

Senior High School Students' Level of Internet Cookie Responsibility

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ABSTRACT:

Students nowadays often turn to the internet for aid in their academic tasks. However, the cookies of which these websites on the internet operate on is something that they are not so knowledgeable about. This study investigated the level of internet cookie responsibility in terms of awareness of cookies, understanding of cookie functionality, knowledge of cookie policy, and consent practices in a university in Ozamiz City, Philippines. The data in this study was obtained through a researcher-made questionnaire where analysis was performed using frequency and percentage, as well as mean and standard deviation. The findings indicate that the students have a proficient level of awareness in terms of cookies. Moreover, their level of understanding of cookie functionality is acceptable as well as their level of knowledge in cookie policy. Furthermore, they maintain an acceptable level of consent practices. Based on these findings, educational institutions are encouraged to integrate knowledge and understanding of cookies and cookie disclaimers into the curriculum. Further research is encouraged especially those concerning the actuality of the students in observing their responsibilities with cookies. In the world today where it is convenient to use technology, students should learn to be responsible with internet cookies and most importantly apply what they have learned.

KEYWORDS: cookies, internet, responsibility, students, websites

INTRODUCTION

Students have been observed to frequently browse the internet through various websites to aid them in their educational journey especially in their activities, assignments, and projects. As much as the internet has aided the students in their activities, it presents multiple concerns especially when dealing with cookies where most websites use it. Internet cookies are data storage tools that collect data from a website's users to inform other websites particularly those related to marketing and recommendations (Diez et al., 2020). Cookies are normal at the present and can benefit a user's overall experience on the internet (Choi et al., 2019). However, it is particularly alarming that many internet users are unaware of cookie function and presents multiple data privacy risks (Wagner, 2021).

As much as cookies can improve web browsing experience, students perceive topics such as accepting cookies when surfing the internet with high risk (Torres-Hernández & Gallego-Arrufat, 2023). According to Naithani (2022), there is also a concern about manipulative techniques towards a user to convince them to accept cookie disclaimers. Moreover, there are concerns over the overall functionality of cookies where it originally is utilized for authentication and session management but is also for user

tracking and advertisement targeting. What can concern users is that most governmental websites have also violated at least one of the privacy guidelines (Alharbi et al., 2023)

Dabrowski et al. (2019) stated in their study that to respond to concerns, the European Union (EU) has imposed the General Data Protection Regulation (GDPR), a legal framework for data protection giving individuals the power to control their own personal data. The implementation of the GDPR was done back on May 25th, 2018 and started a new regulatory regime for businesses in Europe and in other countries (Limba et al., 2021). Since the GDPR came into enforcement, many companies have been found to violate the ePrivacy Directive known as the Cookie Law which puts forth the cookie consent guidelines for websites (Jayakumar, 2021; Alharbi et al., 2023; Cahn et al., 2016). Despite the violations that have been found, Degeling et al. (2019) concluded that the web became more transparent at the time GDPR came into force, but there is still a lack of both functional and usable mechanisms for users to consent to or deny processing of their personal data on the Internet.

Legalities and privacy issues aside, the user aspect has not been quite explored and researched about. The problem is that users accept online cookies being unaware of the meaning of the given consent and the following implications (Bushati et al., 2023). Ultimately, by clicking “yes” or “I accept”, people will agree to the use of tracking technologies and cookies (Yang, 2023). Another concerning problem is that regardless of the implementation of the GDPR and other various measures, it left the general public’s attitude towards cookies unchanged (Kulyk et al., 2021). Additionally, the prevailing reason one would accept a cookie is due to the need to access the content immediately regardless of the credibility of the website (Jayakumar, 2023).

MATERIAL, METHODOLOGY, AND LITERATURE REVIEW

Material of the Study

This quantitative study employed a descriptive design to obtain its findings. This study was conducted in the senior high school department in a university located in Ozamiz City, Philippines. The respondents were chosen through a stratified random sampling method. The researchers utilized the researcher-made survey questionnaire to gather data from the respondents. With the use of SPSS software, the following statistical tools were used in interpreting the data of this study: frequency and percentage, as well as mean and standard deviation.

Methodology

The researchers obtained approval from the basic education department of the university to conduct a survey about students’ cookie responsibility. The researchers verified the validity and reliability of the questionnaire used by ensuring it undertook a validation process. The questionnaires were thoroughly examined by five teachers before it was administered to the respondents. Furthermore, a pilot test was conducted by the researchers to ensure its reliability. The pilot test attained a Cronbach’s Alpha of 0.94 which signifies an excellent level of reliability. A letter of consent was distributed to inform respondents that the survey conducted by the researchers was solely for academic purposes. After permission was granted, the researchers administered the survey questionnaires, ensuring respondents met the criteria.

Literature Review

According to Statista (2023), internet users in the Philippines spend an average of 9.14 hours utilizing the internet across different devices during the third quarter of 2022. In the education sector in Visayas, it was noted that teachers hold higher levels of motivation with information, communication, and technology (ICT) integration in their field allowing for more ease of access for them and their students

(Sanchez et al., 2023). Furthermore, an emerging topic is Artificial Intelligence in Education (AIEd) and it has also shown a significant impact in the educational sector, especially after the outbreak of the COVID-19 pandemic (Zulkarnain & Yunus, 2023). However, it remains in question if these users are aware of the cookies of which these platforms operate on.

Internet cookies are data storage tools that collect data from a web platform’s users to inform other platforms particularly those related to marketing and recommendations (Diez et al., 2020). Moreover, LinkedIn (2023) stated that there are two kinds of cookies, first party and third-party cookies. First party cookies are a small piece of code that a web-browser stores in a file on the user’s computer to remember their activity on a certain site. A first-party cookie comes from the domain (or website) the user is browsing. On the other hand, third party cookies are a small piece of code that comes from a domain other than the one the user is browsing. However, what is concerning is that by design, cookies lack security. Additionally, there is also a concern about manipulative techniques towards a user to convince them to accept cookie disclaimers.

To address multiple privacy concerns, the General Data Protection Regulation (GDPR) was put into place by the European Union (EU). The GDPR is a legal framework for data protection giving individuals the power to control their own personal data. A stressing situation is that for countries outside the EU, it remains unclear if privacy concerns regarding cookies are addressed because of lack of available related literature. A rationale for stressing such is that various firms have been found violating the ePrivacy Directive known as the Cookie Law (Jayakumar, 2021). However, despite the violations that have been found, Degeling et al. (2019) concluded that the web became more transparent at the time GDPR came into force.

RESULTS AND DISCUSSION

Demographic Profile of the Respondents

The respondents’ demographic information is inclusive of their age, sex, and grade level. This study’s respondents are senior high school students from a university located in Ozamiz City, Philippines. The data in Table 1 shows varying ages among the students with a range of 16 to 22 years of age and a mean of 17.20 years of age. Moreover, the sample is prevalently female standing at 67% of the sample. Furthermore, there is not much of a difference in number of students in terms of grade level.

Table 1. Demographic Information of the Senior High School Students

Respondents profile (n=150)				
Profile	Mean	StDev	Min	Max
Age	17.20	0.843	16	22
Profile			Count	Percent
Sex				
Male			49	33
Female			101	67
Grade Level				
11			83	55
12			67	45

Level of awareness regarding cookies

The awareness of cookies of the user is defined as the capability of the user to sense the elements of the cookie disclaimer and the understand the basic concepts revolving it. As seen in table 2, the respondents are ultimately aware of the existence of cookie disclaimers when they utilize a website and that it blocks their content before they give their action towards the cookie disclaimer. However, their score is a bit lower regarding their awareness of the cookie’s capabilities to track and record information. Their awareness of the existence and functions of third-party cookies are also lower in terms of score. What is remarkable is that the respondents are highly aware of their rights and capabilities in terms of data privacy in order to reject the cookies in websites despite being aware of the need for cookies also. Moreover, they are aware of the privacy risks associated with cookies.

Related literature mentioned that there is a lack of awareness of users towards cookie disclaimers as well as their expression for concern. However, Table 2 presents that the students are highly aware of cookie disclaimers and the elements associated with such. A reason that is assumed for the disagreement in findings is the time of conduct. Provided almost three years have passed since the mentioned literature, there are likely to be changes and improvements in how users are aware with cookies.

Overall, the respondents’ level of awareness is fairly proficient (M = 3.52). It remains in emphasis that students are encouraged to remain aware of the existence of cookies as awareness is a good foundation for action. Moreover, it is recommended that students try to explore more about cookies to gain insight on their awareness regarding the existence of cookies.

Table 2. Level of awareness regarding cookies

Statements	Mean	StDev	Remark
1. I am aware that cookie disclaimers pop up when I open a website.	3.94	1.27	Proficient
2. I am aware that the cookie disclaimer blocks my access to the content before giving my consent.	3.53	1.24	Proficient
3. I am aware that cookies track my movement while using a website.	3.19	1.16	Acceptable
4. I am aware of the existence of third-party cookies when accessing a website.	3.23	1.11	Acceptable
5. I am aware of the possibility of third-party cookies monitoring my website activity for advertising purposes.	3.21	1.19	Acceptable
6. I am aware of my power and rights as a user to reject unnecessary cookies.	3.85	1.20	Proficient
7. I am aware of the need for cookies in websites to allow it to function.	3.54	1.21	Proficient
8. I am aware that cookies can be associated with privacy risks.	3.67	1.18	Proficient
9. I am aware of the fact that cookies gather information about my device.	3.36	1.23	Acceptable
10. I am aware of the need for me to give consent or reject the cookie disclaimer to allow the website to work.	3.67	1.11	Proficient
Overall	3.52	1.19	Proficient

Note: Scale:4.20-5.0 (Very proficient);3.40-4.19(Proficient);2.60-3.39 (Acceptable); 1.80-2.59(Incompetent);1.0-1.79 and below (Very incompetent)

Level of Understanding of Cookie Functionality

The understanding of cookie functionality is defined as the user’s understanding and overall knowledge of the functionality of cookies. As seen in table 3, the respondents have an acceptable level of knowledge regarding the basic idea of cookies and its functionality. However, their scores are lower when it comes to the knowledge of the existence of first party and third-party cookies as well as their knowledge in differentiating them. Their understanding of cookies in terms of it gathering data is also acceptable and that they also have a fair understanding of the need for cookies in websites. They also understand their capability in rejecting the cookie disclaimer and that some websites cease to function if disabled. However, when it comes to specific cookies in the cookie settings, their score is lower for such aspect. Their capability to navigate a cookie disclaimer is acceptable.

Overall, the respondents’ level of understanding of cookie functionality is fairly acceptable (M = 3.19). It is recommended that students will be encouraged to dig deeper into the world of cookie disclaimers and cookies to gain more understanding on cookie functionality which will enable them to make competently informed decisions when making choices with cookies.

Table 3. Level of understanding of cookie functionality

Statements	Mean	StDev	Remark
1. I understand the basic idea of a website cookie is and what it is used for.	3.22	1.10	Acceptable
2. I know that there are first-party cookies and third-party cookies.	2.81	1.14	Acceptable
3. I can differentiate the functions of a first-party cookie and a third-party cookie.	2.65	1.22	Acceptable
4. I know that cookies function in a way that it gathers my data for certain purposes such as functionality and improvement of the website.	3.28	1.18	Acceptable
5. I understand that necessary cookies are required for a website to function.	3.51	1.08	Proficient
6. I understand the function of a cookie is to monitor my website activity for various purposes such as website improvement.	3.42	1.07	Proficient
7. I know that unnecessary cookies do not function or is inactive if I reject the cookie disclaimer.	3.35	1.01	Acceptable
8. I understand that certain websites do not work if all cookies are rejected.	3.42	1.10	Acceptable
9. I know that there are different kinds of website cookies or specific cookies and that they serve different functions.	3.22	1.13	Acceptable
10. I can navigate the cookie disclaimer if it prompts me to choose specific cookies.	2.97	1.07	Acceptable
Overall	3.19	1.10	Acceptable

Note: Scale:4.20-5.0 (Very proficient);3.40-4.19(Proficient);2.60-3.39 (Acceptable); 1.80-2.59(Incompetent);1.0-1.79 and below (Very incompetent)

Level of Knowledge on Cookie Policy

The knowledge of cookie policy is defined as the basic and technical knowledge of the user regarding the rules, regulations, and legalities revolving around the cookie disclaimer and the user’s power to

choose to protect their information. As seen in table 4, the respondents’ knowledge of the GDPR, its enforcement, and location of enforcement are incompetent. However, they know that there are privacy laws existent that protects them but is not entirely knowledgeable of the specifics such as the cookie law. What’s also alarming is that the respondents are not knowledgeable of the websites that violate the cookie law and its percentage on the internet. Moreover, they do not know the reasons as to why such laws were put about but has specific knowledge that they have the power to accept or reject the cookie disclaimer.

Most related literature has not cited the idea of users being knowledgeable about cookie policy. Still, this study has established that students as users hold an acceptable level of knowledge when it comes to cookie policy. What is noteworthy is that students are ultimately aware that they possess rights under the protection of Philippine laws regarding their data privacy. Overall, their knowledge on cookie policy is acceptable (M = 3.05) but is lower compared to the other constructs. It is highly emphasized that students become more aware with the legalities associated with cookies.

Table 4. Level of knowledge on cookie policy

Statements	Mean	StDev	Remark
1. I know what the GDPR is about and its role in cookie policy.	2.50	1.10	Incompetent
2. I know that the GDPR is not highly enforced in the Philippine setting.	2.47	1.01	Incompetent
3. I know of the countries where the GDPR is strictly followed.	2.58	1.18	Incompetent
4. I know that there are data privacy laws protecting me from the malicious intent of ill-willed people.	3.65	1.09	Proficient
5. I know about the “Cookie Law” and its enforcement to protect online users.	3.11	1.16	Acceptable
6. I know of the percentage of websites that violate the cookie law.	2.84	1.18	Acceptable
7. I know that third-party cookies have possibilities of violating the cookie law.	2.93	1.10	Acceptable
8. I know that under the cookie law, I can opt to reject unnecessary cookies.	3.23	1.06	Acceptable
9. I know the general reasons of why the cookie law exists and was enforced.	3.04	1.09	Acceptable
10. I know that the cookie law stated that one must declare their actions towards a website cookie disclaimer by clicking “accept” or “reject”.	3.54	1.16	Proficient
Overall	3.05	1.11	Acceptable

Note: Scale:4.20-5.0 (Very proficient);3.40-4.19(Proficient);2.60-3.39 (Acceptable); 1.80-2.59(Incompetent);1.0-1.79 and below (Very incompetent)

Level of Observance in Consent Practices

The consent practices are defined as the frequency and habituation of which they observe proper giving consent to the cookie disclaimer and modification of the cookie settings if needed to further protect one’s data. As seen in table 5, the respondents’ practices when dealing with website cookies are proficient where they do not give their immediate consent when prompted to accept it. However, if there are no

cookie disclaimers that pop up, they do not quite look for it and go through it due to their lower scores. Moreover, it is not a habit of theirs to look for cookies when no prompted. However, they are very cautious when visiting and using a website especially when it prompts them to use cookies. Lastly, they are proficient when it comes to not allowing suspicious third-party cookies in websites that they use. The results of this study are slightly contradictory to the results of other studies which prevalently claim that users consent practices are incompetent where they dismiss the cookie disclaimer by immediately clicking “accept” to access the content of the website. The results of this study differ from related studies especially in the aspect that the students observe proper practices when dealing with cookies. The information that coincides with relevant literature is that students indeed take cookies with a particular degree of risk and suspicion especially when prompted to accept the cookie disclaimer. Overall, the level of observance of consent practices of the respondents are on an acceptable level (M = 3.37). It is recommended that students be constantly reminded in class about their consent practices especially when concerning assignments or homework involving the need to search the internet. It is already remarkable that they are proficient in being cautious when dealing with cookies and that they have acceptable consent practices, but it should remain in emphasis that they be reminded from time to time about their practices when providing consent to cookies.

Table 5. Level of observance in consent practices

Statements	Mean	StDev	Remark
1. I always observe proper practices when dealing with website cookies.	3.51	1.06	Proficient
2. I do not give my immediate consent to the cookie disclaimer whenever I am prompted to accept it.	3.58	1.14	Proficient
3. I look for cookie disclaimers in a website should the website not inform me of the existence of cookies.	3.27	1.00	Acceptable
4. I am never in a hurry when going through the cookie disclaimer.	3.07	1.10	Acceptable
5. I always make sure I have gone through the cookie disclaimer whenever I am prompted to declare my action.	3.11	1.12	Acceptable
6. I always find ways to maneuver the website cookie disclaimer.	3.19	1.07	Acceptable
7. I am always cautious whenever I use a website I never visited before, and it prompts me to accept a cookie disclaimer.	3.61	1.14	Proficient
8. I am always cautious with my movements online especially with websites that use third-party cookies.	3.57	1.09	Proficient
9. It is a habit of mine to go through the website cookie disclaimer whenever I am prompted.	3.18	1.15	Acceptable
10. I never allow suspicious third-party cookies to run on a website I am using.	3.61	1.21	Proficient
Overall	3.37	1.11	Acceptable

Note: Scale:4.20-5.0 (Very proficient);3.40-4.19(Proficient);2.60-3.39 (Acceptable); 1.80-2.59(Incompetent);1.0-1.79 and below (Very incompetent)

Overall level of cookie responsibility

As seen in table 6, among the four constructs the respondents scored the highest in their awareness of cookies followed by their consent practices, then their understanding of cookie functionality, and lastly

their knowledge on cookie policy. This means that the students are ultimately aware of the existence of cookies in websites they utilize and maintain good practices when dealing with cookies. However, their understanding and knowledge on cookie functionality and the relevant legalities surrounding it is a bit lower than their awareness and practices.

The findings, results, and reports of related literature vary when compared to the results of this study and is probably due to the location and time of conduct of the other studies. Some literature contradicts certain aspects in this study while others also partly coincide. Still, this study has proved its importance by presenting the case of Filipino students in a certain university.

Overall, the senior high school students' website cookie responsibility is of an acceptable level ($M = 3.27$). It remains in utter importance that students could be frequently reminded to be cautious and careful when dealing with internet cookies. Even if the students in this case hold an acceptable level of cookie responsibility, there is still room for improvement. It could also be emphasized that students try to learn more about cookies especially in the academic setting.

Table 6. Overall level of cookie responsibility

Construct	Mean	StDev	Remark
Awareness of cookies	3.52	1.19	Proficient
Understanding of cookie functionality	3.19	1.10	Acceptable
Knowledge on cookie policy	3.05	1.11	Acceptable
Consent Practices	3.37	1.11	Acceptable
Overall	3.27	1.13	Acceptable

Note: Scale:4.20-5.0 (Very proficient);3.40-4.19(Proficient);2.60-3.39 (Acceptable); 1.80-2.59(Incompetent);1.0-1.79 and below (Very incompetent)

CONCLUSION

The study's findings have led to multiple important conclusions. The students are ultimately aware of the existence of cookies in their web activity and practice good ethic with their consent practices towards internet cookies. However, their understanding of cookie functionality as well as cookie policy is only acceptable and can be improved. It remains in utter importance that students be cautious and careful when dealing with internet cookies.

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