ICT Student Teachers' Judgments and Justifications about Ethical Issues

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Abstract

In this study, Turkish ICT student teachers' judgments and justifications in four scenarios involving ICT-related ethical problems were investigated. Scenarios were designed based on Mason's (1986) four ethical issues: privacy, accuracy, property and accessibility. The study was carried out in the fall of 2010. We used the critical incidents technique (CIT) - a qualitative research approach- and the data were gathered via a structured questionnaire. The questionnaire was conducted face-to-face with an in-person interview. Participants were 35 ICT student teachers from the Faculty of Educational Science at Ankara University. The associations between different categorical variables were analysed with Fisher's exact test. Open-ended questions were analysed through content analysis. The findings revealed that gender does not affect the ethical judgments and justifications of ICT student teachers. Furthermore the same reasons and justifications were reported by ICT student teachers who have taken course in ethic and those who have not taken the course. Moreover, out of the four issues considered in this study, accessibility was found as the most controversial issue. In addition to that it was observed that a number of ICT student teachers do not attain the right justifications due to the lack of knowledge on copyrights, intellectual property and the policies of web sites.

Keywords: *Computer ethics; ethical dilemma; gender; prior education.*

Introduction

Fenstermacher (1986) pointed out that the teaching profession cannot be compared with other professions due to its uniqueness when ethical and moral questions are formulated (cited in Colnerud, 2006). First of all, teachers interact, formally and informally, with students. One of the main goals of a teacher is to help students to construct knowledge. Secondly, it is obligatory for a teacher to have a

certain rapport with his students so that he/she can understand them professionally. Lastly, teaching process requires reciprocal interaction between teachers and students such that a dialogue takes place between teachers and students regarding segments of text. In addition to these characteristics, professional values, ethical self-awareness and ethical responsibilities of a teacher are gaining importance over the last decade because teachers have been encountering additional concerns involving appropriate use of computer technologies (Kafai, Nixon, & Burnam, 2007). Floridi and Sanders (2002) stated that information and communication technologies (ICT) have a great impact on contemporary society and many practical concerns arise when using ICT. According to Moore (1985), use of computers incites some ethical issues because of the three properties of computers; logical malleability, transformation and invisibility. Logical malleability is a term, which defines the uniqueness of the computers since any computer can be programmed to perform any logical operations that also allow new forms of behaviour. The transformation factor refers to drastic changes in our daily life such as sending e-mails and conducting meetings via videoconference systems. The invisibility factor of the computers also indicates that computer operations might be undetectable by the user. That is, the control of our computers might be taken by other computers and we could not be aware of this until the functionality of our machine suffers (Basandra, 1999; Buchanan, 2010). These properties of computers lead to unavoidable ethical dilemmas and unanticipated problems mostly stemming from policy vacuums and conceptual vacuums despite the international conventions and national laws, and the most evident of these problems are privacy, accuracy, property and accessibility (Moor, 1985; Mason, 1986).

One of the most visible ethical issues of computer use is the privacy (Loch & Conger, 1996). In the context of personal privacy, increasing value of information and easier access to other computers and information stores lead to great concern for privacy (Mason, 1986). Hence, many countries throughout the world attempt to amend legal regulations with respect to privacy aiming to decrease these concerns of computer users. Article 20 of the Turkish Constitution entitled Privacy of Individual Life stated that; "Everyone has the right to demand respect for his or her private and family life. Privacy of an individual or family life cannot be violated". The legislation also stated that limitations on these rights will only be allowed in very exceptional circumstances if there are decisions passed by a judge on the grounds of protection of public morals and the rights and freedoms of others, prevention of crime and maintenance of public order and national security. Another legislation related with privacy issue is the Turkish Civil Code, which regulates the civil rights (Law no. 4963, updated 6/8/2003). But, despite the above-mentioned regulations, we cannot mention a specific and comprehensive regulation concerning the data protection and privacy in Turkey (Berk, 2008; Privacy International, 2011).

Another important ethical issue is the accuracy of information. Inaccurate information stored in a computer system might cause intolerable damages in many cases. Considering the amount of information produced in every second, we should be vigilant in the pursuit of accurate information. Information Technologies and Communications Authority (BTK) in Turkey has made a regulation closely related to this issue entitled Procedures and Principles Regarding the Safe Use of the Internet Safe in 2011. The regulation presents two filtering options to Turkey's Internet users. However, this regulation raises concerns about access rights and Internet censorship. Hope (2010) also stated:

> *"...those who create and monitor educational technologies, such as filtering software systems, need to foster a greater awareness of how their products might negatively impact on educational outcomes, at the same time factoring an element of trust into the operation of such devices"* (p. 700).

Kuzu (2009) stated that intellectual property rights are the most controversial ethical issue. Weckert (1997) pointed out that intellectual property is different from other properties at least in three ways. Firstly, owing an idea or intangible thing is different from owing a physical object. It is hard to talk about those intangible things because they are not defined, explained, or measured explicitly. Secondly, the most confronted question is to what extent an idea is mine? Human being is a social creature and permanently interacts with others. So how can we make sure the extent to which an idea is mine? Lastly, there is a distinction between moral and commodity rights to intellectual property. The author or creator of something has the right to get financial profits incurred by it. What about a computer program? We can copy a software program but the creator still has the program.

Turkey has signed the Bern Convention for the protection of literary and artistic works. Since the European Union (EU) recognized Turkey as a candidate for EU membership in 1999, the Turkish government has made many amendments concerning the rights related with computer and Internet such as intellectual property and regulations of publications on the Internet and suppression of crimes. Law no. 5846 on intellectual property and artistic works protects intellectual property rights in Turkey. Computer programs and preparatory works, reproduction rights, distribution rights, the rights of communication to the public and protection of databases are regulated by this law. Law also includes some compulsory and non-compulsory exceptions. European Commission - Enlargement (2006) stated that "The exceptions to the exclusive rights regard personal use, acts necessary for the use of the program by the legal acquirer (including correction of errors), back-up copy, and reverse engineering" (p. 3). For example, a computer program might be replicated for personal use, adaptation and error correction by user who got it legally (Article 38 of Law no. 5846, dated 03/03/2001). Moreover, users are allowed to benefit from databases for private use, pedagogical purposes, freedom of quotation, public security and in judicial procedures, provided that they do not conflict with the normal exploitation of the work. Law 5846 also includes exceptions for disabled people. For example, scientific and literacy works written or published including textbooks for disabled people, are allowed to be used for non-profit pedagogical purposes without permission, specifying the name of the owner of the rights provided and the purpose of the specified condition (Annex 11 of Law no. 5846, dated 03/03/2004). But there is strong evidence showing that these regulations are far from resolving the existing problems. European Commission - Enlargement (2006) noted the following:

> *"Turkey's legislation is aligned to a large extent with the acquis in the area of copyright and neighbouring rights….Distribution rights, rental and public lending rights, right of communicating to the public are overall in line with the acquis…. Protection granted to computer programs is also comparable to the one granted by the acquis, with the general exception of exhaustion….The legislation on the protection of databases is partially aligned with the acquis"* (pp. 10-11).

The second most controversial issue in computer ethic is the access rights. Until 2001, we cannot mention a specific law in regard to publications and crimes committed on Internet in Turkey. The most comprehensive law was arranged by Law no.5651 entitled Regulation of Publications on the Internet and Suppression of Crimes Committed in 2007. This is widely known as the Internet Law of Turkey. This law concerns the encouragement and incitement of suicide, sexual exploitation and abuse of children, facilitation of the use of drugs, provision of substances dangerous for health, obscenity, prostitution, gambling and crimes committed against Atatürk, the founder of the Turkish Republic. A web site is subject to banning if committing those certain crimes. For example, Google, YouTube, Geocities and DailyMotion were blocked under the provisions of this law. On the other hand, numerous web sites have been blocked outside the scope of this law so that the extent is this breach is unknown (Akdeniz, 2010).

It is obvious that because of rapidly developing technology, gaps in legislation are inevitable. In addition, Jung (2009) in a study of Japanese college students' ethical judgments and behavioural intentions found that moral and socio-cultural norms have greater impact on behaving ethically than legal or contractual obligations. Despite laws and regulations may often be insufficient to solve the problems and can also create new problems, there is also a necessity for written rules. Aristotle lists three reasons for the necessity of written rules:

- Rules facilitate an ethical decision when it requires a general view of a complex issue that would take too long to investigate as an individual case.
- Rules can protect against corruption in cases when partiality could distort a person's judgment.
- Rules provide the basis of ethical choices for people whose judgment we cannot fully trust (Nussbaum, 1995, Colnerud, 2006).

Furthermore, Colnerud (2006) pointed out that in considering the ethical questions, rules should improve our own thinking and judgment instead of hindering. In a discussion about how to cope with moral dilemmas in classrooms, Clark (1995) emphasized the importance of naming ethical pitfalls that help to clarify conceptual vacuums and studying moral literature using case studies, parables, poems, biographies, proverbs, stories, myths and scenarios on teaching ethics and encouraging ethical self-examination. In spite of certain debates starting from Moore's interpretation of the need for Computer Ethics (CE), CE is considered as a separate academic discipline and requires its own application-specific knowledge (Floridi & Sanders, 2002; Maner, 1996). Exploring justifications for the study of CE, Maner (1992) argued that "the involvement of computers in human conduct can create entirely new ethical issues, unique to computing, that do not surface in other areas" (p. 4). Moreover, the 5th and 3th Information Literacy Competency Standarts for Higher Education are directly related with CE. The 5th standart includes outcomes associated with privacy, intellectual property, freedom of speech, institutional policies and research ethics in general. In the 3th standart, it is noted that an information literate student judges the worth and quality of an information critically and integrate selected information into his/her knowledge base and value system (ACRL, 2000).

According to Beycioğlu (2009), "However…prospective teachers tended to undermine morality of computer use. A major reason for this result is that student teachers have not been taught the basic principles of using computers ethically" (p. 207). It is unfortunate that universities in Turkey do not offer alternative courses related to ethics to their students, especially computer technology students who are the candidates to teach students what is right and what is wrong of computer use. Namlu and Obabaşı (2007) stated that "Computer technology students do not take a compulsory course related to ethics during their four year study in Turkey. Some, or only a few, universities offer selective courses in the subject" (p. 206). For instance, Faculty of Educational Science of Ankara University offers two courses related to ethics to their students during their four-year study. One of them is Computer Ethics course. It is an elective one-semester, three credit course and composed of three hour lecture period once per week in the Department of Computer Education and Instructional Technology. A central task of the course is to provide some insight into how ethics related to computer. Course content also covers ethic theories, digital problems, unethical computer using behaviours, social effects of computers, information technology crimes, professional responsibilities of ICT teachers, and discussion of numerous computer technology issues related to education and computer. The second course is Professional Ethics. It is an elective one-semester, three credit course and composed of three hour lecture period once per week in the Educational Administration and Supervision Department. Professional Ethics course components include code of ethics, student and parental rights, social responsibilities of schools, ethical decision-making process, judgments and

justifications of moral behaviour. The major objectives of this course are twofold: (1) to enhance students' awareness of professional ethics; and (2) to gain knowledge and skills through sample scenarios including various professional domains.

Ethics deals with human actions and beliefs. ICT offers entirely new opportunities for individuals to behave in such a way that they did not behave before in a face to face environment and raises major ethical issues for society. Hence, academic programs should offer undergraduate students a variety of courses specializing in ethical, professional and legal issues that they are likely to confront (Thompson & Edward, 2004). So, they should be aware of potential and emerging ethical issues of ICT that may affect them. Despite discussions about teachers' judgments of the appropriateness of ICT use, there have been few studies of ICT student teachers' judgments and justifications in this context. After graduation they will work as primary school ICT teachers and will be responsible for teaching students what is right and what is wrong of computer use. So, it is important to understand their judgments and justifications about ethical issues in order to help prepare them for future ethical issues.

Specifically, it was intended to establish whether gender and prior education in ethics have any effect on the ethical judgments and justifications of ICT student teachers.

The following research questions were considered:

1. Are there differences in the ethical judgments of female and male ICT student teachers in computer related situations?
2. Are there differences in the ethical justifications of female and male ICT student teachers in computer related situations?
3. Do ICT student teachers' formal education in ethics have effect on their ethical judgments of computer related ethical issues?
4. Do ICT student teachers' formal education in ethics have effect on their ethical justifications of computer related ethical issues?

Methodology

In this study, we used a critical incidents technique (CIT) - a qualitative research approach- similar to Colnerud's (1997) procedure to collect data. This method was first developed by Flanagan in the 1950s. CIT involves a step by step approach to collect and analyze information about significant instances of a circumstantial activity. It enables researchers (1) to identify practical problems, (2) to reflect real life problems and (3) support practical outcomes. As Pope, Green, Johnson and Mitchell (2009) stated, "This methodology allows subjects to respond from their own perspective in their own words and thus better describe the dilemmas they face" (p. 779). Participants were asked to respond one single question about the case in the scenario from a moral/ethical point of view. They then were asked to give their reasons for why they perceive that there is an ethical dilemma or not in the case scenario.

Participants

The participant pool for this study consisted of 54 fourth year students studying at the Department of Computer and Instructional Technologies Education in the Faculty of Education from Ankara University in Turkey. We purposefully selected the fourth year students because prior education was a major

objective of the current study. Thirty-five students volunteered to participate in this study (23 male and 12 female). Demographics of the participants are shown in Table 1.

According to the survey, the majority of participants had more than five years of computer and Internet experience. Out of the participants, 57% described themselves as good ICT users. Most of them had at least one course related to ethics being either professional ethic or computer ethic. There was only one student that took more than two courses related to ethics.

Table 1: Demographics of the Participants

	n	%
Gender		
Female	12	34.29
Male	23	65.71
How long have you been using computer and Internet?	9	25.71
1-5	17	48.57
6-10	9	25.71
11 and above		
ICT Levels		
Average	6	17.14
Good	20	57.14
Very Good	9	25.71
Have you ever taken any course related to ethics during your formal education?		
None	7	20.00
Professional Ethic Course	10	28.57
Computer Ethic Course	10	28.57
Professional and Computer Ethic Courses	7	20.00
Other	1	2.86

Data Collection

The study was carried out in the fall of 2010 and the data were gathered via a structured questionnaire containing twelve items. The questionnaire was conducted face-to-face with an in-person interview. Questionnaire consists of two sections. The first section includes four multiple choice questions about the gender, computer and Internet usage, ICT level and courses taken related to ethic. We used these questions to describe the ICT student teachers' familiarity with ethic and ICT usage. The second section consist of a set of four vignettes illustrates scenarios of ethical dilemmas that ICT student teachers would confront in the school. Scenarios were self-designed vignettes based on our observations in the schools and informal interviews with primary school ICT teachers of critical events that may occur in the school. All participants were asked two questions after each of the scenarios. The first one was a multiple-choice question aiming to judge the appropriateness of the case in the scenario. The second question was an open-ended question to draw out their reasons for their opinions. Two specialists also revised whether the scenarios and instructions were clear and

understandable. We expected that there would be a difference between ICT student teachers' judgments and justifications with regard to gender and formal education.

Scenarios

To investigate ICT student teachers' judgments and their justifications, four scenarios were designed based on Mason's (1986) four ethical issues: privacy, accuracy, property and accessibility. They were reviewed by two academic staff who taught computer ethics course in higher education. All the reviewers agreed that the four scenarios represented ethical dilemmas in ICT use that Turkish ICT teachers could encounter in their real life. The scenarios were as follows:

Scenario #1 highlights the issue of privacy violation

Scenario 1: "The teacher announces students' grades on the school website publicly."

Here we argue that announcing grades publicly might be expected to be closely related to ethical judgments. The behavior is widespread even if it is not illegal or it does not violate a contract.

Scenario #2 presents an accuracy issue

Scenario 2: "Mrs. P wants to get an appointment from the social science teacher to discuss the performance of her son in the school. Therefore, she checks the office hours of the social science teacher from the school web site. She then goes to the school by obtaining permission from the workplace. But she can't get in touch with the teacher during office hours. The school officials say that information on the web was not up-to-date and teachers' office hours had changed a long time ago."

When considering Internet use, we argue that the misinformation on the web when people rely on it might foul up peoples' lives.

Scenario #3 relates to property issue

Scenario 3: "Student K needs a software program that is able to create 3D images to prepare the term paper on science and technology course. He talks with his ICT teacher and wants a copy of the software which would exceed his budget. ICT teacher gives him a copy of the software which is purchased by National Education Center for school use."

Here we argue that giving a copy of proprietary software to students for educational purposes is an ethical dilemma even if it is illegal or violates a contract.

Scenario #4 relates to access right

Scenario 4: "Miss. E wants to prepare a project on the protection of the natural environment. She proposes to develop a blog site and to add videos about environment and nature to her blog. But she has no access to the Internet at home and therefore, she wants to use the computer lab to search videos on the video-sharing web sites. However, accessing to the video-sharing web sites at school has been blocked by the school management because of the inappropriate content.

Here we argue that it is unethical to block the entire website because of some inappropriate contents.

For each of the four scenarios, we asked participants two questions. The first question asked was to judge whether there exist an ethical dilemma in the case of the scenario. The second question asked them to elicit their reasons for their justifications.

Data Analysis

All categorical data were analysed using the SPSS (Version 17, SPSS Inc., Chicago, IL, USA) system. The associations between different categorical variables were analysed with Fisher's exact test. Open-ended questions were analysed through content analysis. Conceptual analysis was used to identify themes and justifications of ICT student teachers' reasons for why they perceive that there is an ethical dilemma or not in the case scenario. Each justification was presented using direct quotations in a conversational format. Familiarity with the text was achieved by repeated reading. We also identified words and sentences including information relevant to the research questions as analysis units. The whole data were analyzed in more detail by reading and searching for new associations and meanings in the data. Quotations illustrate the ICT student teachers' expressions. As the study was conducted in the Turkish language the quotations were translated to English by the authors. The quotations start with "S" (Student) and end with the participants' code, numbered from 1 to 35.

We first present the results of ICT student teachers' judgments and then justifications in computer related ethical issues.

Results

Research Question One

To address the first research question, "Are there differences in the ethical judgments of female and male ICT student teachers in computer related situations?", we conducted Fisher exact test to assess whether there are gender-based differences in the ethical judgments of ICT student teachers with respect to ethical issues. The majority of them made accurate judgments and indicated that there exist ethical dilemmas in the cases of scenarios. However, none of these results were statistically significant for each scenarios outlined in this study (Table 3). The proportion of the male ICT student teachers was approximately the same value with the proportion of female ICT student teachers. Overall, these results suggest that gender does not affect the ethical judgments of ICT student teachers.

Table 2: Gender and ICT Student Teachers' Judgments

Scenarios		Judgments	Gender		Total	P
			Male	Female		
1 (Privacy)	n	Exist	19	10	29	1.00
	%		65.52	34.48	100.00	
	n	Not exist	4	2	6	
	%		66.67	33.33	100.00	
2 (Accuracy)	n	Exist	18	8	26	0.68
	%		69.23	30.77	100.00	
	n	Not exist	5	4	9	
	%		55.56	44.44	100.00	
3 (Property)	n	Exist	18	11	29	0.64
	%		62.07	37.93	100.00	
	n	Not exist	5	1	6	
	%		83.33	16.67	100.00	
4 (Accessibility)	n	Exist	11	8	19	0.47
	%		57.89	42.11	100.00	
	n	Not exist	12	4	16	
	%		75.00	25.00	100.00	

Research Question Two

To address the second research question, "Are there differences in the ethical justifications of female and male ICT student teachers in computer related situations?", we used content analysis method. This research question explores possible differences in the gender-based ethical justifications of ICT student teachers with respect to ethical issues. The results will be explained in a more detailed way below:

Scenario 1: The majority of male and female ICT student teachers indicated that there exists an ethical dilemma in the case of this scenario (Table 2). Most frequently they emphasized that announcing students' grades publicly is an invasion of students' privacy. They also stated that it is inappropriate for teachers to announce the students who got low grades publicly because it may adversely affect those students' emotions. For example, one student expressed: "I experienced the same situation last semester. I got the sense of inferiority when I got low grade. Teacher behaves unethically" (S24). Furthermore, male ICT student teachers stressed that it is appropriate to announce students' grades publicly on the Internet so that students could do their self-assessment. One male student, for example, expressed: "By comparing his scores to classmates' scores, students can review their status and be more careful for future exams" (S2). Moreover, the same reasons and justifications were reported by female ICT student teachers. Consequently, we found that privacy, psychological effects and self-assessment were all reasons for the case of this scenario.

Scenario 2: Male ICT student teachers who believed that there exists an ethical dilemma in the case of scenario 2 reasoned that it is inappropriate to provide incorrect information on a website. Publishing incorrect information is an invasion of accuracy. Moreover, they also stated that teacher/school management has not fulfilled his/her obligations appropriately. Those who believed that there exists no ethical dilemma pointed out that it might be tolerated because of teachers' heavy workloads. For

example, one male student stated: "...There is just neglect and it may have been caused by teachers' heavy workload..." (S8). Similarly, the same reasons and justifications were reported by female ICT student teachers. Overall, we found that accuracy, professional responsibility and heavy workload were all reasons for the case of this scenario.

Scenario 3: Male and female ICT student teachers who believed that there exists an ethical dilemma in the case of this scenario reasoned the same justifications. They expressed that it is inappropriate for a teacher to share school property with a student because it may violate the property rights. On the other hand, it is interesting that there is just one female ICT student teacher who pointed out that there exists no ethical dilemma in this scenario. She reasoned that it is appropriate to share a software program because it looks like a good and goods can be shared. On the contrary, male ICT student teachers who believed that there exists no ethical dilemma stated that it is appropriate to use software program for educational purpose. One male student, for example, stated: "...it is for educational purpose, not for commercial use" (S7). Overall, we revealed that intellectual property, perceiving software like a tangible property and pedagogical purpose were all the reasons for the case of this scenario.

Scenario 4: This was the most controversial issue among ICT student teachers. The majority of male ICT student teachers, who believed that there exists an ethical dilemma, stated that it is inappropriate for school management to block websites. Banning website violates users' accessibility rights. In addition, some of them also reasoned that it is inappropriate for students to download videos without uploader's or copyright holder's permission. For example, one male student expressed: "Because the student did not get permission to use the videos from the rightful owners" (S4). On the other hand, a large number of female ICT student teachers who believed that there exists an ethical dilemma reasoned that it is inappropriate for students to download videos without permission. One female student, for example, expressed: "...It is not ethical to download videos without uploaders' permissions" (S31). Similarly, one of the female ICT student teachers stated that it is inappropriate for students to download videos if downloading such videos is not permitted by school management. Furthermore, the same reasons and justifications were reported by ICT student teachers who believed that there exists no ethical dilemma. The majority of them pointed out that it is appropriate for school management to block those web sites having harmful contents since students should be protected from such contents. Consequently, we found that accessibility, permission, authorized rules and harmful content were all reasons for the case of this scenario.

Research Question Three

To address the third research question, "Do ICT student teachers' formal education in ethics have effect on their ethical judgments of computer related ethical issues?", we conducted Fisher exact test to assess whether there are differences in computer related ethical judgments between ICT student teachers who have previously taken course related to ethic and those who have not. In response to all four scenarios, the majority of them indicated that there exist ethical dilemmas. However, none of these results were statistically significant for each scenarios outlined in this study (Table 2). The proportion of ICT student teachers, who have taken course related to ethic, was approximately the same with the proportion of those who have not. Overall, these results suggest that taking a course in ethics does not affect the ethical judgments of ICT student teachers.

Table 3: Prior Education in Ethics and Judgments of ICT Student Teachers

			Course			
Scenarios		Judgments	None	Course taken	Total	P
1 (Privacy)	n	Exist	5	24	29	0.57
	%		17.24	82.76	100.00	
	n	Not exist	2	4	6	
	%		33.33	66.67	100.00	
2 (Accuracy)	n	Exist	5	21	26	1.00
	%		19.23	80.77	100.00	
	n	Not exist	2	7	9	
	%		22.22	77.78	100.00	
3 (Property)	n	Exist	4	25	29	0.79
	%		13.79	86.21	100.00	
	n	Not exist	3	3	6	
	%		50.00	50.00	100.00	
4 (Accessibility)	n	Exist	5	14	19	0.41
	%		26.32	73.68	100.00	
	n	Not exist	2	14	16	
	%		12.50	87.50	100.00	

Research Question Four

To address the fourth research question, "Do ICT student teachers' formal education in ethics have effect on their ethical justifications of computer related ethical issues?", we used content analysis method. This research question explores whether there are differences in ethical justifications between ICT student teachers who have previously taken course related with ethic and those who have not. The results are explained in more detail below:

Scenario 1: The majority of ICT student teachers indicated that there exists an ethical dilemma in the case of this scenario (Table 2). The vast majority of them, who have taken course related to ethics, stated that announcing students' grades publicly is an invasion of students' privacy. Some of them also expressed that it is inappropriate for teachers to announce students' private knowledge. A few of them also pointed out psychosocial factors and stated that it is inappropriate to announce students' grades publicly since it would be embarrassing for other students who got scores below average. On the other hand, ICT student teachers who indicated that there exists no ethical dilemma expressed that they would prefer openness so it was okay for them. Some of them also reasoned that it is appropriate to announce grades on the Internet so that they could assess their own success by comparing others. The results indicated that same reasons and justifications were reported by ICT student teachers who have previously taken an ethics course and those who have not. Overall, we revealed that privacy, psychological factors, openness and self-assessment were all reasons for the case of this scenario in regard to formal education.

Scenario 2: When we analysed the justifications of ICT student teachers, who have taken course related to ethics, we saw that they consider the reasons from the viewpoints of professional ethics and computer ethics. Some of them expressed that it is inappropriate for a teacher or school management not to keep the web site up-to-date because this means that the teacher or school

management has not fulfilled their professional duties and responsibilities. Besides that, the others stated that school management should ensure the accuracy of information on the school website. On the other hand, ICT student teachers who believed that there exists no ethical dilemma in the case of this scenario stated that keeping the web site up-to-date is a time consuming process and it might be tolerated because of the teachers or school managements' heavy workloads. They most likely believed that not to keep the website up-to-date is due to negligence. Furthermore, the same reasons and justifications were reported by ICT student teachers who have taken course in ethics and those who have not taken the course. We found that professional responsibility, accuracy and heavy workload were all reasons for the case of this scenario in regard to formal education.

Scenario 3: The majority of ICT student teachers believed that there exists an ethical dilemma in the case of this scenario (Table 2). The vast majority of them who have previously taken a course related to ethics reasoned that it is inappropriate for teachers to share the school property because it violates the property rights. For example, one female student expressed: "... software that has been purchased by National Education Center can only be used in the ICT class. Instead of giving the software to student, it would be more appropriate for teacher to offer opportunities for student to study in the ICT class" (S13). On the other hand, ICT student teachers who indicated that there exists no ethical dilemma expressed that it is appropriate for teachers to share school property because it is for an educational purpose. When we analysed the reasons of ICT student teachers who have not taken any course related to ethics, we see that they have the same justifications with those who have taken. It is interesting that one female ICT student teacher stated that software program is like a good and it is okay for her to share a software program. Consequently, we found that intellectual property, pedagogical purpose and perceiving software like a tangible property were all the reasons for the case of this scenario in regard to formal education.

Scenario 4: As we said before, this was the most controversial issue among ICT student teachers. It seems that the students who have taken formal education in ethics are separated into two groups with polar viewpoints. One of the groups indicated that it is inappropriate to block the web sites because it violates the accessibility rights. Conversely, the others believed that it is appropriate in the school to make such restrictions because students should be protected from harmful content. A few students also stated that there is no ethical dilemma in the case of this scenario since even if access is blocked in the school, students could access and download the videos beyond the school walls. When we analysed the justifications of ICT student teachers who have not taken course related to ethics, they stated that blocking access to information and the restriction of the freedom of information are inappropriate for school management. One male student, for example, expressed: "... Whatever the purpose it may serve, the student should not use or access the website with harmful content" (S17). A few of them also expressed that it is inappropriate to download and embed videos to the blog without uploaders' permission. In fact, it is obvious that they have incorrect and misleading information about topics such as copyrights, intellectual property and the policies of video-sharing web sites. Therefore, they have a justification that is wrong. Overall, we revealed that accessibility, harmful content, multi-channel access to information and authorized rules were all reasons for the case of this scenario in regard to formal education.

Conclusion

The findings showed that almost all ICT student teachers in this study have the same judgments and reasoned the same justifications regarding the scenarios related with Mason's (1986) four ethical issues. We found that gender does not affect the judgments and justifications of ICT student

teachers. Prior, Rogerson and Fairweather (2002) stated that "A number of studies have examined the extent to which gender is an influencing factor in ethical attitudes. However, there is little consistency in their findings" (p. 29). For instance, Khazanchi (1995) explored that women are more capable of recognizing the unethical behaviours depending upon the ethical dilemma. Kreira and Cronan (1998) also concluded that men and women have different assessment structures regarding what is ethical or unethical behaviour. Moreover, a recent study by Beycioglu (2009) showed that gender has an influence on the ethical judgments depending on the social impact, safety and information integrity components. By contrast, Hay, McCourt Larres, Oyelere and Fisher (2001) revealed that gender does not have a significant influence on ethical behaviours of undergraduate students and they also stated that "male and female ethical perception depends on the particular scenario with which the subjects are confronted" (p. 335). Although our results do not indicate any possible association between gender and ethical judgments, we suggest that further research is sorely needed with larger samples on this context to be able to draw meaningful distinctions between gender and ethical judgments and justifications.

Similar to Hay, McCourt Larres, Oyelere, & Fisher's (2001) study, another interesting finding in this study is that by focusing educational background of ICT student teachers, we found that whether or not to take a course related to ethics does not affect the judgments and justifications of ICT student teachers. Lack of difference between those two sets of ICT student teachers is quite surprising and raises the questions regarding the practical value of courses related to ethics. One possible explanation for this result is that they in this study are getting special education on ICT, and they have opportunities for informal interaction and engagement beyond both the classroom walls and physical environment with classmates even they all have not taken the same courses. We argue that social interaction has a strong impact on enhancing ICT student teachers' ethical decision-making process. So, we believe that a transition from a lecture-centred teaching approach to a more learner-centred teaching is necessary and a way to get better learning outcomes is to use discussion-centred activities based on the real-world problems.

Our results also showed that few ICT student teachers tend to obey school or institutional rules strictly. For instance, in Scenario 3, a teacher lends student a software program, ICT student teachers mostly relied on constructed rules to judge the behaviours as appropriate or inappropriate. This finding is partly consistent to Kreire and Cronan's (1998) study. Their results showed that men' judgments are mostly based on personal values and the legal authenticity of the act, and women' judgments are based on environmental cues such as personal values. But their results offer no adequate explanation (Adam & Ofori-Amanfo, 2000). Jung (2009) also stated that legal obligations have a weaker impact on students' ethical judgments. However, we discovered that legal obligations and regulations have a strong impact on male and female ICT student teachers' judgments and justifications. Findings from this study showed that they are not capable of distinguishing the virtue and rules. Colnerud (2006) defines virtue as "practical wisdom" and argues that while handling ethical issues, our thinking should not be limited by rules. We should develop our judgments as thinking all cases in its uniqueness so it helps us to give the right decision at any moment. It is unfortunate that there are many policy and conceptual vacuums in Turkish legislation and teachers confront various ethical issues in their classrooms. We argue that it is not possible to solve the problems encountered in the classroom by strictly adhering to rules so we see the needs for new approaches to develop ICT student teachers' virtues.

Findings also revealed that, of the four issues considered in this study, accessibility is the most controversial issue and about half of the participants indicated that banning access to a web site is not

an ethical dilemma in the case of scenario 4. A few of them also think of restrictions as a solution. Our results also showed that ICT student teachers do not attain the right justifications due to the lack of knowledge. One possible explanation for this result is that since they, 4th grades, mainly focus on preparing for the annual Public Personnel Selection Exam (KPSS), they ignore the courses, for example computer ethic course, in the last two semesters just before graduation. This finding is very positive in light of the need for educators to be able to understand the source of lack of knowledge and to make necessary regulations in the curriculum, especially the general topic of student learning outcomes.

To sum up, ICT student teachers should be aware of the ethical issues, so that they can be ready for incidents that may arise in the classroom. We need to modify, adapt, and construct our judicial system in accordance with the law of the knowledge age so that we could help students understand the ethical issues in the digital world, such as cyber bullying and cyber victimisation, surrounding them. Li (2007), in a study of Canadian and Chinese seven grades students' cyberbullying experiences, stated that "...restricting Internet usage, emails or any other technological tools cannot stop bullies..." (p. 453). He also suggested empowering students' awareness of what they are doing is considered a form of cyberbullying. Furthermore, considering the rules that might cause new problems, we should make the effort to develop our students' highest virtues. To begin with, we should identify and understand their reasons and justifications for their ethical choices. We believe that future research is needed to more clearly identify students' ethical decision making process. Future studies can focus on a greater variety of ethical issues, other age groups and higher order thinking skills.

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