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VIEWS OF INFORMATION TECHNOLOGIES TEACHERS ON THE EFFECTS OF VALUES EDUCATION ON INFORMATICS ETHICS

(Research Article)

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Abstract

In this study, effects of values education on students' attitudes and behaviors on informatics ethics taught in information technologies and software courses have been examined, according to the opinions of information technologies teachers (ITT) working in schools where values education is taught through Selcuklu Values Education Project (SEDEP). This is a qualitative study and in this study, criterion sampling, one of the purposeful sampling methods, have been adopted to determine the participants. Thirty-five information technologies teachers (13 male, 22 female) working in Selcuklu, a district of Konya, have participated in the study. The data have been collected through a fixed format questionnaire form and analyzed using content analysis. The findings show that the values taught in values education are related to informatics ethics in various aspects (individual, family, society, morality, teacher and curriculum). The participants state that the students have been able to transfer the values education to the informatics ethics even if it is not at a sufficient level cognitively and affectively. Participants mainly use values education elements such as respect, responsibility, justice, self-control and empathy, in the teaching of informatics ethics issues (Privacy-Security, Intellectual Property, Cybercrime, and Cyberbullying). The values education elements the participants use to deal with negative behaviors they encounter in relation to informatics ethics are respect, empathy, justice and self-control. Lastly, information technologies teachers have offered some suggestions that can be followed in the classroom and in the digital environment on the use of values education while teaching informatics ethics.

Keywords: Informatics ethics, Information technologies teachers, Values education

1. Introduction

Countries in the world have been taking various steps to overcome problems such as conflicts, terrorism and discrimination which have been going on for years. The loss or corruption of basic human values brings along many problems like dissatisfaction and greed, both at the individual and social level. Therefore, there is an urgent need for concepts such as values and values education in order to question the individual and social life style, which is gradually deteriorating, and to balance the societies based on their internal dynamics. In turn, based on value-based beliefs, some subjects like character education, ethics and values education have been gaining more and more importance (Alkış Küçükaydın, 2020). Today, the conditions brought about by technological and scientific developments keep values education on the agenda of all societies, which aims to highlight human values, protect the

qualities of social life and maintain its continuity. The main purpose of all these discussions and efforts is to transfer social and universal values to future generations (Izgar, 2020).

Questions such as what values are and to whom they should be taught often arise (Debats & Bartleds, 2005). According to Yaman (2012, pp. 17-18), the values, defined as the superior qualities and abilities of human beings, are the sensitivity people show to any person, entity, event or situation. For Cevizci, value is a feature that shows the importance of something makes it desirable and attracts attention (Cevizci, 2014, p. 212-213). Values, which are a relatively permanent structure that shape the personality of the individual, are effective in determining the attitudes and behaviors of the individual (Coombs-Richardson, 2005).

Individuals cannot successfully meet the three universal needs of biological, social interaction, and the survival needs of groups on their own. Instead, they have to communicate and cooperate with others to meet these needs. Values are the concepts that are used to mentally represent these behaviours and also to explain them during social interaction. Universality, independence, friendship, trust, pleasure, comfort, success, courage, family values and change are some of the common values in all societies (Schwartz, 2010, 2012). As Sönmez (2005) states, all learned behaviors of human beings are based on at least one value. Therefore, none of the learned behaviors can be devoid of values.

With values education, it is aimed to teach people, moral, cultural, spiritual, social and universal awareness and transform this awareness into behavior. Since education requires a process, efforts to teach the values are called values education (Yaman 2012: 18). Values education refers to the pedagogical practice in which young people learn about values and morals and gain knowledge about this field to relate to other people, with the ability and tendency to apply values and rules wisely (Aspin, 2000). Teachers intentionally or unintentionally pass on values to their students. Parents have the primary responsibility for the moral education of their children; however, schools also bear the responsibility of teaching values that are important for democracy and good citizenship (Debats & Bartleds, 2005).

In primary and secondary schools, in addition to giving information about values, it is also necessary to teach the values in a way that reflects the values they have learned to their behaviors. It is the responsibility of the school and therefore the teacher to restore the values that the student has not gained in his previous life at school, and even to correct the improper value gains he has previously acquired (Göksu, 2018; Kaya, Sölpük, Göçen, Bingöl, Parlakyıldız, & Arslan, 2017). In order for values education to be carried out more effectively, teacher opinions are important in terms of determining the values that are difficult to acquire and revising the processes related to the education of the values that are problematic (Çengelci, Hancı & Karaduman, 2013).

Many studies have been conducted on how to acquire values and their effectiveness in studies related to values education (Bayırlı, Doruk, & Tüfekçi, 2020; Baysal, 2013; Gurhan & Çiftçi, 2017; Koyuncu & Uçar, 2018; Izgar, 2013). In some studies, on the effectiveness of values education, it has been found that values education practices mostly give positive results on students. However, in some studies, teachers had difficulties during values education due to reasons such as the role of family, lack of materials, environmental problems, social media, and the fact that values education practices remained mostly on paper (Ateş, 2013; Can, 2008; Gür, Koçak, Şirin, Şafak, & Demircan, 2015; Kurtdede Fidan, 2013; Tokdemir, 2007).

The concept of value has a moral structure and it includes thoughts about the goodness of something and ethics associated with the concept of value (Köktaş, 1998). In terms of being a phenomenon that embodies ethical "good" and affects our moral values, , the basic feature of ethics is that it is related to values, creates values, and is the carrier and embodier of values (Cevizci, 2013, p. 218). Ethics is fundamentally concerned with the concepts of good and bad, right and wrong. People's ethical decisions and behaviors are generally guided by their value structures. In a pluralistic and multicultural society, differences in the values and judgments of individuals are common, and the technology contributes to the spread of these individual differences (Lau & Yuen, 2014). As Stark and Hoffmann (2019) stated, ethics should be a starting point for the kind of the world we want to see in relation to the consequences of technology.

The transfer of works such as books, movies, music and TV series to multimedia and the rapid access of societies to these products have given humanity various opportunities like quick and easy access to information and works of art. However, this situation has brought along problems such as the accuracy and security of information, unauthorized access to documents by individuals or institutions, and unauthorized obtainment of intellectual and artistic works. All these have magnified the importance of “Informatics Ethics" (Gündüz, 2013, p. 345). Informatics ethics is the written or unwritten rules that must be followed when using information technologies (Tıngöy, 2009). According to the Turkish Informatics Association, informatics ethics is a branch of philosophy and an applied sub-field of ethics that examines the behavior of those who provide services in the field of informatics and who benefit from this service. Informatics ethics, which is an applied field of ethics, is closely related not only to theoretical moral philosophy but also to daily moral values. The basic subjects of informatics ethics are ethical rules for computer use, internet use, information systems and network management, software development, forensics and administrative investigations and end users (TBD, 2010).

In order to prevent the spread of unethical behaviors influenced by some factors such as lack of knowledge or the necessary education (Çelen & Seferoğlu, 2016), and to increase the awareness of ethical behaviors in the use of technology and to develop a positive attitude, it is necessary to raise awareness and train individuals about informatics ethics (Ozan Leymun, 2018). Therefore, educational institutions should focus on how they can teach students the necessary information that will enable them to be aware of the consequences of the problems they face and will encounter with the increasing use of information technologies and ethical dilemmas (Uysal & Odabaşı, 2006). Moreover, it should be ensured that values related to information technologies are clearly explained and adopted by individuals and that individuals transform these values into behaviors. Informatics values such as virtual sharing, accuracy, honesty, virtual environment cooperation, respect for copyrights, respect for thoughts, virtual benevolence, virtual morality etc. can be taught to students (Çelik & Gündoğdu, 2019).

Reviewing the literature on informatics ethics, it has been found that attitudes towards the ethical use of information technologies (Çelik & Gündoğdu, 2019; Özdemir, 2017), the relationship between informatics ethics and attitudes (Özpınar, Kazaskeroğlu & Öz, 2010; Söylemez & Balaman, 2015), teaching informatics ethics with various methods (Arıkan & Duymaz, 2015; Heron & Belford, 2015; Ozan Leymun , 2018; Tarhan, 2019), the opinions of high school students on computer and informatics ethics (Ghazali, 2003), examining the relationship between computer technologies and moral problems (Gattiker & Kelley, 1999), ethical decision-making (Dorantes, Hewitt, & Goles, 2006), scale developments related to informatics ethics (Çelik & Gündoğdu, 2019; Kuzu & Yıldırım, 2008) have already been carried out.

To sum up, in information technologies it is necessary to create awareness and consciousness by minimizing the unethical behaviors mentioned above. This awareness and consciousness in the individual can only be achieved with education in primary and secondary schools. At the same time, giving this education at a young age is important for students to internalize the concept of ethics (Çelen, 2012; Duymaz, 2013). In Çelik's (2019) study, it has been concluded that the animation supported values education program has a positive effect on the academic success of the graphics and animation course, the attitude towards the course and the values of informatics ethics. The undesirable behaviors of students towards informatics ethics can be resolved with activities related with values education.

Values education is carried out through the implementation of educational programs in schools, but it is also supported by projects carried out jointly by different institutions in provinces like Afyonkarahisar (DEHA), Erzincan (EDEP) and Konya (SEDEP). According to the opinions of teachers, administrators and parents, it has been determined that these values education practices contribute to the child, teacher and family (Aydoğdu, 2017; Bayırlı, Doruk, & Tüfekçi, 2020; Gurhan & Çiftçi, 2017; Koyuncu & Uçar, 2018; Meydan, 2012).

SEDEP (Selcuklu Values Education Project), implemented in all kindergartens, primary schools, secondary schools and high schools in Selcuklu district, started in the 2012-2013 academic year with the aim of providing students with national, spiritual and basic human values. SEDEP is a project developed in parallel with the syllabus and curriculum (Gürhan, 2017, p. 36). The project, implemented under the leadership of Selcuklu Municipality, is carried out jointly by the Selcuklu District Directorate of National Education and Necmettin Erbakan University. As of the 2015-2016 academic year, SEDEP has planned to conduct studies on 8 values: respect, honesty, responsibility, patience, tolerance, cleanliness, compassion and generosity. In schools, it was recommended to form a voluntary team to carry out SEDEP, which aims to teach the values determined depending on feedbacks and education programs. (SEDEP, 2021).

Literature review shows that, no studies have been found to determine the values education taught at schools and the behaviors of students regarding informatics ethics depending on information technologies teachers' opinions. With this study, it is aimed to determine the effects of Selcuklu Values Education Project (SEDEP) on the attitudes and behaviors of students on informatics ethics, according to the opinions of information technologies teachers working in schools where SEDEP values education is taught.

For this purpose, this research tries to find answers to the following questions.

1. What are the opinions of information technologies teachers on the relationship between values education and informatics ethics?

2. What are the opinions of information technologies teachers about the ability of students to transfer what they learned through values education to informatics ethics?

3. Which values education elements do the information technologies teachers emphasize in teaching of informatics ethics?

4. What are the problematic behaviors that information technologies teachers encounter regarding informatics ethics? What values education elements do they use to correct those behaviors?

5. What are the opinions of information technologies teachers on the use of values education for more effective conduct of informatics ethics education?

2. Method

2.1. Research Design

This research, explores the opinions of information technologies teachers about values education, student experiences on information technologies and software course and information ethics. The case study, one of the qualitative research methods, was adopted in this study. The case study is a qualitative research method that allows a detailed and in-depth examination of a phenomenon in its real-life context (Yin, 2009; Cresswell, 2013). The most important quality of this method is that it allows the person, community or situation to be examined in its own context (Ersoy, 2016). Case studies examine a specific situation in depth. Thus, factors related to a situation are explored with a holistic approach (Yıldırım & Şimşek, 2008, p. 77).

2.2. Participants

Criterion sampling, one of the purposeful sampling methods, has been used to determine the participants. “Participants are determined according to pre-determined criteria in criterion sampling” (Yıldırım & Şimşek, 2013). Accordingly, while determining the participants, being an "Information Technologies Teacher" (ITT) and working at schools where the "Selcuklu Values Education Project" is carried out have been determined as the criteria. Therefore, the participants of this research are information technologies teachers working in secondary schools where the Selcuklu Values Education Project (SEDEP) is carried out and voluntarily participate in the study. The participants consist of 35 information technology teachers, 13 of whom are male and 22 are female. In order to keep the identity of the participants confidential, codes have been used instead of their real names. The demographic information of the participants is shown in Table 1.

Table 1. *Demographic Information*

Demographic Information		f
Gender	Male	13
	Female	22
Age	24-29	1
	30-35	13
	36-40	19
	41-45	4
	46 or above	1
Job Seniority	1-4	1
	5-9	7
	10-14	23
	15-19	5
	20 or above	1
Faculty of Graduation	Faculty of Education	27
	Faculty of Technical Education	8
Department of Graduation	Computer Education and Instructional Technologies	27
	Computer Systems Teaching	8

It is clear in Table 1 that, the majority of the information technologies teachers participating in the study are female teachers. This result may be related with their willingness to participate in the study. Moreover, it came out that the majority of the participants are between 30-40 years old, and their job seniority is 10 years or more. This

result shows the fact that, usually, experienced teachers may find the opportunity to work in the city center.

2.3. Data Collection Tool

A fixed format questionnaire developed on Google Forms has been used to collect the data. In fixed format questionnaires, closed-ended questions can be asked as well as open-ended questions. Thus, it allows the researchers to learn the reasons for participant answers to closed-ended questions and to make detailed comments (Creswell, 2013). In order to develop the fixed format questionnaire, studies on values education and informatics ethics have been examined and a draft form consisting of 15 open-ended questions has been created. Regarding the draft form, 4 experts who have studies in the field of values education and informatics ethics reviewed the form. In the light of expert opinions, two questions were removed and some questions rearranged. The revised form was applied to 10 teachers, and the fixed format questionnaire form got its final form. In the first part of the form, there are questions that include the demographic information of the participants (gender, age, job seniority, faculty from which they graduated, and the department they graduated from). In the second part, there are thirteen open-ended questions to determine the opinions of teachers about the effects of values education on students' informatics ethics.

2.4. Ethical Permissions

Before starting the data collection, the authors informed the Konya Provincial Directorate of National Education about the purpose and method of the study and got the necessary permissions. Moreover, they got the ethics committee approval from the ethics committee of Necmettin Erbakan University.

2.5. Data Collection and Analysis

The data collection tool was prepared on the Google Forms platform and the link of the questionnaire was sent to the information technologies teachers via e-mail. The data were collected online in a 3-weeks period. Reminder e-mails were sent to those who were late in responding.

According to Böke, Özdoğan, Sevinç, Güler, Büker, and Demir (2014), content analysis is the process of grouping, summarizing, and categorizing all kinds of verbal and written data in a way that illuminates the research problem, in order to measure and interpret certain variables or concepts in the data. For this purpose, firstly, the data obtained with the Google Forms was transferred into the Microsoft Excel program. In the next step, the data were read several times and categories were created according to the questions. Sub-categories were created by coding the opinions showing similarity in the categories created beforehand. Categories were named considering participant expressions or descriptions. Categories and subcategories are visualized using figures. In addition, in order to increase the internal reliability of the research, the findings have been presented as they are without any comments. In the analysis, codes (ITT, 1, ITT, 2, ITT, 3, …) were used instead of the names of the participants.

In order to ensure reliability in content analysis, intercoder-reliability was also calculated. Next, the answers given by the participants to the questions in the questionnaire were examined by the researchers in order to evaluate the coding, and they are grouped as "Agreement" and "Disagreement". If the researchers marked the same option in the questions, it was considered as an agreement, if they ticked different options, it was considered as a disagreement. In this study, Miles and Huberman's (1994) percentage of agreement formula, "Reliability = Consensus / (Agreement + Disagreement) x 100", was used to determine the

reliability of content analysis, and the percentage of agreement among researchers was found to be P = .92.

3. Findings

In this section, the answers given by the information technologies teachers to the open-ended questions asked in the fixed form questionnaire have been examined. The findings are presented under six themes in accordance with the six sub-questions of the research.

3.1. Views of IT teachers on the relationship between values education and informatics ethics

After analyzing the responses of the participants with regards to RQ1, the following six themes have arisen. Figure-1 shows the views of participants grouped under six sub-themes regarding the relationship between values education and information ethics. The figure below gives the descriptions of these sub-themes.

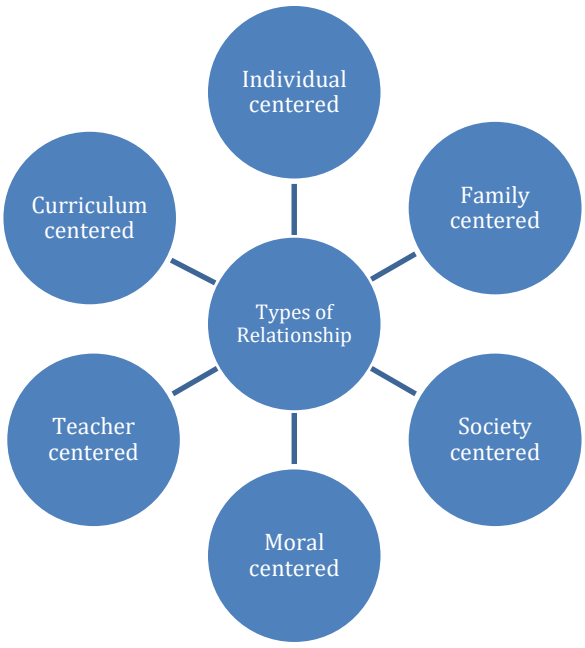


Figure 1. Types of Relationship between Values Education and Informatics Ethics

3.1.1. The Individual-Centered Relationship of Values Education with Informatics Ethics

Figure-1 shows the participants' evaluation of the individual-centered relationship between values education and informatics ethics. People may encounter various problems in the use of information technologies. In order to produce solutions to these problems, they are expected to have a certain level of awareness about the developments in information technologies and to know what their role is. In this respect, people should be aware of their responsibilities, rights, duties and the consequences of the mistakes they make. They should know that the use of information technologies has written or unwritten ethical rules. It is for sure that the source of the problems that can be experienced with informatics ethics is the individual himself. So, people should become cognitively, emotionally and behaviorally equipped. One of the ways that can be used to equip people is values education. With values education, the individual gains an understanding of ethics in information technologies by emphasizing respect, love, responsibility, virtue, courage, belief, perseverance, justice and discipline. IT teachers who participated in this research stated that there is a relationship between values education and informatics ethics.

The teachers stated that the achievements of the student through values education will contribute to the learning of the subjects related to informatics ethics and make it easier to behave accordingly. It is understood form this statement that students who attach importance to values education and pay attention to informatics ethics are more sensitive. Examples of direct quotations from the views of participants on the individual-centered relationship between values education and informatics ethics are given below.

- "Informatics ethics is also important for a student who cares about values education. Because, a person who has feelings of justice, honesty and respect will also be sensitive about informatics ethics" (ITT, 14)
- "Every individual who internalizes the titles in values education will adapt to the ethical rules in the world of informatics. Now that informatics is an important part of our lives, while teaching informatics ethics, examples can be given through values education." (ITT, 21)
- "People should have the same character in real life and in the virtual environment." (ITT, 23)

3.1.2. The Family-Centered Relationship of Values Education with Informatics Ethics

Figure-1 shows the participants' evaluation of the family-centered relationship between values education and informatics ethics. One of the factors that matures or hinders the development of the gains taught by values education in the individual is the family. The family's support/failure to support the student's achievements related to values, conscious/unconsciousness, responsibility/irresponsibility, caring/not caring about the education provided contribute to his/her positive/negative development. The same development can be seen in the acquisitions related to informatics ethics. The support/unsupport of the family will affect the behavior of the student in informatics ethics. Examples of direct quotations from the views of participants on the family-centered relationship between values education and informatics ethics are given below.

- "Values education should be supported in the school and family environment. This situation will positively affect the reflection of the issues related to informatics ethics and the behaviors in the family environment." (ITT, 13)
- "Subjects such as values education and informatics ethics have an impact on the communication between people. The family's interest in the subject has positive, and the family's indifference to the subject has negative consequences and, it shows its effect either with positive or negative behaviors." (ITT, 27)

3.1.3. The Society-Centered Relationship of Values Education with Informatics Ethics

Figure-1 shows the participants' evaluation of the society-centered relationship between values education and informatics ethics. In order to build a healthy society for present and future, it is necessary to raise individuals who are aware of informatics ethics, who can analyze ethical problems and show the necessary ethical behaviors. Just as situations like the asocialization of the individual, the decrease in the value given to the individual in the society, the fact that the truth does not attract as much attention as the lie, the same situation emerges in the virtual world. Therefore, just as we regulate our behaviors in real life with values education, we should regulate our behaviors in the virtual world with informatics

ethics. Examples of direct quotations from the views of participants on the society-centered relationship between values education and informatics ethics are given below.

- "The internet, which has become an integral part of our lives with millions of users, hundreds of applications and incredible data sharing, is one of the fields with its own ethical rules and people should act accordingly." (ITT, 3)
- "Informatics is now completely in our lives. It is necessary to apply and pay attention to all of our values that concern the society in daily life in the virtual environment." (ITT, 11)

3.1.4. The Moral-Centered Relationship of Values Education with Informatics Ethics

Figure-1 shows the participants' evaluation of the moral-centered relationship between values education and informatics ethics. One of the components of values education is morality and it is one of the factors affecting informatics ethics. Since rapid solutions cannot be provided to the problems that informatics ethics is concerned with, moral principles are put forward for such problems. When we look at morality as a source of value, in all societies, it contains features such as goodness, evil, happiness, virtue and responsibility. On the other hand, morality also acts as an internal control mechanism in the individual. From this point of view, the moral values of the person come to the fore in every situation concerning the informatics ethics. Just as we prioritize moral features in every aspect of our lives, it is also a feature that should be prioritized in the virtual world. Examples of direct quotations from the views of participants on the moral-centered relationship between values education and informatics ethics are given below.

- "Values education has a direct contribution to informatics ethics. Values education directs individuals to question while using information technologies. Every individual who acts with moral values and patience and is aware of his/her responsibilities knows himself/herself and others in the world of informatics, the good and the bad, and takes careful steps accordingly." (ITT, 21)
- "In the IT world, we should prioritize moral qualities such as good, bad and virtue as if we were in the real world." (ITT, 31)
- "Values education contributes to every aspect of our lives. Because it contains moral and universal values. Informatics ethics is one of them." (ITT, 32)

3.1.5. The Teacher-Centered Relationship of Values Education with Informatics Ethics

Figure-1 shows the participants' evaluation of the teacher-centered relationship between values education and informatics ethics. In addition to the fact that teachers should be equipped with qualifications of values education, they should now be equipped with qualifications of informatics ethics. This situation does not only concern ITT teachers. All teachers should increase students' awareness about their responsibilities and ethical practices in the world of informatics. Examples of direct quotations from the views of participants on the teacher-centered relationship between values education and informatics ethics are given below.

- "Students think that with the support of informatics teachers, they will overcome the negativities they may encounter in the virtual world." (ITT, 6)

- “They are surprised when I, as an ITT, exemplify concrete examples that the values education they think they will use in the real world can also be used in the virtual world.” (ITT, 13)

3.1.6. The Curriculum-Centered Relationship of Values Education with Informatics Ethics

Figure-1 shows the participants' evaluation of the curriculum-centered relationship between values education and informatics ethics. Curriculum is a plan that explains which subjects will be taught in what order. When the curricula of all courses are examined, the same qualifications are mentioned under the title of "Values". When we look at the curriculum of the information technologies course, informatics ethics is included as a separate unit. It is mentioned that the student should be informed, what topics it contains, how it should be explained and taught. It contains information about what should happen in order to inform and raise awareness of students about informatics ethics. Examples of direct quotations from the views of participants on the curriculum-centered relationship between values education and informatics ethics are given below.

- “When we look at the curriculum of the course, when values education is taught adequately, it will be seen that it is intertwined with informatics ethics, and a more productive environment is created while we are teaching informatics ethics in our courses.” (ITT, 1)
- “There are written and unwritten elements in values education and informatics ethics. Here, let's give the written ones with the curriculum so that it can form the basis for the unwritten rules.” (ITT, 2)
- “It is expected that the student will transfer this to behavior by creating a theoretical infrastructure both in values education and in the content of informatics ethics. Theoretical infrastructure is also possible with the curriculum, which is a written planning.” (ITT, 9)

3.2. Views of IT teachers on students' ability to transfer what they learned through values education to informatics ethics

After analyzing the responses of the participants regarding RQ2, the following three themes have arisen. Figure-2 shows the views of participants grouped under three sub-themes regarding students' ability to transfer what they learned through values education to informatics ethics. The figure below gives the descriptions of these sub-themes.

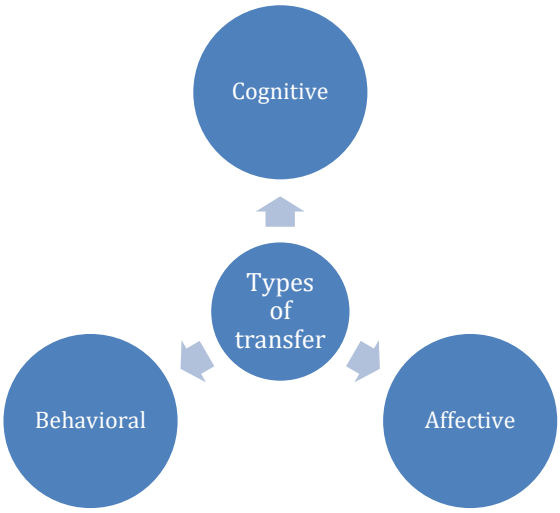


Figure-2. Transfer of Values Education to Informatics Ethics

3.2.1. Cognitive Transfer

Figure-2 shows the participants' evaluation of the cognitive transfer of values education to informatics ethics. Among the general objectives of the curricula used by the Ministry of National Education Board of Education, the importance of transferring the learned knowledge to relevant fields and real life is emphasized (MEB, 2018). The opinions of IT teachers in this category are also evaluated. Accordingly, the level of students' ability to transfer their cognitive knowledge gained through SEDEP to subjects related to informatics ethics was examined. According to the opinions of IT teachers, there is transfer at the cognitive level, but it is not at the sufficient and desired level. Examples of direct quotations from the views of participants on the cognitive transfer of values education to informatics ethics are given below.

- "I feel that they have some knowledge in some ethical principles before I cover informatics ethics issues. I think the reason for this is related to values education again." (ITT, 1)
- "There is an opinion that they can use the knowledge they have received through values education more in real life. However, the cognitive transfer that they can use it in the virtual world is not enough." (ITT, 23)
- "During the transfer of information about informatics ethics, I give examples with the qualifications in values education. While they can't connect with each other at first, this situation can be moved to a better level with examples." (ITT, 32)

3.2.2. Affective Transfer

Figure-2 shows the participants' evaluation of the affective transfer of values education to informatics ethics. Affective behavior is related with "attitudes, self-perceptions, interests and values". It is expected that the qualifications given by values education will have an affective response on students. On the other hand, this expectation should also have an impact on informatics ethics, which is a related field. IT teachers have stated that there is affective transfer in the subjects related to informatics ethics over the subjects in values education, as

in cognitive transfer, but it is at the sufficient and desired level. Examples of direct quotations from the views of participants on the affective transfer of values education to informatics ethics are given below.

- "They do not have a perspective on issues such as privacy, cybercrime, cyberbullying encountered in IT ethics. When I ask them to associate it with values education, they can match it, although it is not enough. They internalized the theoretical knowledge and turned it into a certain level of interest. I believe that the qualifications in values education affect this situation, even if they are not aware of it." (ITT, 17)
- "I think that their indifference to the course and especially to this subject weakens the interaction between the two subjects, whether they have knowledge infrastructure or values education." (ITT, 22)
- "They know that values have an impact on our lives. Some students have a high level of sensitivity, while others have a low level of sensitivity. This affects the attitude towards informatics ethics." (ITT, 28)

3.2.3. Behavioral Transfer

Figure-2 shows the participants' evaluation of the behavioral transfer of values education to informatics ethics. Our schools and education programs not only provide students with cognitive and affective skills, but also enable them to act or practice using these skills. Cognitive and affective background related to informatics ethics should be put into practice. Positive results are available in the transfer of cognitive and affective acquisitions of students who have received values education. From this point of view, it can be stated that it is not sufficient to show it as a behavior in cases involving informatics ethics. It has also been reported that the family and social environment can affect it negatively. Examples of direct quotations from the views of participants on the behavioral transfer of values education to informatics ethics are given below.

- "This varies from student to student. When we give values education and informatics ethics, some students quickly grasp the rules and apply them to their lives. However, some students have difficulty in correcting their mistakes if they see indifference or there are wrong examples around them." (ITT,5)
- "Unfortunately it can't provide enough. Even if they have achieved cognitive and affective gains regarding both values education and informatics ethics, there may be people who cannot reflect on their behavior due to the influence of their family and environment." (ITT, 11)
- "Partially. I think it took some time for them to understand values education. But as a result, students who complete informatics ethics are more sensitive." (ITT, 17)
- "Although provided in theory and attitude, they can behave like the majority of people in daily life. For example, watching pirated movies does not comply with IT ethics, but they can still watch it." (ITT, 25)

3.3. Views of IT teachers on the use of values education elements in the teaching of informatics ethics

After analyzing the responses of the participants regarding RQ3, the following four themes have arisen. Figure-2 shows the views of participants grouped under four sub-themes regarding the use of values education elements in the teaching of informatics ethics. The figure below gives the descriptions of these sub-themes.

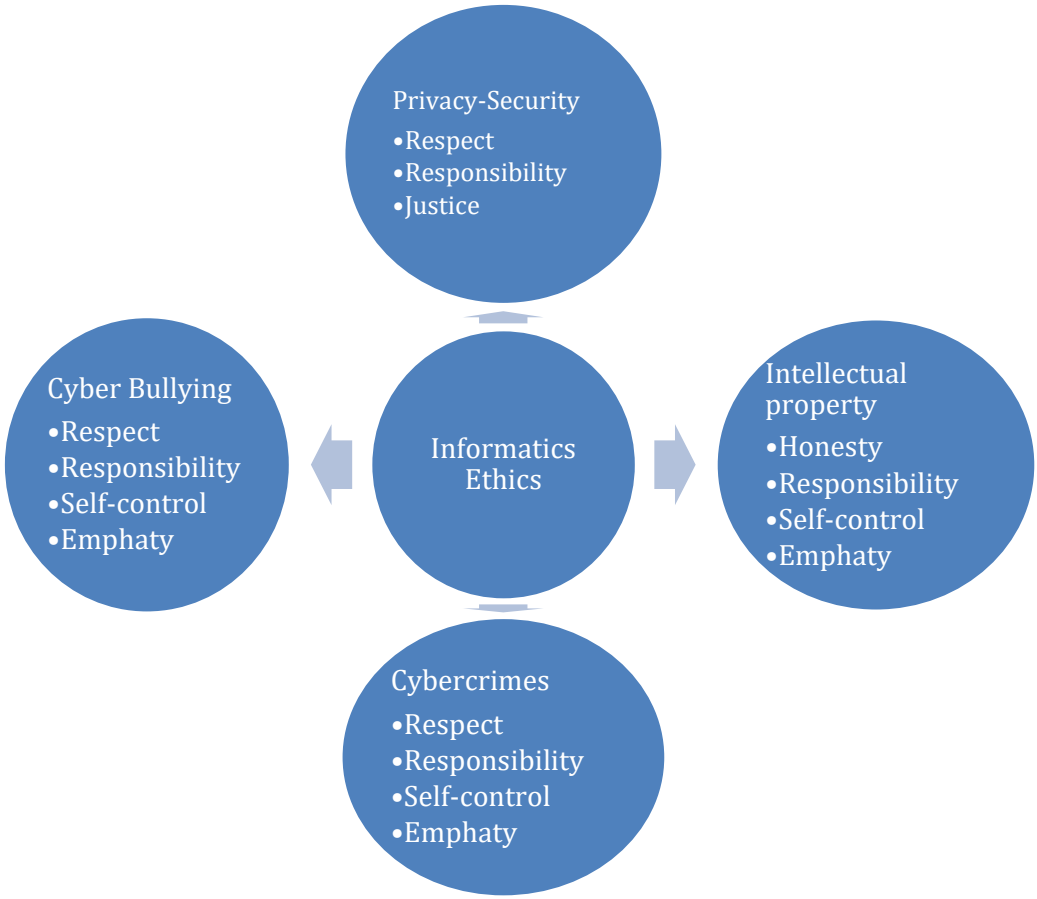


Figure-3. Values Education in Informatics Ethics

3.3.1. Privacy- Security

Figure-3 shows, the participants' evaluation of the values education elements they used in teaching privacy and security, which is one of the subjects of informatics ethics. Information security refers to the protection of information from damage during storage and transportation, effective use of information, and at the same time protection from unauthorized access. Privacy is access to information only by authorized persons. It has been determined that the qualities that IT teachers highlight from values education while explaining privacy and security issues are "Respect", "Responsibility" and "Justice". Examples of direct quotations from the views of participants on the values education elements they use in teaching privacy and security, which are among the subjects of informatics ethics, are given below.

- "I can match Privacy and Security with Responsibility and Fairness." (ITT, 17)
- "I match it with respect and responsibility." (ITT, 21)

3.3.2. Intellectual Property

Figure-3 shows, the participants' evaluation of the values education elements they used in teaching intellectual property, which is one of the subjects of informatics ethics. Intellectual property is the product of ideas belonging to a person or organization. In other words, it refers to the whole of the material and moral rights on a work. It has been determined that the qualities that IT teachers emphasize when explaining intellectual property, patent, copyright and license issues are "Honesty", "Responsibility", "Self-control" and "Empathy". Examples of direct quotations from the views of participants on the values education elements they use in teaching intellectual property, which are among the subjects of informatics ethics, are given below.

- "I explain the subject of Intellectual Property, License, Copyrights and Patents directly by using values such as "Self-Control", "Empathy", "Respect" and "Honesty". (ITT, 4)
- "I usually have students do it with empathy and self-control. For example, while explaining the subject of intellectual property rights, I choose a few students and tell them that they are authors and that they will earn some money from each book sale. I make another group of students a software developer and another group of students a game designer. I would like the authors of the books to think that we copy their books, the developers of the software to think that we use their software by cracking, the designers of the game to think that we play their game without paying any money. Of course, none of the groups can afford to lose money and say their intellectual property rights have been hijacked." (ITT, 9)

3.3.3. Cybercrimes

Figure-3 shows, the participants' evaluation of the values education elements they used in teaching cybercrimes, which is one of the subjects of informatics ethics. Cybercrimes can be defined as any unlawful, immoral or unauthorized behavior in a system that automatically processes information or transfers data. It has been determined that the qualities that IT teachers highlight from values education when talking about cybercrimes are "Respect", "Responsibility", "Self-control" and "Empathy". Examples of direct quotations from the views of participants on the values education elements they use in teaching cybercrimes, which are among the subjects of informatics ethics, are given below.

- "I am aware that they do not fully understand cybercrimes. For this, I do activities that will bring respect and responsibility from values educations to the fore." (ITT, 11)
- "I focus more on cybercrimes and their consequences. I tell them that they should have empathy so that they do not face any undesired consequences and not lose their self-control even in the virtual world." (ITT, 23)

3.3.4. Cyber Bullying

Figure-3 shows, the participants' evaluation of the values education elements they used in teaching cyberbullying, which is one of the subjects of informatics ethics. Cyberbullying is a type of bullying carried out, using digital technologies, on social media, messaging platforms, gaming platforms and mobile phones. It is a repeated behavior intended to intimidate, anger or embarrass the targeted people. The qualities that IT teachers highlight from values education when talking about cyberbullying are "Respect", "Responsibility", "Self-control"

and "Empathy". Examples of direct quotations from the views of participants on the values education elements they use in teaching cyberbullying, which are among the subjects of informatics ethics, are given below.

- "If we interpret the topics taught in values education in terms of informatics ethics, I associate cyberbullying with empathy and respect." (ITT, 29)
- "I think that informatics ethics contributes to values education. Cyberbullying – Respect can be explained with empathy." (ITT, 32)
- "I explain that cyberbullying is on social media, and sometimes it is also affected by our environment and it is normal. In order not to do this, I tell you that we need to increase our self-control based on our sense of responsibility." (ITT, 34)

3.4. Views of IT teachers about the behaviors they encounter regarding informatics ethics and their use of the values education items to correct

After analyzing the responses of the participants regarding RQ4, the following three themes have arisen. Figure-4 shows the views of participants grouped under three sub-themes regarding the behaviors they encounter regarding informatics ethics and their use of the values education items to correct. The figure below gives the descriptions of these sub-themes.

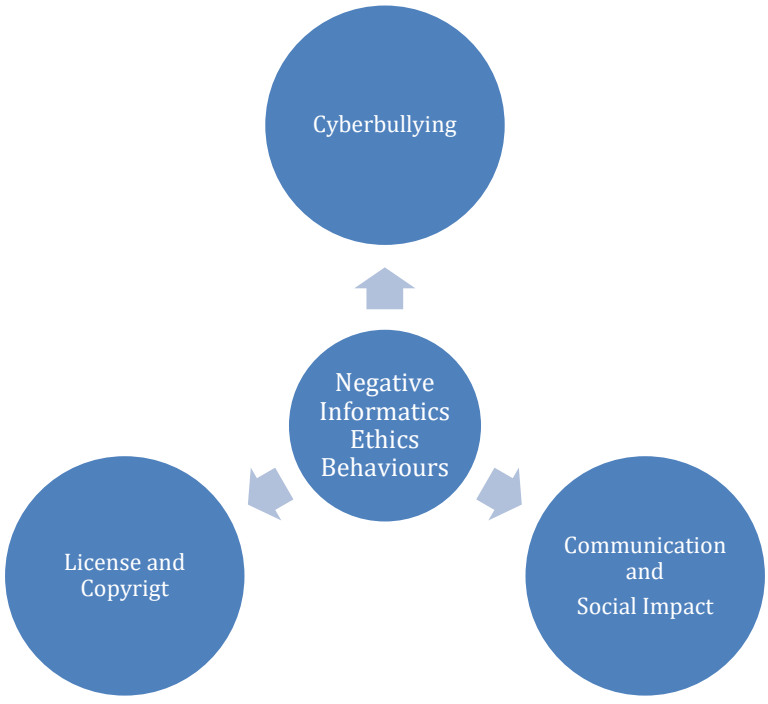


Figure-4. Behaviors that do not comply with informatics ethics

Figure-4 shows, the participants' evaluation of the behaviors and solutions they encountered that did not comply with informatics ethics. Undesirable behaviors faced by IT teachers are grouped under three sub-themes as "Cyberbullying", "License and Copyright" and "Communication and Social Impact". The teachers stated that they used "respect, empathy, justice and self-control" for the solution of Cyberbullying, which is one of the inappropriate behaviors that IT teachers encounter. Additionally, that they used "justice, empathy, responsibility and respect" for the solution of Licensing and Copyright. Lastly, they

used "honesty, empathy, responsibility and respect" for the solution of Communication and Social Impact. Examples of direct quotations from the views of participants on the behaviors and solutions they encounter that do not comply with informatics ethics are given below.

- "I had a student who was cyberbullying. The subject was a simple one, but it was cyberbullying. We solved it with the values of Justice and Empathy." (ITT, 1)
- "I had students who tried to use a software by cracking it. I introduced them to free alternatives and talked about honesty and empathy." (ITT, 8)
- "Almost all of our students have registered for education on course platforms and several websites. They shared their personal data (Passwords, ID no, Student numbers) they used these on websites on behalf of each other and made undesirable shares by logging into each other's accounts. We heard about these problems. We solved the problem both in terms of informatics ethics and by using the qualities of responsibility, respect and honesty." (ITT, 21)
- "They mostly have trouble with unauthorized access to personal accounts. I try to solve this with values of respect, honesty, self-control and empathy." (ITT, 27)

3.5. Suggestions of IT teachers on the use of values education for more effective conduct of informatics ethics education

After analyzing the responses of the participants with regards to RQ5, the following two themes arise. Figure-5 shows the views of participants grouped under two sub-themes regarding the use of values education for more effective informatics ethics education. Descriptions of these sub-themes are given below the figure.

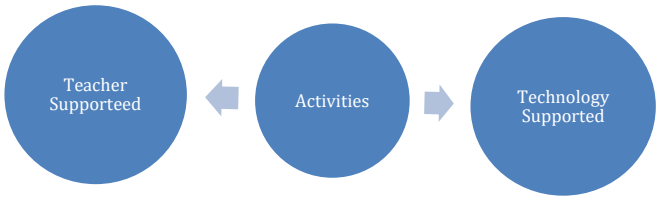


Figure-5. Suggestions for more effective informatics ethics education

3.5.1. Teacher Supported In-class Activities

Figure-5 shows, the participants' evaluation of the methods and techniques they used while teaching informatics ethics. IT teachers suggested some in-class activities that they thought could be effective in teaching informatics ethics. They are storytelling, gamification, creative drama, role playing and poster preparation. Examples of direct quotations from the views of the participants about the teacher-assisted methods and techniques they use while teaching informatics ethics are given below.

- "Planning of gamified activities that our children will prepare." (ITT, 2)

- "I would like to have creative drama, story activities that students will script, and activities where posters will be prepared to hang on the walls of the classroom and computer lab." (ITT, 4)
- "I would suggest having activities that use everyday problems to prove that digital environments are connected to real life. For example, damages due to digital crimes." (ITT, 9)

3.5.2. Technology Supported Digital Activities

Figure-5 shows, the participants' evaluation of the methods and techniques they used while teaching informatics ethics. IT teachers also suggested some activities that can be done digitally, which they think can be effective in the teaching of informatics ethics. These activities are web 2.0 supported digital stories, gamifications, concept cartoons and poster preparations. Examples of direct quotations from the views of participants on technology-supported methods and techniques they use while teaching informatics ethics are given below.

- "They can watch digital stories and digital concept cartoons that I will prepare or have been prepared, which they can reach both in the classroom and outside the classroom." (ITT, 6)
- "The impact will be great as students will feel that they will be more active with digital stories, gamifications and posters that they will prepare themselves." (ITT, 15)

4. Conclusion and Discussion

This study has been done in order to determine the effects of values education, within the scope of SEDEP, on students' attitudes and behaviors on informatics ethics given in the information technologies and software course. Walter Manner first mentions Computer Ethics as a sub-branch of applied ethics with his work in the 1970s (Manner, 1980). Over time, with the development of technology and the emergence of different components, it has turned into a macro concept and the expression "Informatics Ethics" (Floridi, 2013) has begun to be used. Moore (1985), while describing computer ethics, mentioned its relationship with facts, concepts, policies and values, and stated that it had an interdisciplinary structure. It is important that IT teachers have an important role in informatics ethics education and their views and experiences are important. This study tried to reveal the relationships and effects of informatics ethics and values, accepted by all societies, depending on the opinions of information technologies teachers. This research is limited to thirty-five IT teachers and their views. Almost all of the IT teachers participating in the study stated that there is a positive relationship between informatics ethics and values education. According to the views of IT teachers, the relationship between informatics ethics and values education has been revealed with six different elements. Considering the views of IT teachers, it is thought that each element is important and at the same time their effects cannot be ignored. Similarly, Chiang and Lee (2011) in their study examining the factors affecting the informatics ethics, reported that the individual is affected by himself, his friends, family and social environment. It is clear that each component in this study has its own value judgments. In another study, Çelen and Seferoğlu (2016) determined that informatics ethics and moral responsibility, social values and personal values have effects on informatics ethics. Heron and Belford (2015), on the other hand, emphasized that students underestimate the issue of informatics

ethics, and that their teachers primarily play an important role in preventing this situation by informing, guiding, and raising their awareness.

In this study, the transferability of the gains obtained with values education to informatics ethics and their levels have been evaluated according to the views of IT teachers in terms of cognitive, affective and behavioral aspects. According to IT teachers, students transfer little of the values they learned through values education to informatics ethics cognitively and affectively, but very little of it to their behaviors. Accordingly, the students have an idea about empathy, responsibility, respect and justice cognitively and they are also aware of what they mean emotionally.

If we exemplify, the student knows that cyberbullying, which is one of the topics of informatics ethics, is bad and negative cognitively, he is emotionally aware and can explain this situation within respect, empathy and responsibility. However, a moral dilemma arises as a result of the pressure of the family and social environment in transforming this into a behavior and, in turn they can behave negatively. This moral dilemma reported by the participants is in line with what Heron and Belford (2015) stated in their study that individuals have cognitive and affective knowledge and awareness about ethical issues, but the expected effect in transforming them into behavior may not occur.

In this study, the values education elements used in the teaching of informatics ethics have been studied from the perspectives of IT teachers. As a result of the observations and experiences of teachers, it is clear that the most prominent values education elements they used in the teaching of informatics ethics are respect, responsibility, justice, empathy, self-control and honesty.

There are written and unwritten rules regarding both values education and informatics ethics. However, it is clear that individuals are not aware of these rules (Titi, 2012). Furthermore, it is obvious that while the real life of the individual is tried to be regulated with values education, the life in the virtual world is tried to be regulated with informatics ethics. It has been revealed that personal values, moral values and social values are effective in creating the IT ethics acquisitions of the person (Çelen & Seferoğlu, 2016). Consequently, it is necessary for the teachers to use the appropriate values education elements that they think are relevant. To conclude, the current problems in the virtual world are similar to the ones experienced in the past. Peslak (2006) and Ming, Jabar, Sıdı, and Wei (2015) stated in their studies that the subjects of informatics ethics are up-to-date and worth researching.

Behaviors that are inappropriate for informatics ethics, faced by IT teachers, are cyberbullying, licensing and copyright, and communication and social ethics. In this research, the values education elements that IT teachers use to solve these problems have been studied. These elements are respect, empathy, fairness, self-control for cyberbullying; fairness, empathy, responsibility, respect for licensing and copyright; honesty, empathy, responsibility and respect for communication and social impact.

In the study, the participants have been asked to suggest different methods and techniques that can be applied while teaching informatics ethics, and as a result two groups of suggestions have come out, which can be carried out in the classroom and in the digital environment. The common points of the suggestions are that they are student-centered and contribute to the student. Thus, it has been found that students' informatics ethics behaviors, their awareness and responsibilities (Gerstein, 2014; Ozan-Leymun, 2018), critical thinking about informatics ethics will be more effective in practice (Avraamidou & Osborne, 2009; Tunç & Karadağ, 2013). When we consider the results, it is obvious that the principles of

informatics ethics are needed in order to provide social order in the virtual world as in real life, to adapt to the virtual world, to reduce corruption even if it cannot be totally prevented.

This research has examined the relationship of IT teachers' values education and IT ethics from different aspects and highlighted their effects on students. It is thought that the elements that informatics teachers highlight will provide integrity and continuity on students. In schools, values education is used in teaching of behaviors that can organize the students' real lives. On the other hand, with IT ethics, the behaviors that they should have in the virtual world are taught. Therefore, in turn, values education contributes to informatics ethics.

IT teachers have the opinion that students are capable of transferring the values they have learned to informatics ethics, but they are not sufficient in transforming them into behavior in terms of cognitive and affective aspects. As a reason for this outcome, the teachers blame the environment out of school. IT teachers compare the virtual world with the real one in the teaching of informatics ethics. They think that students establish a relationship with the values they have learned and that the courses are more effective when they are taught in this way. Additionally, IT teachers state that they use the values taught by values education in order to prevent student behaviors that are not suitable for informatics ethics. They also think that this method is really important. While teaching informatics ethics, It teachers use teacher-supported and technology-supported methods and techniques. Thus, while the role, behavior and communication of the teacher in the classroom come to the fore, the prevalence of technological opportunities outside the school is important. In addition, according to IT teachers, it is thought that the use of classroom and digital environment for more effective informatics ethics education can ensure the continuity of learning. It is obvious that there is a need for informatics ethics in order to provide social order in the virtual world, to be able to adapt, to feel belonging, to reduce corruption even if it cannot be totally prevented, and to shape the future. At the same time, it is clear in researches that it would be right to foster informatics ethics with elements such as moral development, values education, personal values, and moral responsibility (Dorantes, Hewitt & Goles, 2006; Hur, Kim, Song & Lee, 2009; Kiere & Cronan, 1998).

In future studies, effects of values education on students' views, perceptions and beliefs can be investigated based on the relationship between values education and informatics ethics. In addition, both the teachers and students of the schools where the values education is taught and the schools where it is not taught can be the subject of comparison studies.

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