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Views of Information Technologies Guide Teachers With Regard to Computer Ethics

Bilişim Teknolojileri Rehber Öğretmenlerinin Bilgisayar Etiğine İlişkin Görüşleri

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Abstract

In this study, the views of information technologies guide teachers working in primary schools with respect to the problems they encounter about computer occupational ethics and their solution offers aimed at these problems have been tried to be presented. This research, figured in accordance with the qualitative research processes, is a case study. The target population of this study is consisted of information technologies guide teachers working in the primary schools located in the city centre of Eskişehir in 2013-2014 academic years. Total 22 voluntary information technologies guide teachers participated in to the study. The data have been collected through semi-structured interview method. Content analysis has been used for data analysis. The findings concerning the themes procured at the end of the analysis have been presented with tables. Frequency calculation has been used in the study in accordance with the aims of digitizing quantitative data. Sample sentences have been cited in relation to the sub-themes via findings and interpretations. At the end of the research it has been observed that the participants, generally, could not give complete and correct answers to the questions related to computer ethics. It may be recommended that "Computer Occupational Ethics" lesson be evaluated within the scope of compulsory lessons in all departments related to computer.

Keywords: Ethics, Computer Ethics, Qualitative Research, Interview Method, Content Analysis.

Öz

Bu çalışmada, ilköğretim okullarında görev yapan bilişim teknolojileri rehber öğretmenlerinin bilgisayar meslek etiği ile ilgili karşılaştıkları sorunlar hakkındaki görüşleri ve karşılaştıkları bu sorunlara yönelik çözüm önerileri ortaya konulmaya çalışılmıştır. Bu araştırma nitel araştırma yöntemlerinden durum çalışması yöntemi ile desenlenmiştir. Araştırmanın çalışma evrenini 2012–2013 öğretim yılında Eskişehir il merkezindeki ilköğretim okullarında görevli bilişim teknolojileri rehber öğretmenleri oluşturmaktadır. Araştırmaya toplamda 22 bilişim teknolojileri rehber öğretmeni katılmıştır. Bu çalışmada veriler yarı yapılandırılmış görüşme tekniği ile toplanmıştır. Verilerin analizinde içerik analizinden yararlanılmıştır. Analiz sonucunda elde edilen temalara ilişkin bulgular tablolarla sunulmuştur. Nitel verilerin sayısallaştırılma amaçları doğrultusunda çalışmada, frekans hesaplaması kullanılmıştır Bulgular yorumlamalar yapılarak örnek cümleler alt temalarla ilişkili olarak alıntılanmıştır. Bu çalışma sonucunda katılımcıların genel olarak bilgisayar etiğine ilişkin tam ve doğru yanıtlar veremedikleri gözlenmiştir. Bilgisayar ile ilgili alanlarda eğitim verilen tüm bölümlerde "Bilgisayar Meslek Etiği" dersinin zorunlu dersler kapsamında değerlendirilmesi önerilebilir.

Anahtar kelimeler: Etik, Bilgisayar Etiği, Nitel Araştırma, Görüşme Yöntemi, İçerik Analizi.

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Introduction

According to the Primary Education Information Technologies Curriculum adopted with the decision of the Head Council of Education and Morality dated 15.09.2012 and numbered 347, the Ministry of National Education developed qualifications addressing to ethical values in order to train students as having fundamental ethical values. In the renewed Primary Education IT Curriculum, gains of computer ethics and social values take place within the range of student gains. It is expected that Information Technologies Guide Teachers have ethical values and be models for students as they are those who will get students adopt these qualifications.

The study gives place to the ethical problems IT Guide Teachers encounter and their solution offers aimed at these problems. Therefore, it will be very useful to explain and clarify the concepts of ethics and computer ethics.

Ethics

Ethics is derived from the word "ethos" in Greek. It can be defined as "Moral Theory" or "Theoretical Morals". Ethics is a theory that forms the definition of right and wrong behaviour. "Morals" is the practice of ethics (Pieper, 1999). Ethics is the specification of what is right and what is wrong as a moral judgement (Bowyer, 1996).

First of all, ethics is the searching and understanding of the desired life. From a different and broader viewpoint, it is the slotting of all activities and objectives, and it is to know what should be done or what should not be done; what can be desired or what cannot be desired; what can be owned or what cannot be owned (Pehlivan, 1998).

In Turkish culture, you can see renunciation in effect, that is thinking about others, altruism morals. In renunciation morals, all of the ethical imperatives are in favour of the people living together. Suppression of our own desires is out of question (Akarsu, 1982). There is a golden rule principle mentioned frequently in philosophy of ethics. The phrase of "golden rule" means that the rules being talked about are the most important rules in life. Generally, the "Golden Rule" that is expressed as "treat others as you would have them treat

you" and involves altruism, appears in many religions and societies as a rule that is expressed a bit differently but similarly (Kıranlı, 2002).

Computer Occupational Ethics

The ethics about computer technologies is known as computer ethics and defined by Moor (1985) as a dynamic and complicated study area which deals with the relationships between the facts, conceptualizations, policies, and values about constantly developing computer technologies.

Computer ethics is divided into subtitles in terms of study area. It is seen in the literature that these subtitles are individual responsibilities, intellectual property, access to information, accuracy of information, system quality, risk and security, integration, occupational responsibilities, life quality, privacy, use of power, computer crimes and economic issues about computers etc (Uysal and Odabaşı, 2006). Afterwards, these subtitles are classified in the context of Intellectual Property, Accuracy, Privacy and Accessibility whose English equivalents constitute the word (an acronym) PAPA (Property, Accuracy, Privacy, Accessibility). These are specified as four ethical problems of the information age by Mason (1986).

The most common and the most complicated issue of the computer ethics problems is the issue of intellectual property rights (Mason, 1986). The issue of intellectual property rights deals with who has got the copyright of the information, through which channels the dissemination of the information is available and information pricing. The issue of accuracy is about if the attained information is reliable or not. The issue of privacy is about obtaining, using and sharing private and confidential information by ill-intentioned individuals by means of information and communication technologies. The issue of accessibility is about which information, under what conditions and measures a person or an organization can require (Mason, 1986). These policies are only the starting point. From this point forth, it is necessary to determine the social rules by means of evaluation in the light of these policies (Kuzu and Özdamar, 2007). Making a decision in accordance with the ethical policies means making an ethical decision. Making and ethical decision requires altruism and obedience to the golden rule. Ethical issues mean duties, responsibilities and obligations. Each professional organization must determine its own policies to be continuously updated

(Kıranlı, 2002). Due to both human resources and production object of educational organization are human so ethical values are always considered in decision-making. Ethical decision-making requires actions within ethical principles. Situations related to ethics contain tasks and obligations. While making ethical decisions, one must be respectful to other people's decisions as they expect respect from others for their decisions (Kıranlı and Ilgan, 2008).

The Studies with Regard to the Assessment of Computer Ethics

When the literature about computer ethics is analysed, it is clearly seen that there are few researches and studies related to computer ethics.

Mollavelioğlu (2003) used the titles of Intellectual Property, Privacy, Accessibility, and Accuracy in his thesis study. According to the survey results, it is seen that 53,3 % of the businesses use pirated software. 38,3 % of those using pirated software express that they use it because a licensed software is expensive and 28,9 % of them express they use it because it is difficult to find a licensed software. 40 % of the participants think their employees have very little information about computer ethics. It is understood that 86,7 % of the businesses are exposed to computer crimes. The percentage of the businesses exposed to and affected by viruses and similar ill-intentioned software is 34,7 %. 90 % of the businesses affected by computer crimes assert that they have been under the influence of viruses and similar software. It is understood that 76 % of the participants think it is ethically inconvenient if the employers read their employees' e-mails. Furthermore, 72 % of the participants find it inconvenient if employees have a chat on the internet unless they delay their work within the working hours. There is no relationship between educational level and the usage of pirated software. 54,4 % of those having higher education and 59,5 % of those having secondary education use pirated software.

Five factors in the "Unethical Computer Using Behaviour Scale" developed by Namlu and Odabaşı (2004) are specified as intellectual property, social effects of computers, security (privacy) and quality (accessibility), accuracy of information and network accuracy (accuracy).

Uysal (2006), in his study called "Views of Teacher Trainees on Computer Ethics", used the "Unethical Computer Using Behaviour Scale" developed by Namlu and Odabaşı (2004). In the study, generally positive views about computer ethics have been detected. However, it has been seen that schoolboys use computers more unethically than schoolgirls do, there are differences in network accuracy and information accuracy, intellectual property infringement increases as computer usage time increases.

Torun (2007), in his study, developed a seven-factor internet attitude scale. Kuzu (2009), in his study called "Problems related to computer ethics: Origins of the problems and suggested solutions", used the titles Intellectual Property, Privacy, Accessibility and Accuracy. In his study he had an interview with ten participants who are computer education and training graduates and work as computer teachers, ten computer-assisted training graduates and ten participants working in the Computer Center in Anatolian University. The research results are generally as follows: Computer teachers are not aware of the definition of computer ethics. But they agree to comply with the ethical rules on the internet and computer. Computer ethics is perceived as internet ethics. They explain computer ethics mentioning about unethical behaviour and based on the fact that these unethical behaviour should not be. They do not have much information about computer ethics education.

In a research carried out by Kılıçer and Odabaşı (2006), it is pointed out that computer technology is a field changing extremely fast and it is very difficult to estimate what will happen in the future and in the same time it is emphasized that when training computer teachers not only the occupational ethics policies but also especially the concept of computer ethics should be included. Since computer ethics lesson has just been placed in IT teacher training programs in faculties of education, the views of IT guide teachers related to computer ethics are addressed in this study who started his career and did not receive computer ethics lesson during their undergraduate study, and the ethical problems in the concept of intellectual property are also addressed that is the most common computer ethics problem encountered by computer teachers during their careers.

Teachers at schools become models to students through their behaviour and attitudes in the face of a situation. Students mostly regard their teachers as the most accurate decision

makers. In this context, IT guide teachers are expected not only to teach computer usage skills to the next generation but also to guide them in the ethical use of computers. Therefore, it comes into prominence that the views of IT guide teachers related to computer ethics problems and solutions they produce should be determined. It is expected that the problems experienced by teachers at schools about computer ethics in terms of intellectual property, accuracy, privacy and accessibility can be decreased thanks to the application of suggested solutions. This study aims to specify the views of IT guide teachers working at schools affiliated to Eskişehir Directorate of National Education about computer occupational ethics, problems they encountered in the context of intellectual property, accuracy, privacy, and accessibility and their solutions about these problems. In accordance with this general purpose the sub-goals of the study have been specified as follows:

1. What are the views of IT guide teachers related to computer occupational ethics?
2. What are the problems IT guide teachers encounter in the context of
    a) intellectual property
    b) accuracy
    c) privacy and
    d) accessibility
3. What are the solution offers of IT guide teachers in the context of
    a) intellectual property
    b) accuracy
    c) privacy and
    d) accessibility

Method

The Research Model

This research, figured in accordance with the qualitative research processes, is a case study. Case study, one of the qualitative research methods, is a research method which is based upon "how" and "why" questions, which allows the researcher to examine thoroughly and integrally a fact or an event that s/he cannot control (Yıldırım and Şimşek, 2010). Interview method has been used in this research as data collection method. The research is a qualitative study as is. Interview is a research method that is commonly used in social

studies and literature. Interview is a very good way of accessing people's perceptions, meanings, definitions of situations and constructions of reality (Punch, 2005). The aim of the interview is to understand the people's viewpoints, feelings, experiences, thoughts, expectations, aims, perceptions and evaluations.

Target Population of the Research and Study Group

The target population of the research is consisted of 22 voluntary IT guide teachers working in the primary schools in the city centre of Eskişehir in 2013-2014 academic year.

Purposeful sampling method has been used to define the participants and teachers willing to participate in the research have been specified as participants. This method allows choosing the sample out of those in the immediate surroundings of the researcher who can give the most suitable answer for the purpose of the research (Aziz, 2008). The reason for choosing purposeful sampling method is that it allows gathering various data and data suitable for the purpose of the research from easily accessible people.

22 IT guide teachers have participated in the study group. 6 of them are female, 16 of them are male. The appointment branch of seventeen of the participant teachers is information technologies. The branches of the other seven teachers are different but they work as IT teachers with a certificate. The average age of the participants is 32; the average year of service is 9.

Data Collection Tool and Data Collection

While interview form was preparing, four ethical problems of the information age which are classified by Mason (1989) were used. These ethical problems are classified in the context of Intellectual Property, Accuracy, Privacy and Accessibility whose English equivalents constitute the word (an acronym) PAPA (Property, Accuracy, Privacy, Accessibility). As a data collection tool, a nine-question interview form has been prepared which has been developed by researchers.

In order to specify if this form is consisted of questions to be able to answer the research questions or not, the content validity has been revised by means of asking for three academic members' opinions that are in the field of Computer and Instructional Technologies Education. Pilot implementation has been carried out after getting the expert

opinions. The unaccountable expressions in the interview form have been determined together with two IT guide teachers not included in the working group. The interview form has been reorganized in accordance with the suggestions from the experts and the pilot study then the interview form has been made available for implementation. The interview form is consisted of nine open-ended questions.

In order to specify the views of the participants within the scope of the research, semi-structured interviews have been carried out with them. The interviews have been carried out with each participant one by one in the place and at the time designated together with them. The interviewees have been made to sign an interview permission paper. The questions to the interviewees are not directive. The questions have been asked in the order as they are in the interview form. After the interview, the coding of the school at which the interview took place, the date and the time of the interview have been added to the notes taken. All the interviews could be completed within two months.

The data obtained as a result of the completion of all the interviews have been transformed into a written text by the help of tape recorder and the notes taken. The notes taken during the interview have also been used while transforming the audio recordings of the interviews into a written text. Thereafter, an academic member has been asked for help to listen to the audio recordings then the written texts have been revised again.

Analysis and Interpretation of the Data

Content analysis has been used in order to analyse the data obtained from the participants. The reason for choosing content analysis is that it allows analysing the collected data thoroughly and specifying the dimensions not clear previously. In this research, content analysis has been carried out in the form of coding the data, finding the themes, organizing the codes and the themes, defining and interpreting the findings (Yıldırım and Şimşek, 2010).

The audio recordings obtained as a result of the completion of all the interviews have been computerized. Afterwards, answers for each question have been added to the relevant indexes and the collected data made available for descriptive analysis by means of classification of the answers on the basis of question. The researchers, in this study, have first transformed the semi-structured interview data in the form of audio files into written texts

and then they added them to the interview forms. For the descriptive analysis of the data, first of all, a thematic framework has been established based upon the procured data and by taking the literature and the conceptual framework into consideration. The researchers have determined the themes on the basis of question via reading all the data. They specified the answers of the participants as sub-themes.

The themes have been transformed into "Interview Coding Key". Afterwards, the researchers, via reading the data forms in the research independently, have coded the theme including the answers on the interview coding key. After filling in the coding keys for each person, the coherency of the coding key has been compared. The markings of the researchers have been compared; the reliability of the research has been calculated 90 % by means of using the agreement / (disagreement + agreement) *100 (Miles and Huberman, 1994). Due to the fact that this value is more than 70 %, it has been concluded that the reliability of the research has been ensured.

While transferring the views, the participants' names and schools have not been stated directly in the context of privacy policy and in this way coding has been carried out in accordance with the ethical rules. They have been carried out in the form of (Information Technologies Guide Teacher) ITGT 1... ITGT 22. The obtained data has been supported by means of directly quoting from the raw data obtained through the interviews and the findings have been reached.

Validity and Reliability

Validity and reliability are significant in terms of getting healthy results in researches. In order to ensure the internal validity of the research, the literature review has been conducted and interview questions have been prepared based upon acceptable sources related to computer ethics. It has been checked whether or not the data from the interview is realistic or not and experts have been asked for their views during the analysis of the data (Yıldırım and Şimşek, 2010). In addition, biasness in the study has been tried to be reduced by means of digitization of the data. External validity has been tried to be ensured through exact quotation from the views of IT guide teachers and purposeful sampling.

In order to ensure the internal reliability of the research, it has been tried to be coherent while coding the procured data. The transformation of the raw data into themes has been carried out by two researchers; coherency ratio has been calculated by means of comparing the codes. In order to increase external reliability, experts have been asked for their views during the comparison of the findings, interpretations, and suggestions with raw data.

Findings and Interpretations

In this part, the views of IT guide teachers are presented within the framework of the themes specified.

Views Related to Computer Ethics

The frequency table with regard to the views of IT guide teachers related to computer ethics is given below in Table 1.

Table 1. Views Related to Computer Ethics

Themes	Frequency (n)
A. Having little info about computer ethics	8
B. Having information about computer ethics	5
C. Computer ethics problems	4
D. Raising the awareness of the public	3
E. Having computer ethics lesson at schools	2

The answers of the participants to the question related to what they understand from the concept of computer ethics indicate that IT guide teachers have quite inadequate information about computer ethics. When asked for their views about computer ethics, some of the teachers interviewed requested an explanation about the question. Examples of said statements:

This question is a bit off to me. Can you please a bit more explanatory for me to answer? (ITGT1)
As a person not having received computer ethics lesson, can I ask for your help in this regard? (ITGT3)
I haven't read a text about this so far (ITGT6).
Computer ethics is a bit nonapparent, I mean, the question is not clear. I don't understand it (ITGT8).

I think it is a little bit limited when "computer" is said. Is it manners of computer use? (ITGT20)
I don't know it. Believe me I don't have an idea (ITGT22).

The views of those having information and being able to explain about computer ethics are as follows:

Computer ethics means to respect the rights of others; it means the rules to be complied with (ITGT2).
... may be the criteria within the framework of moral dimension to specify our behaviour and tendency while making a decision while using computer (ITGT15).
In terms of computer ethics, it is necessary to respect people's labour. Also the people should be respectful to each other in terms of communication (ITGT7).
Moral rules in our daily life should survive in the virtual platform, too. Personal information should not be deciphered, private projects should have copyright and it should be respected (ITGT19).

Examples from the views of the participants giving voice to computer ethics problems when "computer ethics" is said:

Hazardous publications of some web pages, physically and psychologically hazardous publications are on the internet and there are control problems about them (ITGT5).
When "computer ethics" is said, it comes to my mind that the programs are copied due to their high prices determined by firms (ITGT9).
Computer technologies are advancing rapidly and it is becoming difficult to protect ethical values. Individuals get high technologies in a very short time and do not care about the ethical-moral principles of using them (ITGT11).

Examples from the views of the teachers who emphasize the necessity of raising the awareness of the society are as follows:

I believe this issue should be explained clearly and effectively at schools and public places, in other words, I think not enough and proper education is given in this respect and it is essential to raise the awareness of public in all (ITGT5).
I think it is imperative to inform public about the rights and wrongs related to computer use, internet use or technology use! Public should be informed about it... (ITGT10)
Computers should go on being used in the fields beneficial to mankind, informed and conscious people or generations should be trained with this respect. IT crimes are increasing in Turkey (ITGT16).

The views of the teachers who suggest that computer ethics lessons should be at schools are as follows:

At schools, it can be explained what computer ethics is and the rules, as well. We should inform our students as we can about what kind of problems they may face what if they do or what if they do not do (ITGT14).
It would be better if we had a lesson at school so that we could inform our students about computer ethics as much as computer use (ITGT14).

Views Related to Problems Encountered within the Concept of Intellectual Property

In Table 2, you can find the themes and the frequencies related to problems the teachers encounter in terms of intellectual property.

Table 2. Problems within the Concept of Intellectual Property

Themes	Frequency (n)
A. Unauthorized use of information.	9
B. The source being not reliable	5
C. Not providing reference	4
D. Copyright and license problems	4

Of all the problems faced by teachers related to intellectual property, authorized use of information is the foremost one. For instance, some teachers express the problems they face related to intellectual property as follows:

You know internet is given a lot of information and we do not know if they are authorized or unauthorized. Therefore, I think information owners face very important problems because it is not clear whether or not the published items are authorized. There are problems about it (ITGT3).
I am especially up against the copy and negatively use of the labour of people. Because I do not find it ethical to copy and replicate, in order to derive an improper personal benefit, the works for which people spend most of their time and labour (ITGT5).
It is necessary to get the people's consent, pay away them and use the information with their permission (ITGT7).
Recently, I have seen that a PowerPoint presentation of mine was published under another name. This is not nice at all (ITGT15).
Everybody copies information word by word but they do not add anything new. So, it is not known who the first owner of the information was (ITGT18).

Some of the participants' views about the source not being reliable are as follows:

We cannot say clearly if the source of information obtained in a virtual environment is reliable or not (ITGT16).
We can see the sources on many websites are not reliable. The reliability of the information is over once it is uncertain by whom and from where it is prepared (ITGT2).
It is very difficult to find a reliable and trustworthy (ITGT12).

It is a very common issue that the information takes place on the internet full of mistakes and not based on scientific foundations. It is a waste of time (ITGT19).

Another issue specified is that the reference of the quotation is not provided while quoting from the internet. Teachers put this issue into words like this:

When we prepare something about a topic, it may be given to the internet or used on the internet in opposition to our desire. I think, in such cases, it is necessary to specify clearly at the bottom from whom they benefit as a reference or whose information is used (ITGT2).
You can see a wellknown website's article or a similar one on another website. It is quoted but the source is not specified. It means plagiarism (ITGT6).

Some of the participants' views about copyright and licensed software (ethics) are as follows:

Softwares are pirated and pirated use is common. Unlicensed use is supported (ITGT8).
Softwares are used without license (ITGT14).
It makes me think of the use of information by means of registering through obtaining copyright and patent right (ITGT20).
Without copyright, information of any kind is used for any purpose. So, necessarily criminal sanctions are needed and legal measures should be taken. If copyright is available, the criminals can be found (ITGT22).

Solution Offers to the Problems Encountered Related to Intellectual Property

In Table 2, you can find the themes and the frequencies related to the Problems Encountered Related to Intellectual Property

Table 3. Solution Offers to Problems Related to Intellectual Property

Themes	Frequency (n)
A. Legal sanctions should be applied	8
B. Information should be licensed	5
C. Reference should be provided	5
D. The awareness of public should be raised	4

As a solution to the problems in the context of intellectual property, teachers concentrate upon the opinion that legal sanctions should be applied.

I defend the opinion that by means of legal sanctions being applied, the individuals should be penalized legally who derive an improper personal benefit in this way or copy others' works (ITGT5).
It is necessary to take a criminal action against those who derived an improper personal benefit or copied others' works (ITGT6).

Legal sanctions should be applied. Financial penalties should be applied (ITGT20).

When the reports by ACM and IEEE are examined, it is understood that teachers regard the problems about computer ethics as an educational problem and try to solve the problem in this respect (Uysal and Odabaşı, 2006).

The teachers' views about ensuring information being licensed as another solution are as follows:

It can be a solution to have a patent, that is, to have a license just as the other discoveries and inventions (ITGT10).
Intellectual property rights, copyrights should be available. By this way, the first source of information is clear and reliable, as well (ITGT12).
The government should provide the usage rights of useful information which can be used by everybody by means of getting the copyright and the patent of it on behalf of the society (ITGT15).

Some interviewees think, as a solution in the context of intellectual property, references should be provided.

I think it is necessary to indicate by whom the information of all kinds given to the internet was searched and by whom it was prepared. In other words, it would be better if everybody indicated by whom the information was given to the internet with the date or from which sources he benefited (ITGT2).
A standard reference display system should be used (ITGT11).
If the shared information, documents and files are quoted, the right holder should be informed of it, it is necessary to have the right holder's permission, and reference should be provided, as well (ITGT16).

It has been seen that the participants advise to raise the awareness of public against almost all of the encountered problems; maybe it is because they are also educationists. The teachers express their views with respect to this subject as follows:

I think it is a little bit about public awareness. In my opinion, if we are conscious enough, there will not be problems of this kind left (ITGT3).
If the case is intellectual property, the individual is alone with himself. In other words, he is alone with his conscience. Therefore, the only solution to the intellectual property problems will be to raise the awareness of the individuals in terms of computer ethics (ITGT4).

Views Related to Problems within the Context of Accuracy

The frequency table obtained via the teachers' answers to the question about accuracy problems faced or experienced by them is given below in Table 4.

Table 4. Problems Related to Accuracy

Themes	Frequency (n)
A. Not providing the source of information	12
B. No being able to control information	5
C. Accurate and reliable information is limited	5

Teachers, in the context of accuracy, most often, consider it as a problem if the source of information isn't provided. They express their concerns on this issue as follows:

I do not believe the accuracy of the information on the internet if it has no reference available (ITGT1).
I can not trust the source within the context of accuracy. That is, we cannot use many sources in any research if the owner of the source is not specified. Or we cannot be sure of the validity of it. No reliability is available. Therefore, we cannot make good use of it, we can only read it, but once we want to transfer it to any environment or somebody asks something about it such as "Where did you find it?", we cannot answer much (ITGT2).
In all honesty, I cannot trust the sources I get especially on the internet. I necessarily need a book to confirm. In short, I need to confirm from one or two sources (ITGT3).
It is very difficult on the internet. The accuracy of the information should be checked. We should confirm again the accuracy and reliability of the information we face on the net at different sources (ITGT10).
Everywhere on the net is full of made-up news. In other words, it is very difficult to understand what is right and what is wrong. So, it is required to do a different research, source is needed (ITGT15).

Another problem within the context of accuracy is that there is not an institution or a mechanism to check the accuracy of the information.

Unfortunately, there is not an institution or a mechanism now to check the accuracy of the information that is given or transferred to people. I believe that this issue should be examined seriously. I mean, when people use the net in order to get accurate information, they are given the wrong information or they get the wrong information. So I want this issue to be kept under strict control (ITGT5).
I face problems as there is no control mechanism to control the accuracy of the information (ITGT13).

It is another problem expressed by the teachers is that accurate or reliable information is limited with official web sites.

If I am to present the information to somebody or to research it on the internet, I prefer an official web site of a governmental institution, it can be a university's web site, as well. In short, I would like to use an official web site (ITGT6).
There is a limited reliability as a result of serious policies of certain firms (ITGT9).
I use the web sites accuracy of which I am sure of and I trust (ITGT21).

Solution Offers to Problems Encountered Within the Context of Accuracy

Solution offers to problems related to accuracy in accordance with the teachers' views are given in the Table 5:

Table 5. Solution Offers to Problems Related to Accuracy

Themes	Frequency (n)
A. References should be provided	7
B. The accuracy of the information should be controlled	5
C. Legal sanctions should be applied	4
D. Controlled official web sites should be increased	4
E. Digital certificates or signatures should be used	2

Most of the interviewed teachers offer the solution to the problems they encountered within the context of accuracy that the references of the information should be provided. The teachers express their offers as follows:

If reliable sources are shown as source in researches, I think the information given to the internet is much more reliable (ITGT3).
I think it is necessary to indicate by whom the information of all kinds given to the internet was searched and by whom it was prepared (ITGT2).
If people get into the habit of quotation and use by means of providing reference, the spread and use of wrong information is reduced (ITGT11).

Our teachers express the offer "The accuracy of the information should be controlled." as follows:

Unfortunately, there is not an institution or a mechanism now to check the accuracy of the information that is given or transferred to people. I believe that this issue should be examined seriously. I mean, when people use the net in order to get accurate information, they get the wrong information. So I want this issue to be kept under strict control (ITGT5).
Control mechanisms should be created on the internet through which people considerably interact with each other (ITGT13).

They express their offer related to legal sanctions as follows:

If the source of an article we got on the net is not specified, if the source of any information isn't specified, I think it is forbidden to publish it on the net, but there is nothing legal. However, the sources whose owners aren't specified may not be used in terms of legal framework (ITGT2).
Disincentive heavy legal measures should be taken for adult users (ITGT15).

Views related to use of controlled official web sites are as follows:

When using certain official sites, for example, M.E.B. cleans out a group of hazardous sites and bars them. In the same way, the control of official sites should be increased and this system should be popularized (ITGT10).
The information of the state institutions and orgazization should be accepted correct. The state should take on responsibility in this regard (ITGT17).

Some of the teachers suggest that digital certificates and signatures should be used.

There are some technical solutions put forward in order to be sure about the source of information such as digital certificates and digital signatures, if these are popularized, standardized and applied correctly, at least it can be known from whom the information came from. And this can somehow support the accuracy (ITGT4).

Views Related to Problems within the Context of Privacy

The frequency table obtained via the teachers' answers to the question about privacy problems faced or experienced by them is given below in Table 6.

Table 6. Problems Related to Privacy

Themes	Frequency(n)
A. Easy access to personal information	12
B. Being asked for personal information	8
C. Monitoring of IP addresses	2

Six interviewed teachers, within the context of privacy, most often mention about easy access to personal information as a problem they faced.

A person having only your personal identification number can get access to much information about you. For example, they can see your exam marks if they know your identification number (ITGT2).
The people can find to which school I was appointed to or how long and where I have been working. In all honesty, I feel extremely uneasy about it (ITGT3).
I feel uneasy when the personal information I give in any field may be used in other fields and by those I do not know well. I think the results can be bad for the people (ITGT11).
The use of my personal information, personal data input key information, internet banking information and e-state information for any other purposes. I

hear the information we give to the sites we enrolled is given to other companies to use without our permission. My private information is shared (ITGT22).

The teachers feel uneasy when their personal information is asked for by some databases especially while being enrolled and they express their uneasiness as follows:

There are databases to allow personal information to be obtained by others. You know, I do not want to say what is happening but you can get more detailed information about a person through internet if you know a few simple information about him (ITGT4).
Some personal information is asked for while installing an internet site, while receiving an e-mail account. But, I am obsessed by whether or not my personal information is used for any other purposes. For which purposes is that site administrator using this information? (ITGT10)
It is not proper that personal information may be got by others. It is a serious problem. It is not clear who the people on the internet environment are, what they do, why they ask for this information and for which purpose they will use this information. But we cannot get some necessary information without giving this information (ITGT12).

Sometimes I am really afraid where are that people and who are they, who knows? It is a really unknown problem (ITGT17).

The views of the participants who consider monitoring IP addresses is the violation of privacy rights are as follows:

Knowing IP addresses means knowing which internet site the administrator server is entering (ITGT6).

Solution Offers to Problems Encountered within the Context of Privacy

Solution offers related to privacy in accordance with the teachers' views are given in Table 7.

Table 7. Solution Offers to Privacy Problems

Themes	Frequency(n)
A. Polling should be done according to multiple criteria	7
B. Not giving real personal identification information	5
C. Statutory audit should be applied.	5
D. Legal sanctions should be applied.	5

Some of the teachers express that polling should be done by databases according to multiple criteria while giving information about individuals.

There may be something like password for the personal information after ID number. In other words, I think the privacy should be ensured by means of setting up a different password system (ITGT3).
Some information should be limited. The companies providing service via internet should apply the privacy rules strictly. For example, there are different security applications on the web pages of banks (ITGT5).

Views of those who think real ID information should not be given are as follows:

Real information should be inaccessible, it should remain confidential (ITGT1).
I do not give real and right information to unknown people in a virtual environment (ITGT12).

They express the view "Statutory audit should be applied." as follows:

The state should establish a statutory audit body. This body should make a record of external threats and what they do. It should control them so that security can improve (ITGT10).
Control and auditing should be certainly available so that privacy problems can be solved (ITGT19).

They express the view "Legal sanctions should be applied." as follows:

There should be legal blocking, that is, there should be a legal solution (ITGT6).
Heavy legal sanctions should be applied (ITGT15).
Plagiarism should be included in the scope of crime if it is not. The penalty of plagiarism should be increased. Sharing with public should be punished very harshly (ITGT21).

Views Related to Problems within the Context of Accessibility

The frequency table obtained via the teachers' answers to the question about accessibility problems faced or experienced by them is given below in Table 8.

Table 8. Problems Related to Accessibility

Themes	Frequency (n)
A. The condition of being a member of paid databases	10
B. Everyone does not the same access.	5
C. Membership problems	3
D. Licensed softwares are expensive.	2
E. Information with Turkish content is very little.	2

Our teachers, within the context of accessibility, emphasize upon economic problems.

*Sources like computer and internet access are the sources with a certain cost. In this sense, you know, from the financial point of view, there may be sources that everybody cannot afford or cannot reach, so the issue of equality comes into question (*ITGT4*).*
The best application in order to prevent the copying of programs is cheap production such as providing the people with a game or a program on the cheap. The fact that the people cannot buy them due to their financial difficulties leads to copy that game or a program.

This is the reason of being expensive in a sense (ITGT9).

Our teachers express the views "Everyone does not have the same access." as follows:

Everyone cannot access at the same time due to many reasons such as system or connections. In other words, as a result, the faster your internet access is, the faster you can get access to the information you look for. You cannot get some information on the internet at the same time (ITGT2).
We cannot get information of all kinds at home, at work. We cannot connect to the internet from home or work. For example, we can access to the databases of the universities only from the universities. We cannot get certain articles necessary for academic study (ITGT3).

The views of teachers related to membership problems are as follows:

Even if you are to enroll, the information or documents you accessed can be those pirated and without the permission of the right owner (ITGT16).
When membership is required, personal information is also required. Who are those people? It is not good to give them personal information while enrolling (ITGT18).

The views related to "Licensed softwares are expensive." are as follows:

There are certain softwares and programs we use on the computer. Most of them are paid ones. Softwares are really expensive (ITGT10).

Teachers express their view "Information with Turkish content is very little." as follows:

The only problem about accessibility is Turkish content. We can see very good essays and very nice articles always written in English. Turkish content is very little, which matters (ITGT6).

Solution Offers to Problems Encountered within the Context of Accessibility

Solution offers related to accessibility in accordance with the teachers' views are given in the Table 9 below:

Table 9. Solution Offers to Accessibility Problems

Themes	Frequency (n)

A.	The state institutions and organizations should provide free access.	6
B.	Free access to internet sources should be available.	6
C.	The number of sites, sources with Turkish content should be increased.	4
D.	No access to personal information on the websites without permission.	3
E.	Raising the awareness of public in terms of ethics.	3

The views of those who think the state institutions and organizations should provide free access are as follows:

The state should prepare the educational sites, have them prepared, and provide them available for common use for free (ITGT14).
The state institutions and organizations should purchase information useful for public, bring them into use with copyright and these information should be used (ITGT20).

The teachers express the view "There should be free access to internet sources." as follows:

No commercial concerns. If something prepared by somebody is given to the internet to be used, it can be reached by many people from then on. So, they should not request very much money for the information (ITGT2).
I am in favour of ensuring a little more equality while getting access to the information on the internet. I think it is better if a bit more flexibility is ensured while reaching information, that is, it should be free (ITGT13).

The sample view related to the solution offer "The number of sites and sources with Turkish content should be increased." is as follows:

If Turkish content is increased and not subjected to any kind of membership or charge, anyone can reach the information in any way (ITGT6).

The views of the teachers who express the solution offer "No access to personal information on the websites without permission." are as follows:

The information which the individuals are not afraid of sharing may be open to public use but unlawful access to be harmful should be prevented undoubtedly (ITGT11).
No information should take place on the website if the individuals themselves do not want it so (ITGT12).

The views of the teachers who express the solution offer "Raising the awareness of public in terms of ethics." are as follows:

As long as the people show respect to each other, as long as they show respect to others' labor and as long as their awareness of computer ethics improves,

problems decrease. As long as the awareness of public in terms of ethics increases, problems come to an end (ITGT3).
This is a problem in terms of ethics. In an environment where individuals are alone with their conscience, it may be a solution to raise their awareness in terms of ethics (ITGT4).

Discussion, Conclusions and Recommendations

At the end of this study carried out in order to specify the views of Information Technologies Guide Teachers (ITGTs) related to computer occupational ethics, the problems they encounter within the context of intellectual property, accuracy, privacy and accessibility, and their solution offers aimed at these problems, it has been observed that the participants, generally, could not give complete and correct answers to the questions related to computer ethics. The fact that teachers cannot express their views adequately about computer occupational ethics can be attributed to the fact that they did not receive any computer ethics lessons during their undergraduate study. In the researches carried out by Kılıçer and Odabaşı (2006), Uysal (2006) Torun (2007) and Kuzu (2009), it has been emphasized that not only the occupational ethics policies but also especially the concept of computer ethics should be included when training computer teachers. Therefore, as a result of this study, it may be recommended that "Computer Occupational Ethics" lesson be evaluated within the scope of compulsory lessons in all departments related to computer.

Teachers have specified that people are, within the context of intellectual property, unconscious of using information without permission and reference, unlicensed information and computer ethics and they have shown the economic shortcomings and lack of enough education as the source of these problems. Teachers have offered solutions to problems within the context of intellectual property such as legal sanctions, raising the awareness of public in terms of computer ethics, making information licensed and providing reference.

Teachers, within the context of accuracy, stated that the reference of the information is not provided, there is no mechanism or an institution that controls the accuracy of information, accurate and correct information is limited with official web sites and they expressed as solutions to these problems that reference should be provided when quoting,

the accuracy of the information should be controlled, legal sanctions should be applied, digital certificates or signatures should be used.

Teachers, within the context of privacy, stated that personal information is easily accessible and they gave voice to disadvantages of unconscious use of cipher. They feel uneasy when their personal information is asked for and their IP addresses are monitored by certain databases. They expressed as solutions to these problems that polling should be done according to multiple criteria, the services used should be powerful technically, and the web sites that ask for personal information should be controlled. Additionally, they want the individuals to behave consciously and legal sanctions to be applied.

The problems that teachers encountered within the context of accessibility are the need to have a system requiring cost in order to access information, connection and system problems, the condition of being a member of paid databases in order to access scientific information, very little information with Turkish content. Teachers' solutions to these problems are as follows: Free software should be developed, access to the internet and databases should be free, the number of sites and sources with Turkish content should be increased.

As a result, this study is a qualitative research carried out with a limited number of participants. Therefore, it is recommended that the topic be investigated and analysed thoroughly in a more detailed way by means of collecting quantitative and qualitative data, the findings be compared with each other and new solutions to ethical problems be developed. Within the body of Ministry of National Education, primarily all of the teachers should be given ethics education. Primarily basic ethics education should be evaluated. Then teachers should give computer ethics education taking into consideration that it is offered as a solution to problems faced and experienced within all contexts of the research. Furthermore, computer ethics education should be given to all of the teachers whose branches require computer use particularly information technologies guide teachers.

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Genişletilmiş Özet

Bilişim Teknolojileri Rehber Öğretmenlerinin Bilgisayar Etiğine İlişkin Görüşleri

Semra KIRANLI GÜNGÖR, Yusuf YILDIRIM

Giriş

Terbiye Kurulu Başkanlığı'nın 05/09/2012 tarih ve 150 karar sayılı Ortaokul ve İmam Hatip Ortaokulu Bilişim Teknolojileri ve Yazılım Dersi (5, 6, 7 ve 8. Sınıflar) öğretim programında öğrenci kazanımları arasında bilişim teknolojileri etiği ve sosyal değerler kazanımları yer almaktadır. Öğrencilere bu yeterlilikleri kazandıracak Bilişim Teknolojileri öğretmenlerinin de etik değerlere sahip olmaları ve öğrencilere örnek olmaları beklenmektedir.

Araştırma bu noktadan hareketle BT öğretmenlerinin yaşadıkları etik sorunlara ve bu sorunlara karşı çözüm önerilerine yer vermektedir. Bu araştırmada, BT öğretmenlerinin bilgisayar meslek etiği konusundaki görüşleri, fikri mülkiyet, doğruluk, gizlilik ve erişilebilirlik bağlamında karşılaştıkları sorunlar ve bu sorunlara ilişkin çözüm önerilerinin belirlenmesi amaçlanmıştır. Bu araştırma nitel araştırma yöntemlerinden durum çalışması yöntemi ile desenlenmiştir. Araştırmanın çalışma evrenini 2012–2013 öğretim yılında Eskişehir il merkezindeki ilköğretim okullarında görevli 22 bilişim teknolojileri rehber öğretmeni oluşturmaktadır. Veri toplama aracı olarak araştırmacılar tarafından geliştirilen görüşme formu hazırlanmıştır. Görüşme formu soruları hazırlanırken Mason (1989) tarafından sınıflanan ve bilgi çağının dört etik sorun olarak belirtilen fikri mülkiyet, doğruluk, gizlilik ve erişim kuramsal temel olarak kullanılmıştır.

Katılımcılardan elde edilen verilerin analizinde toplanan verilerin derinlemesine analiz edilmesi ve önceden belirgin olmayan boyutların belirlenmesine olanak sağlayan içerik analizi kullanılmıştır. Araştırmanın güvenirliğini belirlemek amacıyla görüş birliği /

(görüş ayrılığı + görüş birliği) *100 formülü kullanılmış ve % 90 olarak hesaplanmıştır. BT öğretmenlerinin görüşlerinden birebir alıntılar yapılarak ve amaçlı örnekleme kullanılarak dış geçerlik sağlanmaya çalışılmıştır. Araştırmanın iç güvenirliğini sağlamak için elde edilen verilerin kodlanmasında tutarlı olunmaya çalışılmıştır. Ham verilerden temalara dönüştürme iki araştırmacı tarafından gerçekleştirilmiş, kodlamalar karşılaştırılarak tutarlık oranı hesaplanmıştır. Dış güvenilirliği artırmak için araştırma sonucunda elde edilen bulguların, yorum ve önerilerin ham verilerle karşılaştırmasında uzman görüşüne başvurulmuştur.

Çalışma sonucunda katılımcıların genel olarak bilgisayar etiğine ilişkin tam ve doğru yanıtlar veremedikleri gözlenmiştir. Öğretmenler fikri mülkiyet bağlamında bilginin izinsiz ve kaynak göstermeden kullanma, bilginin lisanslı olmaması ve bilgisayar etiği konusunda bilinçsizliğin olduğunu belirtmiş ve bu sorunların kaynağı olarak ekonomik yetersizlikleri ve eğitim eksikliklerini göstermişlerdir. Fikri mülkiyet bağlamındaki sorunlara yönelik öğretmenler; yasal yaptırımları, toplumun bilgisayar etiği bilincinin kazandırılmasını, bilginin lisanslı hale getirilmesi ve kaynakçanın gösterilmesi gibi çözümler önermişlerdir.

Öğretmenler doğruluk bağlamında, bilginin kaynağının gösterilmediğini, bilginin doğruluğunu denetleyen bir kurum veya mekanizmanın olmadığını, doğru ve güvenilir bilgilerin resmi sitelerle sınırlı kaldığını belirtmişler ve dile getirdikleri bu sorunlara çözüm önerisi olarak bilgi alıntı yapılırken kaynakça gösterilmeli, bilginin doğruluğunu denetlenmeli, yasal yaptırım uygulanmalı ve dijital sertifika veya imzalar kullanılmalı demişlerdir.

Öğretmenler gizlilik bağlamında kişisel bilgilerinin kolayca erişilebildiğini, bilinçsiz şifre kullanımının sakıncalarını dile getirmişlerdir. Bazı veri tabanlarınca kişisel bilgilerin istenmesinden ve IP adreslerinin izlenmesinden rahatsız olmaktadırlar. Bu sorunlara çözüm önerisi olarak, birden çok ölçütlere göre sorgulama yapılması gerekliliğini, kullanılan servislerin teknik açıdan güçlü olmasını, kişisel bilgi isteyen sitelerin denetlenmesi gerekliliğini önermişlerdir. Ayrıca kişiler daha bilinçli davranmasını ve yasal yaptırımların uygulanmasını istemektedirler.

Erişilebilirlik bağlamında öğretmenlerin karşılaştıkları sorunlar, bilgiye erişim için maliyet gerektiren sisteme gereksinim duyulması, bağlantı ve sistem sorunları, bilimsel bilgiye erişim için ücretli veri tabanlarına üye olma şartı ve Türkçe içerikli bilgilerin çok az sayıda olması gelmektedir. Bu sorunlara öğretmenlerin önerdikleri çözüm önerileri şu şekildedir; ücretsiz yazılımlar geliştirilmeli, internete erişim ücretsiz olmalı, veritabanlarına erişim ücretsiz olmalı, Türkçe içerikli site ve kaynaklar arttırılmalıdır.

Öğretmenler tarafından bilgisayar etiği eğitimi, araştırma kapsamındaki tüm bağlamlarda yaşanan sorunlar için çözüm önerisi olarak gösterilmiştir. Bu öneri doğrultusunda okullarda bilgisayar etiği eğitimi verilmelidir. Ayrıca bilişim teknolojileri rehber öğretmenleri başta olmak üzere meslekleri bilgisayar kullanmayı gerektiren tüm öğretmenler için de bilgisayar etiği eğitimi verilmelidir.