.

Percentage (%), frequency (f), standard deviation (SD), and mean (\bar{x}) of the data were determined. The data obtained in the study underwent examination to assess their distribution and determine if they conformed to a normal distribution. Analyses on whether the data are normally distributed were conducted on Kolmogorov-Smirnov, skewness, and kurtosis. A correlation test was used to determine the relationship between children's digital competencies and cyberbullying. Correlation is a type of analysis used to show whether there is a relationship between two or more measured variables, and if so, its direction and strength (Akbulut, 2010, p. 51). The analysis utilized data from the cumulative scores of respondents' answers on both the Digital Competence and Cyberbullying scales. The analyses were conducted using the SPSS software package.

FINDINGS

Descriptive Findings

The safety of children in digital environments primarily requires a high level of digital competence. Before providing training to enhance their digital competence, it is necessary to have a detailed understanding of children's current levels of digital competence. In this study, detailed descriptive analyses of the children's digital competence scale have been presented before examining the relationship between digital competence and cyberbullying. The digital competencies scale used to determine the digital competencies of 108 4th-grade students consists of four subtests. To facilitate a better understanding of the analyses, descriptive findings have been presented separately for each subtest. The first subtest is named "academic life" (1, 2, 3, 4, 5); the second subtest is named "extracurricular activities"(11, 12, 13, 14), the third subtest is named "interaction with the environment" (6, 7, 8) and the fourth subtest is named "commerce"(9, 10).

The findings regarding the frequencies and percentages of the academic achievement subtest items are given in Table 1.

Table 1. *Frequencies and percentages of the academic achievement items*

Items		Response Categories		
		Never	Sometimes	Always
1. I do not pirate anything (movies, music, videos, games) when I use the internet.	f	53	31	24
	%	50	28	22
2. I read messages from people like my parents or friends without permission.	f	95	11	2
	%	88	10	2
3. I share someone else's picture on the internet without their knowledge.	f	103	4	1
	%	95	4	1
4. I send messages containing rude behavior (swearing, threatening words, etc.) to other people on the Internet.	f	97	9	2
	%	90	8	2
5. What I find difficult to express directly to a friend in person, I often find it easier to communicate through the Internet.	f	73	24	11
	%	67	24	9

Table 1 shows the descriptive findings regarding children's responses to the items under the academic achievement subtest of the Digital Competence scale. Accordingly, most of the students do not read other people's messages, do not share other people's photos online, communicate face-to-face, and do not send rude messages. The findings about their habits of downloading pirated content while using the internet have been half and half. Fifty percent marking "never" indicates a firm stance against pirating content among this group of participants. The other fifty percent marking "sometimes" or "always" suggests that their habits of downloading pirated content are more flexible, and these individuals may occasionally or regularly download pirated content.

The findings regarding the frequencies and percentages of the extracurricular activities' subtest items are given in Table 2.

Table 2. *Frequencies and percentages of extracurricular activity items*

Items			Never	Sometimes	Always
11. I can easily use devices such as tablets, computers, and phones	<i>f</i>		6	32	70
	%		5	20	65
12. I can access a desktop computer, tablet, and smartphone at any time.	<i>f</i>		22	42	44
	%		20	39	41
13. I can easily connect to the Internet from anywhere, anytime.	<i>f</i>		37	42	29
	%		34	39	27
14. Using the Internet, I can access social networks, news sites, blogs, etc. whenever I want.	<i>f</i>		49	38	21
	%		45	35	19

When Table 2 is analyzed, access to digital devices is widespread among the 4th grade students and most of them are comfortable using these devices. The survey shows that most respondents have access to digital devices at any time, but in some cases, this access may be restricted. It can be said that most of the participants have widespread access to the internet with their mobile devices. It is seen that some of the participants experienced some limitations in accessing content using the internet.

The findings regarding the frequencies and percentages of the interaction with the environment items are given in Table 3.

Table 3. *Frequencies and percentages of interaction with the environment items*

Items			Never	Sometimes	Always
6. I know that I can report to sites such as http://www.guvenlinet.org/ , and https://www.ihbarweb.org.tr/ when we encounter content that we do not want on the internet, just as we have numbers such as 112 in our daily lives.	<i>f</i>		34	28	46
	%		31	26	43
7. 166 I know what the number is used for	<i>f</i>		71	24	13
	%		66	22	12
8. I know what are the criminal behaviors when using the Internet	<i>f</i>		17	12	79
	%		16	11	73

Table 3 shows that 4th grade students who are exposed to unwanted content on the Internet resort to reliable sources and use reporting mechanisms to deal with such situations. The number 166 can be called to get information about the internet and can also be used to report a situation or file a complaint about internet-related issues. The fact that participants did not know the number 166 may reflect a lack of awareness about protecting their safety on the Internet. The fact that 79 students knew the behaviors that could be considered a crime while using the Internet can be considered a positive finding. This shows that the participants understand the legal responsibilities and online behavior standards related to internet use.

Table 4 presents the frequencies and percentages of the items related to the commerce subtest.

Table 4. *Frequencies and percentages of the commerce items*

Items			Never	Sometimes	Always
9. I shop for online games	<i>f</i>		67	20	21
	%		62	18	20
10. I can buy an item I want using the internet	<i>f</i>		43	36	29
	%		40	33	27

The finding on shopping for games shows that students do not tend to shop for games online. On the other hand, 60% of them stated that they can buy an item they want using the internet, which reflects a more positive attitude towards online shopping.

Since the sum of the student's responses to the Digital Competence scale will be used in the correlation analysis, which is the main purpose of the study, descriptive analyses of the total scores are presented in Table 5.

Table 5. Descriptive findings of the total scores of the Digital Competence Scale

n	Lowest Score	Highest Score	(\bar{x})	SD	Skewness	Kurtosis	Kolmogorov Smirnov
108	15	34	24,6	4,1	-,033	-,248	,200

When totaling the responses students provided on the digital competence scale, it is observed that they scored an average of 24,6 points out of a possible range of 14 to 42. This indicates that, on average, students' digital competency levels fall around the mid-range of the scale. When the distribution of the data is examined, it is found to be normal.

The focus of the research is on children's digital competencies, so the data collected through the Digital Competency scale is presented comprehensively. However, instead of presenting detailed descriptive findings on the cyberbullying scale developed by Küçük (2016), a more general perspective is presented. Descriptive findings based on the factors of the cyberbullying scale, which consists of 14 items and 2 subtests, are presented in Table 6. Additionally, descriptive findings of the total scores of participants' responses to the scale are provided.

Table 6. Descriptive findings of the cyberbullying scale

Subtests	n	Lowest Score	Highest Score	(\bar{x})	SD	Skewness	Kurtosis
1*	108	9	27	11,7	3,6	1,9	4,5
2**	108	5	15	7	2,2	1,4	2,3
Total	108	14	42	18,8	5,4	1,9	5

* The first subtest is the subtest of emotional harm and humiliation, comprising items 5, 6, 7, 8, 9, 11, 12, 13 and 14.

** The second subtest is the subtest of exclusion and violence, consisting of items 1, 2, 3, 4, and 10.

The difference in scores between the two subtests stems from the variance in the number of items. Upon examining the descriptive findings regarding the total score, an average score of 18 is observed. Considering that the lowest score achievable on the cyberbullying victimization scale is 14 and the highest is 42, this suggests that the average score falls within the mid-range of possible scores. It can be said that students are experiencing cyberbullying victimization on average. When Table 6 is examined, the data has a right-skewed and peaked distribution. This situation may indicate that the assumptions of normal distribution have been violated.

Descriptive analyses were conducted based on the total scores of students' responses since the cyberbullying scale developed by Arıcaç, Kınay, and Tanrıku (2012) aims to determine cyberbullying behaviors in students and consists of 24 items, can yield a minimum score of 24 and a maximum score of 72. Descriptive findings are presented in Table 7.

Table 7. Descriptive findings of the cyberbullying scale

n	lowest score	highest score	(\bar{x})	SD	Skewness	Kurtosis
108	24	68	28,2	9,4	1,9	4,5

Interpreting an average score of 28,2 on a scale where the lowest possible score is 24 and the highest is 72 suggests that, on average, students are exhibiting some degree of cyberbullying behaviors. When Table 7 is examined, the distribution of the data set is not normal.

Findings On the Correlation Between Digital Competence and Cyberbullying

When Table 5 is analyzed, it can be observed that the data regarding students' digital competence follows a normal distribution. However, upon inspection of Tables 6 and 7, it can be stated that the data related to cyberbullying does not follow a normal distribution. Therefore, the Spearman correlation test was employed to determine the relationship between digital competence and cyberbullying. Findings related to the analysis are presented in Table 8.

Table 8. Correlation test result

n=108		Cyberbullying Victimization	Cyberbullying Perpetration
Digital Competence	Academic Achievement	-.082	-.108
	Extracurricular Activities	-.031	-.142
	Interaction With the Environment	-.153	-.025
	Commerce	-0,96	-.113
	Total Scores	-,100*	-,124*

When Table 8 is examined, it is seen that there is a negative correlation between 4th-grade students' digital competencies and their responses to the cyberbullying scale related to being disturbed ($r = -.100$, $p < .05$). This suggests that as digital competence increases, cyberbullying victimization tends to decrease. Cohen (1988), while interpreting the r (correlation) value, states that r values between .10 and .29 are small correlations, r values between .30 and .49 are medium correlations, and values between .50 and 1.0 are large correlations. The strength of this relationship is weak indicating that the relationship is not very strong.

The correlation coefficient indicates a negative relationship between digital competence and cyberbullying behaviors ($r = -.124$, $p < .05$). This implies that as digital competence increases, engagement in cyberbullying behaviors tends to decrease. However, the strength of this relationship is weak suggesting that the association is not very strong.

DISCUSSION AND CONCLUSION

The data obtained suggest a negative correlation between 4th-grade students' digital competencies and their responses to the cyberbullying scales. The study by Akman (2022) found that cyberbullying has a negative relationship with social competence. This implies that individuals with lower social skills and competencies may be more likely to exhibit cyberbullying behaviors. When considering digital competence as part of social competence in the online realm, this negative relationship aligns with the notion that individuals lacking digital skills may resort to negative online behaviors like cyberbullying. A study conducted by Livingstone et al. (2017) investigated the online experiences of children in Europe and found that while digital competence was associated with safer online practices, including the ability to handle potentially risky situations, it did not eliminate the risk of encountering negative experiences such as cyberbullying. This suggests that digital competency may act as a protective factor but might not completely mitigate the risk of cyberbullying. These studies underscore the multifaceted nature of cyberbullying and suggest that while digital competency is valuable, it may not single-handedly determine individuals' experiences with cyberbullying. Instead, a comprehensive approach that includes digital competency education and broader social-emotional learning may be necessary to address and prevent cyberbullying.

The weak correlation observed in this study underscores the complexity of the relationship between digital competencies and cyberbullying experiences among young students. While possessing digital skills and knowledge may provide some degree of resilience against cyberbullying, it is not a definitive safeguard. Other factors, such as social dynamics, peer relationships, and individual vulnerabilities may also influence students' susceptibility to cyberbullying incidents.

Among the research studies available, there are several that align with the finding of a weak correlation between digital competencies and cyberbullying. For instance, the study, conducted by Seçkin-Kapucu, Özcan, and Karakaya-Özer (2021) explored the relationship between cyberbullying and students' digital literacy levels. The findings suggested that digital literacy had a weak relationship with being exposed to and witnessing cyberbullying. Estévez et al. (2019) investigated the relationship between digital competence and cyberbullying among high school students. The results indicated that digital competence was negatively associated with cyberbullying perpetration and victimization, but the associations were relatively weak. These findings are in line with the conclusion that the relationship between children's digital competencies and cyberbullying is weak. The conclusion drawn from this research indicates that children's digital competencies are at a medium level. Among the various research studies available, there are several that align with the conclusion that children's digital competencies are at a medium level. For instance, Atmazaki & Indriyani (2019) reported that digital literacy competencies among educational students tended to fall within the medium to good range. This finding parallels the conclusion that children's digital competencies are at a medium level.

This could indicate that children possess a basic understanding of digital tools and technologies but may struggle with more advanced or specialized tasks. This finding highlights the importance of incorporating digital competency education into school curricula from an early age. While children may have some familiarity with digital devices, there's room for improvement in developing their skills further. Understanding the level of digital competencies among children is crucial for designing effective educational interventions and promoting responsible digital citizenship from an early age.

LIMITATIONS AND RECOMMENDATIONS

The study's sample size of 108 fourth-grade students may be considered relatively small, potentially limiting the generalizability of the findings to broader populations. In response to potential criticisms regarding the study's sample size, it is noteworthy that the sample size was determined through a rigorous calculation process employing G power software, yielding a sample size of 111 participants.

Given that the data were collected through self-report measures, there is a risk of response bias, where participants may underreport or overreport their digital competencies or experiences with cyberbullying. Incorporating multiple data sources, such as teacher or parent reports, could enhance the robustness of the findings in the future. Additionally, children's digital competence level is limited to the data obtained from the Digital Competence scale. To further research the relationship between children's digital competencies and cyberbullying, several avenues can be explored based on existing literature. Firstly, investigating the impact of parental mediation strategies, such as restrictive mediation, monitoring, and restrictions, on children's digital competencies and their susceptibility to cyberbullying could provide valuable insights (Livingstone et al., 2017). Understanding how parental involvement influences children's online behavior and experiences is crucial in developing effective prevention and intervention strategies.

Secondly, conducting longitudinal studies to examine how changes in children's digital competencies over time relate to their experiences with cyberbullying could be a promising area of research.

Moreover, supplementing quantitative analyses with qualitative inquiry to gain deeper insights into children's perceptions, attitudes, and experiences related to digital competencies and cyberbullying could be beneficial.

Additionally, examining the effectiveness of artificial intelligence-based interventions in addressing cyberbullying among children from a youth perspective could be beneficial. As cyberbullying continues to be a significant issue for young people, leveraging AI technologies for early detection and intervention could offer new solutions to combating online harassment.

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