



## Research article

# Cyberbullying among secondary school students: Analyzing prediction and relationship with background, social status, and ICT use

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## ABSTRACT

This study explored the predictions of and relationships between background, social status, and the use of information and communication technology (ICT) in cyberbullying among 2430 secondary school students from schools affiliated with Thailand's Office of the Basic Education Commission. The stratified sampling method was used along with the Cyberbullying Questionnaire, Sociometric Status Questionnaire, Perceived Popularity Questionnaire, and ICT Use Questionnaire and data were collected through the CU Smart Sociometry web application and Google Forms. Data analysis was conducted to determine 1) demographic data using descriptive statistics; 2) correlation analysis of students' backgrounds, sociometric status, and ICT use against cyberbullying using the chi-square test; and 3) variables that predict cyberbullying among secondary school students using multinomial logistic regression. Results showed a link between cyberbullying and secondary school students' backgrounds, social status, and ICT use. Students with different backgrounds (sex and academic performance), social statuses (social preference and perceived popularity), and ICT use partook in different cyberbullying roles. Independent variables of sex, academic performance, social preference, perceived popularity, and ICT use all predicted cyberbullying by 33.3% with statistical significance. Male students were noted to have a higher likelihood of being cyberbullies than female students, whereas female students were more likely to be cybervictims and bystanders. Moreover, students with low academic performance were more likely to be cyberbullies and cybervictims than high-performing students, with rejected students having the highest likelihood of being cyberbullies. Interestingly, the higher a student's popularity, the higher was their likelihood of being cyberbullies. Finally, cyberbullies had the highest average daily internet use, and students who had never had their guardians monitor their internet usage were more likely to be cyberbullies; students with moderate and good social media behavior were mostly bystanders.

## 1. Introduction

At present, technological prevalence has expanded channels for users to easily and intentionally abuse others while reaching large

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audiences via social media. Cyberbullying has become more damaging than other forms of bullying [1]. A single incident of abuse can be re-broadcast and reach a large number of users on the social media platform [2,3]. Cyberbullying has developed owing to technological advancements that have eliminated geographical boundaries and improved convenience, speed, anonymity, and broadcasting capabilities [4–7]. Consequently, cyberbullying has a wide-ranging impact on stakeholders, particularly among digital native teenagers. A meta-analysis of 55 research studies involving 257,678 teenagers found that cybervictimization was associated with internalizing issues such as suicidal ideation, depression, anxiety, self-esteem, satisfaction, physical symptoms, and fear. This also included externalizing issues such as self-harm, risky sexual behavior, substance abuse, aggression, and social problems [8,9].

A previous study reported that adolescents are frequently involved in cyberbullying, particularly cybervictimization, and this is also true for bystanders. Furthermore, cyberbullying has been found to be more prevalent among adolescents than among primary school students. Primary school students frequently engage in cyberbullying through online gaming, whereas teenagers primarily use social media platforms [10], particularly Twitter and Facebook [11].

Another meta-analysis examined 46 studies that included 35,468 teenagers aged 10–17 years from 12 countries; it found that aggression and victimization are positively correlated with rejection, whereas victimization is negatively correlated with peer acceptance and friendship [12]. Furthermore, a previous study found that bullying victims are often considered unpopular and rarely accepted by their peers [13–15]. Bullying is also associated with higher perceived popularity but lower social liking [16–19]. Teenagers who are perceived as popular but not accepted tend to be more aggressive than teenagers who are both popular and accepted [16, 20].

Further research has revealed that bullying is associated with social status in student relationships, including peer acceptance and rejection; in other words, bullying behaviors contribute to perceived popularity [19,21,22]. In this context, bullying others increased the perpetrator's acceptance and number of friends. Moreover, more bullies prioritize their social status goals compared with those who are not bullies. Thus, acquiring social status prompts bullying [19,23]. This finding aligns with the correlation found between cyberbullying and the social status of senior secondary school students [24]. Nonetheless, cyberbullying may reward the perpetrator less than other forms of bullying because cyberbullies are unable to observe immediate victim humiliation. Furthermore, in-person observers provide insufficient reinforcement during the action [25,26].

However, cyberbullying also impacts social status. A longitudinal study suggested that, over time, electronic aggression was positively correlated with perceived popularity; however, this relationship was only observed in women [27]. Additionally, students may wish to associate with the cyberbully peer group, which can protect them from cybervictimization. Cyberbullies can maintain their existing friendships because the group often shares similar bullying norms [28]. Therefore, peers of the perpetrator would not be bullied, and these behaviors would instead target those rejected by the group [29]. This could be the underlying reason that cyberbullies gain rather than lose peers [24].

Additionally, extended periods of internet and social media use have been found to negatively influenced academic performance [30]. Furthermore, such extended use can lead to cyberbullying, in which students aim to intentionally shame, satirize, harass, threaten, torture, or humiliate others through blogs, chat rooms, social media, emails, voice notes, texts, images, and videos [31,32]. This was consistent with the findings of Park et al. [33], who found that children aged 12–15 years who use ICT for research and learning frequently experience low levels of cyberbullying. Likewise, Kim and Faith [34] found that ICT use for research and learning was negatively correlated with cyberbullying. However, children who used ICT for internet access frequently were more likely to be cyberbullied.

A literature review revealed that sex and academic performance in the background variable, as well as social status and ICT use, correlate with and predict cyberbullying; sex predicts cyberbullying [35], with men being more likely to be cyberbullies than women [35–42]. Furthermore, female sex is a stronger predictor of cyberbullying victimization [43] and bystander behavior than male [42].

Low academic achievement increases and predicts cyberbullying [39,40]. Students with lower academic performance are more likely to commit cyberbullying than those with average performance [39]. In addition, poor or average academic performance can increase the likelihood of cyberbullying [40].

Positive peer relationships help prevent cyber aggression, whereas negative peer relationships increase its risk [44]. Furthermore, as adolescents' peer relationships improve, the perpetration and victimization of cyberbullying decreases [35,45]. Bullying perpetration is associated with higher perceived popularity but lower social preference [16–19,23,24]. Moreover, perceived popularity can predict increased cyber aggression and cybervictimization [46].

The use of ICT, which includes behaviors such as using the internet and social media, is related to and predicts cyberbullying. Personal computer or laptop ownership [47,48], as well as guardian surveillance while using the internet, predict cyberbullying [47]. The lack of guardian monitoring while children use smartphones is linked to cyberbullying [49]. This is consistent with the results of Giménez et al. [50], who found that family members' involvement in advising and monitoring adolescents while using ICT tools is an important factor in protecting them from cyberbullying [51]. Furthermore, the duration and frequency of ICT use are related to the perpetration and victimization of cyberbullying [52], whereas the use of smartphones on weekdays (1–3 h) and computers on weekends (1–3 h) predict factors for an increased tendency for cyberbullying [53,50].

Cyberbullying is associated with internet use and addiction [53,54]. Long periods of time spent on the internet are associated with increased cyberbullying [52,55,56]. Cybervictims have been linked to internet use (frequency, time spent, location, and activity) [57]. In terms of location, internet access in the bedroom is highly common among cybervictims [58].

The use of social networks to create a Facebook fan page without revealing one's identity is linked to cyberbullying [32]; however, Twitter users tend to be passive observers. Time spent on social media correlates positively with cybervictims [52,59], and social media activities and online communication with strangers are risk factors for becoming cyberbullies and cybervictims [60,61].

This finding is consistent with that of Noipom et al. [62], who studied cyberbullying among 600 secondary school students in

Thailand. They found that students with a GPA lower than 3 were 1.58 times more likely to be cyberbullies than students with a GPA of 3 or higher. Furthermore, students who spent more than 3 h per day on social media were 1.97 times more likely to be cyberbullies, whereas those who shared personal information on social media were 3.37 times more likely. In Thailand, these figures can help identify the factors that influence cyberbullying among local students. Chavanovanich et al. [63] found that social media addiction and a generalized perception of peers were significant predictors of cybervictimhood and cyberbullying. These studies sought to identify factors and recommendations, as well as design guidelines, for addressing social media addiction and learning development and fostering healthy relationships among students. Based on the aforementioned literature, the predictors of and relationships between background, social status, and ICT with regard to cyberbullying among secondary school students are observed, leading to the following hypotheses.

**Hypothesis 1.** Background (sex and academic performance) and social status (social preference, perceived popularity, and ICT use) correlate with cyberbullying in secondary school students.

**Hypothesis 2.** Background (sex and academic performance) and social status (social preference, perceived popularity, and ICT use) predict cyberbullying in secondary school students.

This study will add to the body of knowledge on cyberbullying among secondary school students in the transition phase, encompassing all school size categories and four regions of Thailand. Furthermore, the study integrated various aspects of sex, academic performance, and adaptation in peer relationships while accepting the use of ICT by students under guardian supervision. The results will help guide policymakers and lay the foundation for activities aimed at preventing and resolving cyberbullying, developing peer-to-peer relationships, and promoting appropriate use of ICTs in the Thai context.

As a result, the authors became interested in researching the relationships between cyberbullying, background, social status, and ICT use among secondary school students. This is done in conjunction with additional research on the variables of background, social status, and ICT use as predictors of cyberbullying among Thai students, partly due to the lack of research on this subject. The study results can be used to suggest recommendations for the educational sector. Furthermore, sociometry can be used to screen students who are on the verge of or are experiencing relationship problems with their peers. The recommendations may also extend to the development of relationships between peers, teachers, and family members, which will serve as social support systems to prevent and alleviate cyberbullying. Furthermore, the study can shed light on the importance of monitoring student internet use, encouraging positive social media behavior, and promoting educational use of ICT for research, with use for entertainment purposes remaining subject to guardian supervision and advice; these measures can help mitigate cyberbullying.

## 2. Theoretical background

The literature review conducted in this study suggested that factors such as background, social status, and ICT use were associated with and affected cyberbullying among secondary school students.

### 2.1. Background (sex and academic performance) correlated with cyberbullying

Research has suggested that boys had a higher tendency of being cyberbullies than girls [35,38,41,42,64–70]. Moreover, in reviewing the literature on cyberbullying among 10–19-year-olds in 21 countries in the East Asian region, most studies showed that the rate of cyberbullying and cybervictimization for men is higher than for that for women (e.g., Park et al. [6]; Chang et al. [71]; Huang and Chou [72]; Jiaming et al. [73]; Lee and Shin [74]; Wong et al. [75]; Yang et al. [76]; Zhou et al. [77]), whereas women were more likely to discontinue cyberbullying [6,71]. In contrast to these results, some studies (e.g., Dehue et al. [78]; Pornari and Wood [79]; Wright and Li [80]) showed that women engaged in cyberbullying more than men did, whereas men had more experience with cybervictimization than women (e.g., Huang and Chou [72]; Sjørso et al. [81]; Wright and Wachs [82]). Furthermore, men were more likely to be bystanders during cyberbullying [6,72,83].

Low academic performance was found to be associated with cyberbullying and cybervictimization [6,36,76,77,84–86]. In other words, low academic performance was associated with the tendency to be the perpetrator [6,77,87], as well as students who were cybervictims [84]. Furthermore, high academic performance was linked to a low risk of cyberbullying [88]. Interestingly, academic performance could indicate acceptance and social status among peers in East Asian countries. Teenagers with lower academic performance might be more vulnerable to victimization due to their low social status. At the same time, this group was likely to become the perpetrator because they were looking for ways to increase their self-esteem. Furthermore, both groups used the internet, and increased involvement on the internet could increase the risk of perpetration and victimization [6,76].

### 2.2. Social status (social preference and perceived popularity) correlated with and affected cyberbullying

Correlations between social preference, perceived popularity, and cybervictimization among peers have been previously observed [15]. In particular, correlations between social status (perceived popularity and social preference) and cyberbullying increased as perceived popularity increased and social preference level declined [69]. Moreover, perceived popularity predicted an increase in cyberbullying and cybervictimization [46], with the most popular adolescents being more likely to be cyberbullies and victims. Furthermore, cyberbullying was associated with increased popularity among girls but decreased popularity among boys. Furthermore, studies showed a positive correlation between social acceptance and cyberbullying, as well as cybervictimization. Social acceptance

among young men was associated with an increase in cybervictimization over time. This could be because teenagers used cyberbullying to establish and maintain their status in peer groups. Moreover, adolescents who were popular and accepted had large, digitally connected social networks, which could increase their risk of cyber victimization [27].

Cyberbullying perpetration negatively correlated with unpopularity whereas cybervictimization positively correlated with unpopularity [89]. Victims were frequently unpopular and rarely accepted by their peers [13–15]. In addition, peer rejection increased the prevalence of cyberbullying among adolescents [82,85,86].

Furthermore, previous research has found that bullying perpetration is positively correlated with perceived popularity but negatively correlated with social liking [16–19,23,24]. Teenagers perceived as popular but not accepted showed more aggression than those who were popular and accepted [20,90]. Similarly, lower social popularity increased victimization risk [90], and perceived popularity, such as noticeable popularity among peers, had a positive correlation with cyberbullying among teenagers after 6 months [83,91].

### 2.3. ICT use correlated with cyberbullying

Factors associated with cyberbullying included ICT use behaviors, internet use, and social media use.

#### 2.3.1. Use of ICT

The ownership of personal computers or laptops [47,48] and the guardian's surveillance during internet use were significant predictors of cyberbullying [47]. Smartphone use during the week (1–3 h) and computer use on weekends (1–3 h) were factors that predicted an increased risk of cyberbullying [53,50]. Moreover, the lack of guardian supervision during children's mobile phone use was associated with cyberbullying, cybervictimization, and bystander behavior [49]. Furthermore, Giménez et al. [49] found that family members' involvement in the instruction and monitoring of adolescents during ICT use was an important for protecting them from threats such as cyberbullying or internet addiction [51].

#### 2.3.2. Internet use

Cybervictimization was linked to internet use and addiction [53,54]; long-term internet use was associated with increased cyberbullying [54]. This result was consistent with that of Songsiri and Musikaphan [55], who found that students who spent more than 6 h per session of internet use experienced more cyberbullying than those who spent less than 2 h per session. Likewise, Musharraf et al. [52] found that the variables of frequency, average time spent surfing the internet during weekdays and weekends, average time spent on social media, and ICT use were all positively related to cybervictimization and cyberbullying. This was also confirmed by Sittichai and Smith [55], who showed that the frequency, amount, location, and activities of internet use are all associated with cybervictims. In particular, internet access in one's bedroom is directly related to cybervictimization [58].

#### 2.3.3. Use of social networks

Wang et al. [32] explained in their study that cyberbullying among students is common on social media platforms. This can be accomplished by setting up an anonymous Facebook fan page dedicated to cyberbullying behaviors such as name-calling, posting images, and excluding victims from peer groups. This was consistent with the findings of Niblack and Hertzog [92] regarding factors that may affect the behavior of cyberbullying bystanders. The study showed that Twitter users are slightly more likely to act as bystanders than those who do not use Twitter. A study found a positive correlation between average time spent on social media and cybervictimization [52]. Similarly, Sampasa-Kanyinga and Hamilton [59] found that increased time spent on social media was correlated with increased reports of cybervictimization. Furthermore, increased social media activities and greater online communication with strangers were linked to cyberbullying among girls, both cyberbullies and cybervictims [60,61].

## 3. Research methodology

The causal study seeks to investigate the relationship of background, social status, and ICT use with cyberbullying. In addition, the study looks at the predictive power of background, social status, and ICT use in cyberbullying among secondary school students.

### 3.1. Population and research sample

#### 3.1.1. Research population

The study population consisted of approximately 6 million secondary school students from Thailand's Office of the Basic Education Commission during the academic year 2021. Nonetheless, owing to the cascading impacts of remote education and absences due to illness throughout the coronavirus pandemic, further data collection was undertaken in 2022. The research sample included 2430 students.

#### 3.1.2. Research sample

The study participants are secondary school students from schools affiliated with the Thailand Office of the Basic Education Commission. To represent the sample size, the study used G\*Power software with a 95 % confidence interval, +5 % margin of error, and 0.95 power of a test. The appropriate sample size was at least 1380 students. This study used an online questionnaire approach.

To obtain the sample, stratified sampling was used. The sampling units consisted of four regions: central, northeast, north, and

south. Two school sizes were used, small (45.47 %) and large (54.53 %). Sampling was conducted among students from the junior and senior secondary schools in each region and for both school sizes (see Table 1).

### 3.1.3. Inclusion and exclusion criteria

Participants who met the inclusion criteria were secondary school students from schools affiliated with Thailand’s Office of the Basic Education Commission. The participants provided informed consent for participation. The exclusion criteria included participants who submitted incomplete questionnaires and those who denied consent.

Furthermore, the study obtained ethical approval from the Office of the Research Ethics Review Committee for Human Subjects. Chulalongkorn University’s Second Allied Academic Group for the Social Sciences, Humanities, and Fine and Applied Arts (COA no.044/65). The participants were informed of study objectives and methodology and their right to accept or decline participation. Furthermore, they had the option to withdraw at any time without prior notice. The decision to withdraw had no negative impact on them. The research results only provide an overview for educational purposes; no identifying information about the participants has been presented. Information about key informants was kept confidential, and all study participants and their guardians provided informed consent.

## 3.2. Research instrument

### 3.2.1. Cyberbullying Questionnaire

The Cyberbullying Questionnaire in a Google Forms format was developed using the frameworks of the Cyberbullying Triangulation Questionnaire (CTQ) [49] and the Bullying Questionnaire [93]. It was divided into two parts: Part 1 with general demographic information and Part 2 with 21 cyberbullying-related questions. Part 2 of the questionnaire was further divided into three sections: seven questions for cyberbullying, seven for cybervictims, and seven for bystanders. The questions were to be answered on a 3-point rating scale, with 2 indicating *often*, 1 indicating *sometimes*, and 0 indicating *never*. In managing cyberbullying roles, the study considers the level of behavior in each factor. If a student has the best behavior in a particular factor, they are assigned that role. For example, if a student exhibits the highest level of behavior in the cybervictim factor, the cybervictim role is assigned.

Confirmatory factor analysis was used to assess the research instrument’s quality and structural validity and determine how well the cyberbullying measurement model fit the empirical data. The questionnaire received an Item-Objective Congruence Index (IOC) of 1, indicating that all items met the criteria. The reliability value was 0.87. The cyberbullying measurement model included three factors (cyberbully, cybervictim, and bystander) and 21 indicators. The analysis showed a model fit with the empirical data ( $\chi^2 = 1.35$ ,  $p = 0.73$ ,  $\chi^2/df = 1.27$ ,  $GFI = 0.95$ ,  $AGFI = 0.95$ ,  $RMR = 0.01$ ), indicating that the measurement model is suitable for measuring cyberbullying.

### 3.2.2. Sociometric Status Questionnaire

The Sociometric Status Questionnaire adopted the technique of suggesting friends’ names, three most liked and three least liked, in three specific situations. This was accomplished using the CU Smart Sociometry web application [94]. The sociometry results were analyzed and calculated to determine each student’s sociometric status based on the options provided by their peers. The results were then classified into five types following Coie et al.’s [95] criteria for sociometric status: 1) popular, 2) rejected, 3) neglected, 4) controversial, and 5) average student. The content validity of the research instrument was examined. The IOC Index found that all items met the criteria.

### 3.2.3. Perceived Popularity Questionnaire

The Perceived Popularity Questionnaire used the technique of suggesting friends’ names that are popular among peers: three most popular and three least popular. Similarly, the process was completed via the CU Smart Sociometry [94] web application. The name suggestions were used to calculate a standard score for the students in the class. This meant that the student perceived to be popular

**Table 1**  
Details of the samples.

School size	Region								Total students (%)
	Central		Northeast		North		South		
	Junior secondary level	Senior secondary level	Junior secondary level	Senior secondary level	Junior secondary level	Senior secondary level	Junior secondary level	Senior secondary level	
Small	48	81	305	189	98	47	182	155	1105 (45.47 %)
Large	440	368	39	186	120	72	65	35	1325 (54.53 %)
<b>Total</b>	<b>488 (20.08 %)</b>	<b>449 (18.48 %)</b>	<b>344 (14.16 %)</b>	<b>375 (15.43 %)</b>	<b>218 (8.97 %)</b>	<b>119 (4.90 %)</b>	<b>247 (10.16 %)</b>	<b>190 (7.82 %)</b>	<b>2430 (100 %)</b>
	<b>937 (38.56 %)</b>		<b>719 (29.59 %)</b>		<b>337 (13.87 %)</b>		<b>437 (17.98 %)</b>		

among peers would have a higher standard score (+1 SD). Students with low perceived popularity among peers have a standard score below average (−1 SD), whereas students with moderate perceived popularity among peers have a standard score within the standard deviation (between +1 SD and −1 SD). The content validity of the research instrument was examined. The IOC Index found that all items met the criteria.

### 3.2.4. ICT Use Questionnaire

The ICT Use Questionnaire included objective questions with single and multiple choice options, as well as a 5-point rating scale (1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *often*, 5 = *every time*). There were three sections: 1) four items for ICT use; 2) 11 items for internet use; and 3) four items for social media use. During the quality testing of the research instrument, the questionnaire received an IOC Index of 1, with all items meeting the criteria. The reliability value was 0.90.

### 3.3. Data collection

When collecting data, the researchers sought consent from the directors of the sample schools. Letters requesting assistance with data collection were then sent to the school directors along with the online questionnaires for their information and consideration. On receiving the director's approval, the researchers sent the questionnaire hyperlinks to the coordinating teacher, who distributed them to the students and obtained both the students and their guardians' consent. After receiving consent from the students and the guardians, the coordinating teachers in each school sent the questionnaire hyperlinks to students, who voluntarily responded to them online. Finally, researchers gathered and double-checked the data and tracked the responses from each school. The study was conducted from March the academic year 2021–2022. Most importantly, researchers kept the data confidential and destroyed all student information within a year after the results were published.

### 3.4. Data analysis

The data analysis was divided into two parts: Part 1 for preliminary data analysis and Part 2 for analysis related to the research objectives.

#### 3.4.1. Part 1: preliminary data analysis

The respondents' demographic information was analyzed using descriptive statistics such as frequency, percentage, mean, and standard deviation.

#### 3.4.2. Part 2: analysis addressing the research objectives

- 1) The chi-square test was used to assess cyberbullying among secondary school students from various backgrounds.
- 2) The chi-square test was used to analyze the correlation between students' backgrounds, social statuses, ICT use, and cyberbullying. Multinomial logistic regression was also used to examine factors that correlate with and predict cyberbullying among secondary school students.

## 4. Results

The study gathered data from 2430 secondary school students, including 1439 female students (59.20 %) and 991 male students (40.80 %). A majority of the participants were junior secondary (53.40 %) and senior secondary (46.60 %) students. In terms of

**Table 2**  
Demographic details of the samples.

Variables	Details	Frequency	Percentage
Sex	Male	991	40.80
	Female	1439	59.20
School level	Junior secondary level	1297	53.40
	Senior secondary level	1133	46.60
Academic performance (GPAX)	Low (lower than 2.50)	397	16.30
	Moderate (2.51–3.50)	998	41.10
	High (3.51–4.00)	1035	42.60
School size	Small	1105	45.47
	Large	1325	54.53
Region	Central	937	38.56
	Northeast	719	29.59
	North	337	13.87
	South	437	17.98
Cyberbullying roles	Cyberbullies	754	31.00
	Cybervictims	688	28.30
	Bystanders	988	40.70

academic performance, the study considered the cumulative grade point average (GPAX). Most students showed high academic performance (1035 students; 42.60 %) with a GPAX of 3.51–4.00, followed by moderate performance (998 students; 41.10 %) with a GPAX of 2.51–3.50 and low performance (397 students; 16.30 %) with a GPAX lower than 2.50.

According to the data collected on students' school sizes, 1325 students (54.53 %) attended large schools, whereas 1105 (45.47 %) attended small ones. Most respondents belonged to schools in the central region of Thailand, with 937 students (38.56 %), followed by 719 students (29.59 %) from the northeast, 437 students (17.98 %) from the south, and 337 students (13.87 %) from the north.

This study focuses on the three roles of cyberbullying: cyberbully, cybervictim, and bystander. In the study, 988 students were found to be bystanders (40.70 %), followed by 754 cyberbullies (31.00 %) and 688 cybervictims (28.30 %) (see Table 2).

#### 4.1. Correlation of cyberbullying and background, social status, and ICT use among secondary school students

##### 4.1.1. Correlation of cyberbullying and background (sex and academic performance)

The relationship between cyberbullying and sex among secondary school students was found to be statistically significant (chi-square = 72.32,  $p = 0.00$ ). Male students were more likely to be cyberbullies than female students, whereas female students were more likely to be cybervictims or bystanders. The study showed a statistically significant correlation between cyberbullying among secondary school students and academic performance (chi-square = 102.73,  $p = 0.00$ ). Students with low academic performance were more likely to be cyberbullies and cybervictims, whereas students with moderate and high academic performance tended to be bystanders.

##### 4.1.2. Correlation between cyberbullying and social status

The analysis of social status was divided into two subcategories: social preferences and perceived popularity.

2.1) **Social preference:** A statistically significant relationship was found between the aspect of social preference on social status and cyberbullying roles (chi-square = 557.82,  $p = 0.00$ ). In detail, popular students were mostly bystanders (55.00 %), average students were mostly cybervictims (47.30 %), and rejected, neglected, and controversial students mostly played the role of cyberbullies (65.30 %, 46.70 %, and 44.00 %, respectively). This study found that students with different social statuses in terms of social preferences tended to play different roles in cyberbullying.

2.2) **Perceived popularity:** A statistically significant relationship was found between perceived popularity in social status and cyberbullying (chi-square = 46.28,  $p = 0.00$ ). Students with varying perceived popularity statuses tended to play different roles in cyberbullying. Students who were highly popular mostly played the role of cyberbullies (37.60 %) and bystanders (32.40 %), whereas those with low and moderate popularity were mainly bystanders (47.70 % and 43.90 %, respectively).

##### 4.1.3. Correlation between cyberbullying and ICT use

The correlation between cyberbullying roles and average daily internet use found a statistically significant relationship ( $F = 2.44$ ,  $p = 0.04$ ). Furthermore, students who were cyberbullies had the highest average daily internet usage (mean = 10.95,  $SD = 5.79$ ). This was followed by bystanders (mean = 10.70,  $SD = 5.09$ ) and cybervictims (mean = 10.46,  $SD = 5.58$ ). Furthermore, observing the frequency of guardians' surveillance during internet use showed a statistically significant correlation with cyberbullying roles (chi-square = 18.00,  $p = 0.00$ ). Data showed that students who never had guardian monitoring during internet use had the highest tendency to be cyberbullies (36.70 %), whereas those who had occasional or constant guardian monitoring were mostly bystanders (43.40 % and 37.60 %, respectively). Furthermore, there was a statistically significant correlation between social media usage and cyberbullying roles (Chi-Square = 46.82,  $p = 0.00$ ). The figures showed that students with low social media use had the tendency to be cyberbullies and cybervictims (40.50 %), whereas those with moderate or high social media use were mostly bystanders (35.00 % and 47.50 %, respectively). The aforementioned study found that social media use is associated with cyberbullying roles in students.

The analysis of cyberbullying roles and ICT use levels, which included ICT, internet, and social media use, was divided into three categories: low, moderate, and high. This section shows a statistically significant correlation between ICT use and cyberbullying roles (chi-square = 80.87,  $p = 0.00$ ). The details explained that students with a high and moderate level of ICT use were mostly bystanders (51.00 % and 35.70 %, respectively), whereas students with a low level of ICT use were mostly cyberbullies (43.80 %) and cybervictims (34.90 %). This study found that students with varying levels of ICT use tended to play different cyberbullying roles.

Further research into ICT use in behavioral subcategories showed that students who used ICT for education had a lower risk of becoming cyberbullies. This study yielded similar results. It explained that students who played different roles in cyberbullying used ICT for education at different rates, with a statistically significant relationship ( $F = 4.95$ ,  $p = 0.00$ ). Furthermore, students who were spectators used the most ICT for education, entertainment, and communication (mean = 4.05,  $SD = 0.53$ ). This figure was followed by cybervictims (mean = 4.04,  $SD = 0.56$ ) and cyberbullies (mean = 3.88,  $SD = 0.61$ ). This demonstrated that ICT use for education was important in cyberbullying roles.

#### 4.2. Background (sex, learning performance), social status (social preference, perceived popularity), and ICT use variables combined as predictors of cyberbullying among secondary school students

The study on the relationship of background (sex, academic performance), social status (social preference, perceived popularity), and ICT use to cyberbullying among secondary school students used multinomial logistic regression analysis.

Tables 3 and 4 show how the likelihood ratio test was used in the study to determine model fit. The analysis found that a model with

five independent variables predicted cyberbullying among secondary school students. The results showed that the five independent variables predicted cyberbullying by 33.30, with a statistically significant relationship ( $p = 0.00$ ). This indicated that the five independent variables of sex, academic performance, social preference, perceived popularity, and ICT use were reliable predictors of cyberbullying (see [Tables 3 and 4](#)).

The multinomial logistic regression analysis for cyberbullying among secondary school students is detailed in [Table 5](#).

- 1) Sex: Male students were more likely to be cyberbullied than female students, whereas female students were more likely to be cybervictims and bystanders.
- 2) Academic performance: Students who performed poorly in school were more likely to be cyberbullies and cybervictims than those who performed well. Students with high academic performance were more likely to be bystanders, whereas students with moderate performance were more likely to be cyberbullies, cybervictims, or bystanders.
- 3) Social status in terms of social preference: Rejected students were more likely to be cyberbullies, whereas neglected students were more likely to be both cyberbullies and cybervictims. Students with average relationships with their peers could be bystanders as well as cybervictims, whereas the controversial group could be both cyberbullies and victims. Finally, popular students were the most likely to be bystanders.
- 4) Social status in terms of perceived popularity: Students with low to moderate popularity were less likely to be cyberbullies or cybervictims than students with high popularity.
- 5) ICT use: Students with a low and moderate level of ICT use, which included the use of ICT, internet, and social networks for entertainment, education, and positive communication, were more likely to be cyberbullies and cybervictims than those with a high level of ICT use.

## 5. Discussion

### 5.1. Correlation of cyberbullying and background, social status, and ICT use among secondary school students

#### 5.1.1. Correlation between cyberbullying and background

This study shows that the variables of sex and academic performance have different relationships with students' cyberbullying behaviors. The findings support the hypotheses for both sex and academic performance. The results indicate that male students are more likely to be cyberbullies than their female counterparts. Currently, female students are more likely to be cybervictims and bystanders than male students. This is consistent with previous research, which shows that males are more likely to perpetrate cyberbullying than females [35,65–70,96,97]. Girls are more likely to be cybervictims than boys [2,98,99]. In terms of cyberbullying roles and academic performance, the analysis shows that students with low academic performance are primarily cyberbullies, followed by cybervictims, whereas students with high and moderate academic performance are predominantly bystanders. This is consistent with previous research indicating that lower academic performance is associated with cyberbullying perpetration and victimization [6,39,71,76,77]. To elaborate, academic performance can convey acceptance and social status among peers. Teenagers with lower academic performance may be more vulnerable because they lack social status. As a result, they may be more likely to become cyberbullies as a means of boosting their own esteem.

#### 5.1.2. Correlation between cyberbullying and social status

According to the study, popular students tend to be bystanders, whereas average students are more likely to be cybervictims. Furthermore, the rejected, neglected, and controversial are primarily cyberbullies. The correlation between cyberbullying and social status in the perceived popularity aspect shows that students with high perceived popularity play the cyberbully role, followed by bystanders. However, the low and moderate perceived popularity groups are predominantly bystanders. These results support the hypothesis and previous research indicating that bullying perpetration is positively correlated with perceived popularity but negatively correlated with social liking [16–19,99]. Previous research suggested that popularity is a source of power (e.g., Barlett et al. [96]; Wegge et al. [24]) and perceived popularity, such as a desire to be popular among peers, has a positive relationship with cyberbullying [91,100]. Victims of bullying are frequently unpopular and rarely accepted by their peers [13,14]. Furthermore, aggression and victimization are positively associated with rejection, whereas victimization is negatively associated with peer acceptance and friendship [12]. Peer rejection may increase the participation in cyberbullying among adolescents [85,86]. That is, peer rejection can elicit negative emotional responses that increase cyberbullying and cybervictimization [86].

**Table 3**

Model fitting information of cyberbullying.

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	–2 Log Likelihood	Chi-Square	df	sig.
Intercept	2108.35			
Final	1258.14	850.21	22	0.00

Cox and Snell R<sup>2</sup> = 0.333.



**Table 4**  
Likelihood ratio tests of cyberbullying.

Effect	Model Fitting Criteria		Likelihood Ratio Tests		
	−2 Log Likelihood		Chi-Square	df	sig.
Intercept	1258.14		0.00	0	
Sex	1278.71		20.57	2	0.00
Learning performance	1299.86		41.72	4	0.00
Social preference	1848.22		590.08	8	0.00
Perceived popularity	1410.87		152.73	4	0.00
ICT use	1306.88		48.74	4	0.00

**Table 5**  
Multinomial logistic regression analysis for cyberbullying among secondary school students.

Variables	Cyberbully and Bystander			Cybervictim and Bystander			Cyberbully and Cybervictim		
	B	sig	Exp(B)	B	sig	Exp(B)	B	sig	Exp(B)
<b>Sex (ref. = Female)</b>									
<b>Male</b>	0.52	0.00	1.68	0.13	0.25	1.14	0.38	0.00	1.47
<b>Learning performance (ref. = High)</b>									
<b>Low</b>	0.79	0.00	2.21	0.82	0.00	2.27	−0.03	0.88	0.97
<b>Moderate</b>	0.56	0.00	1.75	0.24	0.051	1.27	0.33	0.02	1.38
<b>Social preference (ref. = Popular)</b>									
<b>Rejected</b>	1.81	0.00	6.10	−0.01	0.98	0.99	1.82	0.00	6.15
<b>Neglected</b>	1.52	0.00	4.58	1.02	0.00	2.77	0.51	0.02	1.66
<b>Average</b>	−0.04	0.84	0.97	1.86	0.00	6.43	−1.90	0.00	0.15
<b>Controversial</b>	1.25	0.00	3.49	0.99	0.00	2.68	0.26	0.36	1.30
<b>Perceived popularity (ref. = High)</b>									
<b>Low</b>	−1.69	0.00	0.19	−1.27	0.00	0.28	−0.42	0.07	0.66
<b>Moderate</b>	−0.92	0.00	0.40	−1.14	0.00	0.32	0.23	0.13	1.26
<b>ICT use (ref. = High)</b>									
<b>Low</b>	1.07	0.00	2.91	1.00	0.00	2.73	0.06	0.80	1.07
<b>Moderate</b>	0.61	0.00	1.84	0.55	0.00	1.73	0.06	0.66	1.06
<b>Intercept</b>	−1.22	0.00		−1.39	0.00		0.17	0.05	

### 5.1.3. Correlation between cyberbullying and ICT use

The study shows that students who are cyberbullies use the internet extensively on a daily basis. Furthermore, students who have never had guardians monitor their internet use are the most likely to be cyberbullies. Furthermore, the study finds that the use of social media on the internet is related to the roles of cyberbullying among students. This finding is consistent with the hypothesis and previous studies on internet bullying in relation to internet usage behavior and addiction [54]. Long periods of use of the internet and social networks can result in cyberbullying [57,101] via web blogs, chatrooms, social networks, emails, voice texts, texts, images, and videos [31,32]. Furthermore, the frequency with which guardians monitor students' internet use is associated with cyberbullying. The involvement of family members in advising and monitoring adolescents when they use IT tools is critical in protecting them from threats such as cyberbullying and internet addiction. Monitoring guardians' internet use is an important factor in predicting cyberbullying in students [47,102,50]. Furthermore, the level of social media usage is linked to cyberbullying roles. According to Niblack and Hertzog [92], when using social networks, users tend to take on the role of observer slightly more than those who do not use social networks. This means that users who use social media frequently are more likely to be bystanders than cyberbullies or cybervictims [37,59]. In its analysis of the relationship between cyberbullying and ICT use, the study finds that students with high levels of ICT use are mostly bystanders. Simultaneously, examining the various aspects shows that students who use the tools for education, entertainment, and communication at the high and moderate levels are primarily bystanders. Those with limited ICT use, in contrast, are more likely to engage in cyberbullying. It has been observed that when students use ICT extensively for educational purposes, their chances of becoming cyberbullies decrease. This is consistent with the findings of Park et al. [33], who found that students who use ICT for research and education have lower rates of cyberbullying confrontations. Similarly, Kim and Faith [34] argue that ICT use for education, such as research and learning, has a negative relationship with cyberbullying. That is, cyberbullying is more common among those who use ICT for entertainment rather than information search. Furthermore, Kaluarachchi et al. [103] emphasize that using ICT with comprehension and knowledge about cyberbullying can help them avoid becoming cybervictims.

## 5.2. Background, social status, and ICT use variables as predictors of cyberbullying among secondary school students

### 5.2.1. Background (sex, academic performance) as predictors of cyberbullying among secondary school students

In terms of sex, the study finds that male students are more likely to be cyberbullied than female students, while female students are more likely to be cybervictims and bystanders. This finding is consistent with the hypothesis and previous literature, which found that boys are more likely to be cyberbullying perpetrators than girls [64–70,72,97]. Furthermore, girls are more likely to be cybervictims

than boys [2,104,98], and they have more experience as bystanders than men [6,72].

The study found that students with low academic performance are more likely to be cyberbullies and cybervictims than those with high academic performance. The high performance group consists mostly of bystanders, whereas the moderate performance group takes on all roles, including cyberbullies, cybervictims, and bystanders. This finding supports the hypothesis and previous results, which show that low academic achievement is linked to cyberbullying and cybervictimization [76]. This means that low academic performance is associated with a proclivity to be a perpetrator [77], and low academic achievement is also associated with students who are cybervictims [84,87]. Moreover, high academic performance can help prevent wrongdoing [88]. Previous research suggests that students with high learning achievements score higher for social support and peer attachment than other groups. This then becomes an effective factor in reducing the risk of internet use and cyberbullying among adolescents [105].

### 5.2.2. Social status (social preference, perceived popularity) as predictors of cyberbullying among secondary school students

According to social status and social preference, rejected students are the most likely to be cyberbullies, whereas neglected students are both cyberbullies and cybervictims. Furthermore, students with average peer relationships are more likely to be both bystanders and cybervictims, whereas controversial students are both cyberbullies and cybervictims. Popular students are mostly bystanders. In terms of social status and perceived popularity, the study found that students with low and moderate popularity are less likely to be cyberbullies and cybervictims than students with high popularity. These findings support the hypothesis and previous research that found a link between social preference, perceived popularity, and cyberbullying victimization among peers [15]. The discussions focus on the relationship between social status (perceived popularity, social preference) and cyberbullying, which increases as perceived popularity increases and social preference decreases [69]. Furthermore, peer rejection predicts increased cyberbullying [80], whereas popularity predicts increased cyberbullying [46,106]. Furthermore, loneliness correlates positively with cyberbullying [107], whereas healthy peer relationships correlate negatively with cyberbullying [32]. Interestingly, prior research suggests that popularity goals are positive predictors of bullying, whereas social preference goals are negative predictors. Furthermore, self-perceived popularity and social status insecurity play important moderating roles in the relationship between popularity goals and bullying. Students with high popularity goals, high self-perceived popularity, or high social status insecurity are more likely to bully others. Furthermore, popularity goals predict bullying among classmates with a higher variance in self-perceived popularity [108].

### 5.2.3. Use of ICTs as predictors of cyberbullying among secondary school students

The results show that students with low and moderate levels of ICT use, which includes ICT, the internet, and social media use for entertainment, education, and social media communication, are more likely to be cyberbullies and cybervictims than those with high levels of ICT use. The findings are consistent with the hypothesis and previous research indicating that usage behavior can predict cyberbullying [92]. The use of social networks online is associated with an increased risk of cyberbullying victimization. In this case, cybervictims use digital devices to interact with instant messages, emails, blogs, and online games more frequently than non-cybervictims [59,109]. Similarly, Barlett et al. [64] and Guo [110] found that cyber activities are risk factors for cyberbullying and are increased with an increase in reports of cyberbullying victimization. Girls who engage in more online social activities and communicate with strangers are more likely to be cyberbullied [60]. Similarly, Park et al. [33] argue that high levels of ICT use for educational purposes have a negative impact on cyberbullying, in which students are primarily bystanders rather than cyberbullies or cybervictims.

## 6. Conclusions

This study examining cyberbullying among Thai secondary school students found that the majority of students are bystanders, cyberbullies, and cybervictims. Cyberbullying was found to be correlated with background, social status, and ICT use among secondary school students. Furthermore, students from various backgrounds (sex, academic performance), social status (social preference, perceived popularity), and ICT use participated in various forms of cyberbullying.

Regarding the relationship between background and cyberbullying, male students are more likely to be cyberbullies than females, whereas female students are more likely to be bystanders and cybervictims. Students with low academic performance (GPAX <2.50) are more likely to be cyberbullies than cybervictims. The majority of students with high (GPAX 3.51–4.00) and average (GPAX 2.51–3.50) academic performance are bystanders.

In terms of the relationship between social status (social preference, perceived popularity) and cyberbullying, the study found that popular students are primarily bystanders, average students are primarily cybervictims, and rejected, neglected, and controversial students serve as cyberbullies. The majority of cyberbullying occurs among popular students, followed by bystanders. The least and moderately popular students are mostly bystanders.

An examination of the relationship between cyberbullying and ICT use found that students who were cyberbullies had the highest average daily internet use. Furthermore, students who had never had guardians monitor their internet use were the most likely to be cyberbullies. Furthermore, students who engage in moderate and positive social media behavior are mostly spectators. Finally, the correlation analysis of cyberbullying roles and ICT use is divided into entertainment, educational, and communication purposes. It found that students who are bystanders have the highest average for using ICT for entertainment, education, and communication.

In studies on the predictor variables of secondary school students' background, social status, and ICT use in cyberbullying, the likelihood ratio test was used to assess model fit. The analysis found that a model with five independent variables predicted cyberbullying among secondary school students. This suggests that sex, academic performance, social preference, perceived popularity, and ICT use are all appropriate predictors of cyberbullying.

## 7. Limitations

- 1) The data collection process began during the second semester of the 2021 academic year, amid the ongoing outbreak of the coronavirus pandemic. As a result, some schools practiced alternating school attendance to achieve social distancing goals, so the information collected in those areas fell short of the target. Furthermore, several students took sick leave due to infections. As a result, the researchers had to collect additional data during the first semester of the 2022 academic year. This explains why the data from each school's samples were collected over different time periods.
- 2) The data were collected using two online platforms: the CU Smart Sociometry web application and Google Forms. The collected data were then analyzed to determine causal relationships and predictive power. Some students were provided additional explanation and their data were gathered at a later date as they were absent on the first day of data collection. Students who could not be tracked were excluded from the study as incomplete data cannot be used to analyze the causal relationships or predictive power of the combined variables.

## 8. Recommendations

### 8.1. Recommendations for research results applications

- 1) School administrators must prioritize the development of relationships among students, teachers, and students and their families. This can act as a social support network for preventing and alleviating cyberbullying among students. This can be accomplished by encouraging teachers to incorporate technology for active learning management, promoting the use of ICT for academic and research purposes, and communicating with guardians about their monitoring responsibilities when students use ICT. Furthermore, students should be encouraged to use social media positively in order to avoid cyberbullying.
- 2) Using sociometry, teachers must analyze and screen students who may be at risk or have relationship issues with their peers. This is because the results show that social status is an important factor in predicting cyberbullying. Currently, the CU Smart Sociometry [94] Web application has been developed to help teachers analyze and visualize students' sociometric status. Provides timely and efficient data that can be used to design activities that foster peer relationships. Furthermore, the result is a social support network that helps to prevent and mitigate cyberbullying.
- 3) Guardians must educate and/or promote students' positive use of online social networks, with an emphasis on ICT for academic and research purposes. Furthermore, guardians must monitor and/or advise students on the use of the internet for entertainment and recreation. This refers to the results that, in the context of online social media, cyberbullies and cybervictims use them more for entertainment and fun than bystanders. In comparison to cyberbullies and cybervictims, bystanders use their devices more frequently for academic entertainment and reading digital documents. Furthermore, students who have never had their guardians monitored while using the internet are more likely to be cyberbullies, whereas students who have had their guardians monitored on a regular basis are more likely to be bystanders.

### 8.2. Recommendations for further studies

- 1) The results show that the majority of students are bystanders. Thus, future research can focus on interesting topics such as the psychological effects of cyberbullying on spectators. Furthermore, studies may look into the characteristics of bystanders who may act as protectors, supporters of bullying, or outsiders, particularly among socially preferred and popular students, and who may be able to protect victims of or stop cyberbullying among their peers.
- 2) According to the results, cyberbullies are the second-largest group within the sampled students. The findings differ from previous research in Thailand, which found more cybervictims. This could indicate an increase in aggression, increasing the need for research into the factors that may contribute to increased cyberbullying behavior. Furthermore, longitudinal studies of cybervictims and their tendency to assimilate and mimic cyberbullying behavior in order to exact revenge on other victims will be investigated.
- 3) In light of the results that popular students are disproportionately cyberbullies, this is an interesting occurrence. Further research can look into the underlying studies why popular students are primarily cyberbullies. Interestingly, bullying may be one of the motivators for increasing and maintaining popularity, promoting peer acceptance, and expanding the bullying group's peer base.
- 4) According to the study, guardians who monitor their students' ICT use, as well as schools, play an important role in educating and promoting positive ICT use. As a result, future research will develop to the development of guardian guidelines in such cases. Similarly, curriculum and instructional designs will be developed to encourage students to use ICT effectively.

## Data availability statement

The authors do not have permission to share data.

## CRedit authorship contribution statement

**Chutima Suraseth:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Prakob Koraneekij:** Writing – review

& editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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### Appendix

#### *Cyberbullying Questionnaire*

##### *Part 1 Demographic information*

1. Sex
2. Grade level
3. GPA
4. Name of school

##### *Part 2 Cyberbullying*

1. I post online texts to insult someone.
2. I send online texts that insult, harass, or cause fear to my peers.
3. I expose other people’s personal information and secrets on the internet.
4. I post inappropriate images or video clips of others on the internet.
5. I remove some people that I dislike from a group chat to make them feel bad.
6. I use other people’s identities to do inappropriate actions on the internet or phones.
7. I write jokes, humiliating stories, rumors, and gossips about others and publicly share them on the internet.
8. Someone has posted texts in an online group chat to insult me.
9. I have received online texts that insulted, harassed, and caused fear.
10. My private information or secrets have been exposed on the internet.
11. My inappropriate images or video clips have been publicly shared without my consent.
12. I have been blocked or removed from a group chat only because someone wishes to make me feel bad.
13. I have received inappropriate texts on the internet or phones from someone who uses other people’s identities.
14. Someone has written jokes, humiliating stories, rumors, and gossips about me on the internet.
15. I am in an online group that insults someone.
16. I have seen texts on online platforms that insult, harass, and cause fear.
17. Some peers share private information or secrets of others on the internet.
18. I have received inappropriate images or video clips of peers who are being bullied.
19. Some of my friends in my group chats have been removed from the chat.
20. I have witnessed my peers receive inappropriate messages via the internet or phones from someone who uses other people’s identities.
21. I have read jokes, humiliating stories, rumors, and gossips of peers on the internet.

#### *Sociometric Status Questionnaire*

**Situation 1:** When the teacher assigns group work in class, who are the top 3 friends you want to work with most and the top 3 you want to work with least? Please state your reason.

**Situation 2:** When there is free time during holidays and there are opportunities to go on vacations with friends, who are the top 3 friends you want to invite most and the top 3 you want to invite least? Please state your reason.

**Situation 3:** When you are worried and need friends’ advice, who are the top 3 friends you want to ask most and the top 3 friends you want to ask least? Please state your reason.

**Perceived Popularity Questionnaire**

Who is the 3 most popular and 3 least popular friend? Please state your reason.

**ICT Use Questionnaire****1. ICT use**

- 1.1 Do you own a personal computer or laptop?
- 1.2 (If yes) What do you use the personal computer or laptop for?
  - 1.2.1 Entertainment purposes
  - 1.2.2 Educational purposes
  - 1.2.3 Communication purposes
- 1.3 Do you own a smartphone or tablet?
- 1.4 (If yes) What do you use the smartphone or tablet for?
  - 1.4.1 Entertainment purposes
  - 1.4.2 Educational purposes
  - 1.4.3 Communication purposes

**2. Internet use**

- 2.1 How many hours per day do you use the internet?
- 2.2 Do you have access to high-speed internet?
- 2.3 Whose personal computer, tablet, or mobile phone with internet access do you use?
- 2.4 Do you attend classes with instructors who use the internet?
- 2.5 Who taught you how to use the internet?
- 2.6 When using the internet, how often is a guardian present?
- 2.7 Does your guardian limit access or use control features such as parent mode or kids modes to limit your internet use?
- 2.8 How do your guardians, teachers, or peers give you advice on how to use the internet?
- 2.9 Have you ever told your guardian, teachers, or peers about your internet activities?
- 2.10 How often do you use the internet for the following purposes?
  - 2.10.1 Access information
  - 2.10.2 Entertainment purposes
  - 2.10.3 Access social media
  - 2.10.4 Educational purposes
- 2.11 How often do you access the internet in the following settings?

**3. Social media use**

- 3.1 Which social media account do you have (multiple answers)?
- 3.2 How often do you use or check notifications of the following social media accounts?
- 3.3 How often do you use social media to do the following activities?
- 3.4 What is your level of behavior and feelings toward social media use?

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