

Examination of Opinions of Pre-Service Teachers at Education Faculty Regarding Cybercrimes

Examen de las opiniones de los profesores en formación de la facultad de educación sobre los delitos informáticos

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Abstract

This research includes the examination of the views of pre-service teachers on cybercrimes. For this purpose, it was aimed to determine the students' opinions about their preventive attitude towards these crimes. The study was carried out with 282 pre-service teachers at the Near East University Atatürk Education Faculty in Northern Cyprus in the 2018-2019 academic year. In the study, personal information form, validity and reliability provided by Gözler and Taşçı (2015) and the "Student Opinion Scale on Informatics Concepts and Crimes" were used as data collection tools. According to the findings of the study, it was concluded that general views of pre-service teachers on informatics concepts and cybercrimes are at a moderate level and education on this subject should be increased.

Keywords: Cybercrime, pre-service teachers, cyberbullying, internet security

Resumen

Esta investigación incluye el examen de las opiniones de los profesores en formación sobre los delitos cibernéticos. Para ello, se tuvo como objetivo conocer la opinión de los estudiantes sobre su actitud preventiva frente a estos delitos. El estudio se llevó a cabo con 282 profesores en formación en la Facultad de Educación Atatürk de la Universidad del Cercano Oriente en el norte de Chipre en el año académico 2018-2019. En el estudio se utilizaron como herramientas de recolección de datos la forma de información personal, la validez y confiabilidad proporcionada por Gözler y Taşçı (2015) y la "Escala de Opinión de Estudiantes sobre Conceptos y Crímenes Informáticos". De acuerdo con los hallazgos del estudio, se concluyó que la visión general de los docentes en formación sobre conceptos informáticos y ciberdelitos se encuentra en un nivel moderado y se debería incrementar la educación en este tema.

Palabras clave: ciberdelito, profesores en formación, ciberacoso, seguridad en Internet



Introduction

Developing technology has formed the basic dynamics of information societies and human life in the light of time. However, another common situation is that information technologies develop continuously and increasingly. Although technological innovations are produced for today, they can become obsolete in a short time. While the developments and innovations in technology affect individuals and societies, they can turn them into a subject that pursues the technology invented by humanity (Balkı & Saban, 2009).

Since the developments in technology have different purposes and functions, it has been possible for us to encounter these technologies at every stage of human life. Thanks to technology, the desired information can be accessed quickly and easily without time and place limits.

These types of crimes, which were seen as the commission of ordinary crimes with computers in the early days, have introduced a new type of crime that did not exist before with the development of technology over time. Cybercrimes have arisen due to the risky and illegal use of information technologies in line with the interests of individuals.

Cybercrimes were first recorded in 1966 with an article titled "Computer expert is accused of tampering with the bank account" (Aydın, 1992). Although a clear definition of the concept of cybercrime is not determined in the literature review, several similar features are encountered. These are listed as follows: (i) transfer of information, (ii) repetition, (iii) evaluation, (iv) storage, (v) distribution, (vi) general system science of retrieving information from its original source and transferring it to the user. It is expressed in different terms such as cybercrime, IT crime, and technology crime (Sönmez, 2018). According to Hekim and Başbüyük, (2013), information crimes are defined as cybercrime, computer crime, electronic crime, digital crime, or advanced technology crimes.

Today, development in information technologies causes an increase in crime rates and the emergence of new types of crime. When the report published by the Anti-Smuggling and Organized Crime Department in 2011 is examined, the most widespread cybercrimes can be determined as follows: (i) credit and debit card fraud, (ii) information systems (entering the system, spoiling,

destroying data), (iii) Aggravated fraud via internet banking and internet, (iv) obscenity, (v) gambling, and (vi) breach of confidentiality. It is seen that cybercrimes are committed with different types and methods today. These can be listed as malware, e-mail bombardment, remote management tools, directing the individual to fake addresses, accessing system codes by using advertising-priced software, and sql codes.

Information crimes cause great damages in a short period of time and leaving little clue in the past (Yaycı, 2007). The insufficient awareness of the society regarding cybercrimes increases the possibility of individuals to become victims. It is striking that individuals with a high level of education are also victims (Gözler & Taşçı, 2015).

It should be ensured that pre-service teachers, who will shape the future of society, receive the necessary training on information crimes. The fact that classroom teachers and other relevant teachers, who are seen as education leaders, have the necessary knowledge and equipment about cybercrime or other crime concepts will help the young generation to be more conscious (Gözler & Taşçı, 2015). In this respect, pre-service teachers in education faculty were included in the study and their views on cybercrimes are examined.

Method

The increase in cybercrimes in recent years has revealed the necessity of taking necessary measures in this regard. From this point of view, it was aimed to determine the opinions of the students about having a preventive attitude towards these crimes.

In line with this purpose, answers to the following questions will be sought in the research:

1. Is there a significant difference between the gender of the pre-service teachers and the status of being victimized or attacked on the internet?
2. Is there a significant difference between pre-service teachers' years of internet use and their status of being victimized or attacked on the internet?
3. Is there a significant difference between the pre-service teachers' internet connection and their victimization or being attacked on the internet?
4. What are the opinions of the pre-service teachers about cybercrimes?
5. Is there a significant difference between the pre-service teachers' views on informatics concepts and crimes and their gender?



6. Is there a significant difference between the pre-service teachers' views on informatics concepts and crimes and their grade levels?
7. Is there a significant difference between pre-service teachers' views on informatics concepts and crimes and years of internet use?
8. Is there a significant difference between the pre-service teachers' views on informatics concepts and crimes and the situation of being a victim or being attacked?

Research Model

The survey model was used in this research which was conducted within the framework of quantitative research approach. Survey model is a research approach that aims to describe a past or present situation as it is (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2017).

Study Group

The study group of the research consists of 282 pre-service teachers who took information technologies course at the Near East University Atatürk Education Faculty in the 2018-2019 academic year.

Data Collection Process

The scale and personal information form, which would be used in the process of collecting research data, were applied voluntarily to pre-service teachers in Atatürk Education Faculty.

Data Collection Tools

As the data collection tools in the study, the personal information form and the "Student Opinion Scale on Informatics Concepts and Crimes", whose validity and reliability were provided and developed by Gözler and Taşçı (2015), were employed.

Findings and Interpretations

In this part of the research, the data obtained by considering the general and sub-purposes are included. In addition, findings and interpretations of the tables created using frequency (N), percentage (%), arithmetic mean (\bar{X}), standard deviation (SD), the Mann-Whitney U test for independent samples and the Kruskal Wallis H test are provided.

Table 1. Chi-square (X2) test analysis for prospective teachers to be victimized or attacked on the internet by their gender

| Gender | Being a victim or being attacked | | | Chi square (X2) | Significance (p) | |
|--------|----------------------------------|-------|-------|-----------------|------------------|--------------------|
| | Yes | No | Total | | | |
| Female | N | 46 | 136 | 0.248a | .672 | |
| | % | 25.3% | 74.7% | | | |
| Male | N | 28 | 72 | | | |
| | % | 28.0% | 72.0% | | | |
| Total | N | 74 | 208 | | | p > 0,05 |
| | % | 26.2% | 73.8% | | | |

According to Table 1, the situation of being victim or being attacked on the internet is similar in terms of gender of the pre-service teachers included in the study. As there was no statistically significant difference ($p > 0.05$) as a result of the Chi-square test, it was observed that the gender of the pre-service teachers did not have an effect on their online victimization or being attacked.

Table 2. Chi-square (X2) test analysis for prospective teachers' victimization or being attacked on the internet in terms of years of using the internet

| For how many years he/she has been using internet | Being a victim or being attacked | | | Chi square (X2) | Significance (p) |
|---|----------------------------------|-------|-------|--------------------|------------------|
| | Yes | No | Total | | |
| 0-1 year | N | 6 | 4 | 17.930a | .001 |
| | % | 60.0% | 40.0% | | |
| 1-2 years | N | 8 | 4 | | |
| | % | 66.7% | 33.3% | | |
| 2-3 years | N | 16 | 64 | | |
| | % | 20.0% | 80.0% | | |
| Others | N | 44 | 136 | | |
| | % | 24.4% | 75.6% | | |
| Total | N | 74 | 208 | p < 0,01 | |
| | % | 26.2% | 73.8% | | |



In Table 2, it was seen that there are significant differences in terms of years of using the internet in cases of being victimized or attacked on the internet by the pre-service teachers included in the study. Statistically significant difference was found as a result of the chi-square test ($p < 0.05$), and it was seen that the pre-service teachers had an effect on their online victimization or being attacked in terms of years of internet use. It is observed that people who use the Internet for longer years have higher rates of being victimized and being attacked.

Table 3. Chi-square (X²) test analysis for prospective teachers to be victimized or attacked according to connecting to the internet

| I do not connect to the internet | Being a victim or being attacked | | | Chi square (X ²) | Significance (p) |
|----------------------------------|----------------------------------|------------------|-------------------|------------------------------|------------------|
| | Yes | No | Total | | |
| Yes | N 6 % 60.0% | N 4 % 40.0% | N 10 % 100.0% | 5.752a | .026 |
| No | N 70 % 25.7% | N 202 % 74.3% | N 272 % 100.0% | | |
| Total | N 76 % 27.0% | N 206 % 73.0% | N 282 % 100.0% | p < 0,05 | |

In Table 3, significant differences were seen in terms of victimization or being attacked by pre-service teachers included in the study, according to their internet connection status. As a statistically significant difference was found as a result of the Chi-square test ($p < 0.05$), it was observed that the internet connection status of pre-service teachers had an effect on their victimization or being attacked.

Table 4. Pre-service teachers' views on informatics concepts and crimes

| Items | \bar{X} | SS |
|---|-------------|-------------|
| I know what to do if the password of my e-mail address or a similar pages is broken. | 3.41 | 1.307 |
| Information about cybercrimes should be given in the computer courses we take in our undergraduate education. | 3.86 | 1.200 |
| My closest friends know the passwords of my e-mail addresses. | 2.07 | 1.347 |
| I don't know enough about internet fraud. | 2.73 | 1.233 |
| I get upset if my mail or personal use pages belonging to me are seized by others. | 3.90 | 1.297 |
| I can notice an infected mail if I receive one. | 3.16 | 1.254 |
| I do not add people I do not know to my e-mail address and personal pages. | 3.60 | 1.283 |
| I can easily shop online with my credit card. | 3.31 | 1.319 |
| My computer is protected against viruses. | 3.64 | 1.151 |
| Press and media internet crimes | 3.17 | 1.146 |
| I know what to do when I witness a cybercrime. | 3.26 | 1.166 |
| Penalties for cybercrimes should be severe. | 3.64 | 1.087 |
| Informing about cybercrimes should start from primary education. | 3.90 | 1.092 |
| Cybercrimes are not seriously dangerous. | 2.26 | 1.277 |
| Conferences or seminars should be organized for students on cybercrimes. | 3-.97 | 1.128 |
| People who can commit cybercrimes are very smart people. | 2.98 | 1.268 |
| General Average | 3.30 | .552 |

In Table 4, when the opinions of pre-service teachers about informatics concepts and crimes are evaluated according to the mean and standard deviation values, it is seen that the pre-service teachers gave the answer "I agree" for the following items:

"I know what to do if the password of my e-mail address or similar pages is broken" ($\bar{X} = 3.41, SS = 1.307$), "Information about cybercrimes should be given in the computer courses we take in our undergraduate education" ($\bar{X} = 3.86, SS = 1.200$), "I get upset if my e-mail or personal use pages belonging to me are seized by others." ($\bar{X} = 3.90, SS = 1.297$), "I do not add people I do not know to my e-mail address and personal pages." ($\bar{X} = 3.60, SS = 1.283$), "Penalties for cybercrimes must be severe" ($\bar{X} = 3.64, SS = 1.087$), "Informing about cybercrimes should start from primary education" ($\bar{X} = 3.90, SS = 1.092$), "Conferences or seminars should be organized for students on cybercrimes" ($\bar{X} = 3-.97, SS = 1.128$) and "My computer is protected against viruses" ($\bar{X} = 3.64, SS = 1.151$).



In addition, the pre-service teachers answered "I am undecided" for the following items: "I don't know enough about internet fraud" (), "People who can commit cybercrimes are very smart people" (), "I can notice the infected mail when I see one" (), "I can easily shop online with my credit card." (), "Press and media internet crimes" (), "I know what to do when I witness a cybercrime " ().

In addition to all the foregoing, the pre-service teachers answered "disagree" for the following items: "Cybercrimes are not seriously dangerous" () and "My closest friends know the passwords of my e-mail addresses" ().

When the opinions of the pre-service teachers about the concepts of informatics and their crimes are examined in general, they stated that they said "I am undecided" and that they are not sure about having information on this subject ($\bar{X}=3,30$, $SS=,552$)

Table 5. Comparison of views pre-service teachers on informatics concepts and crimes by gender

| | Gender | N | Mean rank | Rank sum | U | Z | p |
|---|--------|-----|-----------|----------|--------|--------|------|
| Views on informatics concepts and crimes | Female | 182 | 135.01 | 24571.00 | 7918,0 | -1,806 | .071 |
| | Male | 100 | 153.32 | 15332.00 | | | |

No significant difference was found as a result of the Mann-Whitney U test performed in Table 5 for the comparison of opinions of pre-service teachers on informatics concepts and crimes by gender ($p > .05$). Accordingly, the views of female and male pre-service teachers about informatics concepts and crimes are at the same level.

Table 6. Comparison of views of pre-service teachers on informatics concepts and crimes by grade level

| | Grade level | N | Mean rank | Sd | X ² | p |
|---|-------------|-----|-----------|----|----------------|------|
| Views on informatics concepts and crimes | 1. Grade | 58 | 150.64 | 2 | 6,587 | ,087 |
| | 2. Grade | 114 | 127.69 | | | |
| | 3. Grade | 46 | 141.50 | | | |
| | 4. Grade | 64 | 157.81 | | | |

In Table 6, Kruskal Wallis H test was conducted in order to examine the opinions of pre-service teachers about informatics concepts and crimes according to class level. Accordingly, it has been determined that there is no significant difference regarding the opinions of pre-service teachers about informatics concepts and crimes according to the class level variable employed [$X^2 = 6,587$, $p > 0.05$]

Table 7. Comparison of pre-service teachers' views on informatics concepts and crimes according to how many years they have been using the internet

| | Years of internet usage | N | Mean rank | Sd | X ² | p |
|---|-------------------------|-----|-----------|----|----------------|------|
| Views on informatics concepts and crimes | 0-1 year | 10 | 155.90 | 3 | 5,245 | ,155 |
| | 1-2 years | 12 | 90.33 | | | |
| | 2-3 years | 80 | 141.30 | | | |
| | 3 years and above | 180 | 144.20 | | | |

In Table 7, Kruskal Wallis H test was conducted in order to examine the opinions of pre-service teachers about informatics concepts and crimes according to how many years they have been using the internet. As a result of this test, it was determined that there is no significant difference regarding the opinions of the pre-service teachers about informatics concepts and crimes according to the variable of how many years they have been using the internet [$X^2 = 5,245$, $p > 0.05$]

Table 8. Comparison of views of pre-service teachers on informatics concepts and crimes according to the status of being a victim or being attacked



| | Status of being attacked | N | Mean rank | Rank sum | U | Z | p |
|---|--------------------------|-----|-----------|----------|--------|--------|------|
| Views on informatics concepts and crimes | Yes | 74 | 150.85 | 11163.00 | 7004,0 | -1,150 | .250 |
| | No | 208 | 138.17 | 28740.00 | | | |

In Table 8, the Mann-Whitney U test was conducted to compare the opinions of pre-service teachers on informatics concepts and crimes according to their victimization or being attacked. No significant difference was found according to this test ($p > .05$). Accordingly, regardless of being a victim or being attacked, views of pre-service teachers on informatics concepts and crimes are at the same level.

Conclusions And Recommendations

Conclusions

The results obtained from the research were explained to be consistent with the sub-objectives and findings.

The opinions of the pre-service teachers about being victimized or being attacked on the internet by gender. The situation of being victimized or being attacked on the internet is similar in terms of gender of the pre-service teachers within the scope of the study. In the study of Karaca (2019), it was observed that male students were more frequent victims on the internet.

The views of the pre-service teachers about the years of using the internet and the situation of being a victim or being attacked on the internet. It was observed that the pre-service teachers who used the Internet for longer years had higher rates of being victimized or attacked. In another study, it was stated that students who used mobile phones and the internet for longer were more inclined to conduct cyberbullying and more exposed to cyberbullying (Doğan Çevirgen, 2018).

The opinions of the pre-service teachers about being a victim or being attacked by connecting to the internet. Significant differences were observed between pre-service teachers included in the study in terms of connecting to the internet and being victims or being attacked. It has been observed that pre-service teachers who do not connect to the Internet are generally victims or are attacked. Within the scope of the research, it was concluded that the pre-service teachers who participated in the study were commonly connected to the Internet from home and mobile phones. This result is in parallel with the study of Demirli and Arslan (2018).

Opinions of the pre-service teachers about informatics concepts and crimes. It is seen that the opinions of the pre-service teachers about informatics concepts and crimes are generally at a moderate level. In a study conducted by Kuru and Ocak (2016) on public officials, it was concluded that sufficient training should be provided during their careers regarding cyber security and that the necessary regulations regarding the curriculum of universities should be reviewed without hesitation. According to Gökmen and Akgün (2015), views of pre-service teachers on informatics concepts and crimes are similar to this study regardless of their grade level. In another study they conducted, Gökmen and Akgün (2016) found that pre-service teachers studying at the faculty of education committed cybercrimes, were exposed to cybercrimes, had no knowledge of cybercrimes, and did not know what to do when faced with a cybercrime.

Comparison of opinions of pre-service teachers on informatics concepts and crimes by gender. The views of male and female pre-service teachers participating in the study about informatics concepts and crimes are at the same level. In another study, it was stated that the knowledge level of men on information security is higher than that of women (Gökmen & Akgün, 2015).

Comparison of pre-service teachers with their views on informatics concepts and crimes according to their grade levels. When the opinions of the pre-service teachers about informatics concepts and crimes were examined according to the grade level, it was seen that the opinions of the pre-service teachers at different grade levels were identical about informatics concepts and crimes. Similarly, in Kamali's (2015) study on university students, this situation of cyber-victim students did not differ significantly according to their grade level.

Comparison of pre-service teachers' views on informatics concepts and crimes with years of internet usage. When the relationship between pre-service teachers' views on informatics concepts and crimes and how many years of internet use was examined, it was seen that the pre-service teachers' views on informatics concepts and crimes were the same regardless of the years of internet usage. Similarly, in another study, it was stated that people could be attacked even though the experience



increased during the last year (Karacı, Akyüz & Bilgici, 2017).

Comparison of views of pre-service teachers on informatics concepts and crimes with the state of being victims and attacks. When the relationship between the views of pre-service teachers on informatics concepts and their crimes and the state of being victim or being attacked was examined, it was seen that the views of pre-service teachers on informatics concepts and crimes were at the same level, regardless of whether they were victims or being attacked. According to the results of the research conducted by Aslan (2019), it was seen that the cyber awareness of the students did not differ significantly in terms of being attacked on the internet.

Recommendations

In this section, recommendations have been developed based on the research results.

People using the Internet for many years have experienced more victimization or attacks. Considering the duration of use, they can be given trainings on this subject in order not to be exposed to cyberbullying behavior.

The pre-service teachers stated that they are not sure about informatics concepts and crimes by saying "I am undecided" in general. Elective courses on informatics concepts and crimes can be included in university curricula.

The pre-service teachers participating in the study generally use the Internet from home and mobile phones. It can be investigated why pre-service teachers do not use the internet much at school or for educational purposes.

Most pre-service teachers want to connect to the internet to chat with friends, watch videos and do homework-research. It can be investigated why education is not a priority.

It has been observed that pre-service teachers who do not connect to the Internet are generally victims or are attacked. In this case, it has been observed that those who previously connected to the internet are not now connected. Research needs to be done to reveal the reasons for this.

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