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**ETHICAL ASPECTS OF THE USE OF INFORMATION  
TECHNOLOGY IN HIGHER EDUCATION**

Liliana Mățã (a)\*, Roxana Maria Ghiățãu (b)

\*Corresponding author

(a) „Vasile Alecsandri” University of Bacău, Mărășești 157, 600115, Bacău, Romania, liliana.mata@ub.ro

(b) „Vasile Alecsandri” University of Bacău, Mărășești 157, 600115, Bacău, Romania, roxanag@uaic.ro

*Abstract*

The improper use of technology in education is a topic of recent interest on the agenda of researchers in Education Sciences and ethics. In the first part of the study there is defined the concept of unethical use of information technology and there are analysed the most recent models based on explaining the factors underlying the unethical use of information technology. In the second part there are highlighted the academic challenges in terms of the ethical aspects of the use of information technology. The purpose of this article is to explore main themes related to the ethical issues of the use of information technology in the academic environment using a systematic review of literature. There were identified the following themes: attitudes, perceptions, judgments, opinions or beliefs towards the ethical use of IT, ethical or unethical behaviour in computer use, the relationship between personality and unethical Internet use, awareness of computer ethics, ethical decision-making in using IT, ethical code on IT use. In the new context of ethical use of information technology in educational activities in universities, it is necessary to cultivate the importance of understanding the legal and illegal use of computers by students and teachers, and the ethical role models that teachers should represent for students.

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## 1. Introduction

For education in general and higher education in particular, the introduction of the information technology (IT) has constituted both an opportunity and a source of problems. Many forms of academic fraud are mediated and supported by electronic means. The improper use of technology in education is a topic of recent interest on the agenda of researchers in Education Sciences and ethics. The use of information technologies has raised new ethical issues (Alakurt, Bardakçi, & Keser, 2012). Information technology creates more ethical challenges than other types of technologies (Brooks, 2010). On the one hand, these technologies provide many benefits but, on the other hand, give rise to the danger of their use for dishonest purposes such as piracy, invasion of privacy, unauthorized access to data (Mason, 1986). Although ethical issues in the IT field do not differ from wider societal issues, it is necessary to thoroughly understand the practices of using technologies to understand the main cause of these ethical issues (Kim et al., 2014). According to Chatterjee, Valacich, & Sarker (2011), unethical use of IT is influenced primarily by social (subjective norms), situational (moral strength) and technological (technological facilitation) considerations. Ki and Ahn (2006) consider that unethical information technology use in education has become a serious problem. Unethical IT use by students and teachers is a major challenge in educational institutions (Özer, Uğurlu, & Beycioglu, 2011). Higher education institutions are increasingly worried that new technologies are causing students to be dishonest or unethical in the use of information (Cilliers, 2017). The possibility for various types of academic dishonesty to occur following the use of IT in academic environment is high (Akbulut, Şendağ, Birinci, Sahin, & Odabasi, 2008). Brey (2007) emphasizes the role of computerized ethics in the education system, with particular emphasis on university education and university policy. As mentioned by Brooks (2010), it is a priority that students and teachers become aware of all aspects of information technology that involve ethical components.

### 1.1. The concept of unethical use of information technology

The specific concept of unethical information technology use is defined in close connection with the main ethical issues identified: Privacy, Accuracy, Property and Accessibility - the PAPA framework (Mason, 1986). The concept of unethical information technology use (UITU) was introduced for the first time by Chatterjee (2005), which developed Mason's approach (1986), suggesting that UITU refers to violation of one or more ethical pillars in the information age: privacy, accuracy, property and access. Charki, Jossierand, & Boukef, (2017) define UITU as "technology use that is either illegal or morally unacceptable to the larger community". There are a number of current theoretical models based on explaining the factors of unethical use of information technology: the model of unethical usage of information technology (Chatterjee, 2005), unethical behavioural model in the Social Networking Sites context (Jafarkarimi, Saadatdoost, Sim, & Hee, 2016), a casual model for ethical behavioural intention of IT (Seif, 2016). The main ethical issues that arise from the impact of technology use in educational activities are the following (Akçay, 2008; Ashman et al., 2014; Brey, 2007; Cilliers, 2017): privacy, security and ownership of personal data, hacking, intellectual property, netiquette, vandalism, access, accuracy of inferencing, the effect of personalization on individual capability, the commodification of education, improper use of computer resources, academic dishonesty in online assessment, anonymity and pseudonymity, online harassment and hate speech, academic freedom and free speech online.

## **1.2. Academic challenges in terms of the ethical aspects of the use of information technology**

Technological resources favoured unethical behaviours, especially among students (Karim, N. S. Zamzuri, & Nor, 2009). In digital learning environments, students face a wide range of ethical challenges regarding honesty, integrity and the correct use of content (Blau & Eshet-Alkalai, 2017). The data of studies conducted in higher education show that students have misconceptions about ethics in IT use (Calluzzo & Cante, 2004), as well as the fact that they lack knowledge in this field (Hamiti, Reka, & Baloghová, 2013). Cilliers (2017) recommend to include in the curriculum for higher education Ethics of information in order to prepare students to deal with these ethical issues. The main problems of unethical IT use by teachers from academia cover issues like plagiarism, ignoring copyright, file sharing, posting incorrect information, cyber-bullying, delivering courses and exams in laboratories with IT equipment, distance learning, use of licensed software, communication through Facebook and You Tube, lack of academic integrity (Igwe & Ibegwam, 2014) etc. Teachers prepare courses by downloading materials on the Internet, apply assessments online, use email to send and receive feedback, provide students with CDs and web links related to course content, so that all these activities raise ethical issues of which teachers and students should be aware (Jamil, Tariq, R-u-H., & Shah 2013). The priority is for teachers to feel responsible for educating students about “what is right and what is wrong” in the use of IT (Beycioglu, 2009). Increasing emphasis is put on digital ethics (UNESCO, 2011), which constitutes an important part of the digital competence that each teacher should develop. Kuzu (2009) proposes solutions regarding the problems related to computer ethics through the help of practitioners with an information and communication technology background.

## **2. Problem Statement**

Students and teachers use information technology on a daily basis in the academic environment to achieve different educational activities. Moor (2005) considers that there is a lack of understanding of the ethical usage rules of new technologies, which leads to a lack of information on their responsible use. The more the population becomes smarter in developing and using technology, the greater the risk of it being used to the detriment of individuals, organizations or society in general (Brooks, 2010). One of the basic solutions is the introduction of an ethical code of conduct regarding the IT use at the level of higher education. From the perspective of studies, the ethical use of information technology by university students and professors constitute an area that has largely been ignored. Paradice, Freeman, Hao, Lee, & Hal (2018) found that research incorporating an ethical perspective on the use of IT has shifted from focusing on codes of ethics and general notions of behaviour to more sophisticated models of piracy, privacy and security.

## **3. Research Questions**

At the basis of the study there are the following question: What themes have there been addressed in research over the past 15 years in terms of ethical use of information technology in higher education?

## **4. Purpose of the Study**

The purpose of this article is to explore the main themes related to the ethical issues of the use of information technology in the academic environment using a systematic literature review (SLR).

## 5. Research Methods

This systematic literature review was used with the aim of identifying articles published in journals indexed in international databases. The review was conducted in October 2018 on a number of 36 articles achieved in the last 15 years from 2003 to 2018. The method implies "a review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review" (Moher, Liberati, Tetzlaff, & Altman, 2009). Systematic analysis is useful for this study, because it is based on an objective, transparent and rigorous approach to minimise bias and ensure future replicability (Mallett, Hagen-Zanker, Slater, & Duvendack, 2012). While most systematic reviews are conducted in a rigid way, the systematic review in this article is based on a more flexible approach, respecting the main principles of research methodology.

## 6. Findings

A thematic analysis was applied to calculate the frequencies of the themes in the articles. In accordance with the procedure proposed by Thomas and Harden (2008), a series of steps were taken to analyse and interpret the data. In the first stage, the text was encoded and descriptive themes were identified. In Table 1 there are presented the key elements of the study, such as the purpose, design of the study, the region, and the main themes regarding the ethical issues of using IT in higher education encountered in the articles selected for review.

**Table 01.** Major themes on the ethical aspects of using information technology in higher education

Authors	Purpose	Study design	Countries	Major theme/s
Siegfried (2004)	- assessing the attitudes on issues of computer ethics	- 224 students; - questionnaire	United States	attitudes towards the ethical use of IT
Leonard & Cronan (2005)	- identifying the attitude toward ethical behaviour in computer use	- 422 students; - five computing cases	United States	ethical behaviour in computer use
McCarthy, Halawi, & Aronson, (2005)	- measuring information ethical beliefs	- undergraduate and graduate students; - five ethical scenarios	United States	beliefs towards the ethical use of IT
Siponen & Vartiainen (2005)	- determining the factors affecting the unauthorized copying of software	- 249 university students; - quantitative questionnaire	Finland	unethical computer use behaviour
Etter, Cramer, & Finn, (2006)	- analysing the influence of personality factors on attitudes about cheating	- 237 students; - questionnaire	United States	attitudes towards the ethical use of IT
Namlu & Odabasi (2007)	- examining the unethical computer use behaviour	- 216 students; - unethical computer use behaviour scale	Turkey	unethical computer use behaviour
Akbulut, Uysal, Odabasi, & Kuzu (2008)	- evaluating unethical computer using behaviours	- 559 students; - unethical computer using behaviour scale	Turkey	unethical computer use behaviour
Beycioglu (2009)	- investigating unethical computer using behaviours	- 314 prospective teachers; - unethical computer use behaviour scale	Turkey	unethical computer use behaviour
Karim et al. (2009)	- exploring the relationship between the big five personality and unethical Internet use	- 252 students; - questionnaire	Malaysia	unethical Internet use

Kuzu (2009)	- identifying the opinions regarding the ethical issues of the IT	- 20 computer professionals; - interviews	Turkey	opinions towards the ethical use of IT
Acilar (2010)	- examining attitudes towards software piracy	- 125 students; - questionnaire	Turkey	attitudes towards the ethical use of IT
Acilar & Yoruk (2010)	- evaluating the attitudes towards ethical use of computers	- 248 students; - questionnaire	Turkey	attitudes towards the ethical use of IT
Brooks (2010)	- developing an ethics code that includes key areas in using IT	- eight students; - reflections, content analysis	United States	ethical code on IT use
Chiang & Lee (2011)	- exploring the ethical attitude and behaviours regarding computer use	- 660 political science and public administration students; - questionnaire	Taiwan	ethical attitude and behaviours regarding computer use
Kaya & Durmus (2011)	- measuring unethical computer use behaviour	- 298 preservice teachers; - Unethical Computer Using Behaviour Scale	Turkey	unethical computer use behaviour
Alakurt et al. (2012)	- assessing information judgments about ethical issues	- 35 student teachers; - four scenarios based on IT ethical problems	Turkey	judgments about information ethical issues
Coklar (2012)	- determine ICT ethical leadership	- 305 students; - ICT ethical leadership scale	Turkey	ICT ethical leadership
Iyadat, Ashour, & Khasawneh, (2012)	- determining the level of awareness about computer ethics	- 180 university students; - Computer Technology Ethics Questionnaire	Jordan	awareness about computer ethics
Liu (2012)	- analysing cross-cultural differences between attitudes towards information ethics	- 105 American and 98 Chinese students; - information ethics scenarios	United States, China	attitudes towards the ethical use of IT
Quah, Stewart, & Lee, (2012)	- examining attitudes toward plagiarism	- 160 business students; - questionnaire	Malaysia	attitudes towards the ethical use of IT
Jamil et al. (2013)	- identifying the attitudes towards the ethical use of computer and IT	- 498 teachers; - questionnaire	Pakistan	attitudes towards the ethical use of IT
Maisiri & Hikwa (2013)	- establishing factors of information ethics to the use of social media	- 19 faculty members; - exploratory-descriptive Design	Zimbabwe	attitudes towards the ethical use of IT
Pinar, Cakinrel, & Toker, (2013)	- assessing the ethical behaviour regarding informatics	- 154 academics; - scale of the improper computer use behaviour	Turkey	ethical behaviour in using IT
Hamiti et al. (2014)	- investigating ethical perceptions of using IT	- 225 medical students; - survey	Macedonia	ethical perceptions of using IT
Hosny & Fatima (2014)	- identifying the attitude towards cheating and plagiarism	- 148 students; - survey	Saudi Arabia	attitudes towards the ethical use of IT
Kim et al. (2014)	- measuring factors affecting information ethics behaviour intent	- 449 college students; - survey	Korea	the intention of ethical behaviour in using IT
Talib (2014)	- evaluating the attitudes towards computer ethics	- undergraduate students; - questionnaire	Jordan	attitudes towards the ethical use of IT
Abolarina, Tiamiyu, & Eluwa (2015)	- examining computer ethics and security awareness behaviour	- 520 students; - questionnaire	Nigeria	awareness about computer ethics
Akdemir, Vural, & Çolakoğlu (2015)	- investigating the probability to perform unethical behaviours in the virtual environment	- 352 prospective teachers; - 22 scenarios	Turkey	unethical computer use behaviour
Jamal, Ferdoos, Zaman, & Hussain, (2015)	- exploring the perceptions regarding cyber-ethics	- 304 students; - structured questionnaire	Pakistan	perceptions regarding cyber-ethics

Garcias & Marin (2016)	- assessing ethics issues of digital contents	- 125 pre-service teachers; - questionnaire	Spain	opinions towards the ethical use of IT
Jafarkarimi et al. (2016)	- identifying the factors of ethical decision-making in using social networking sites	- 441 students; - questionnaire	Malaysia	ethical decision-making in using IT
Salehnia & Salehnia (2016)	- measuring the perceptions on ethical issues in computing	- students; - questionnaire	United States	ethical perceptions of using IT
Seif (2016)	- analysing ethical behavioural intention of IT	- 234 students; - questionnaire	Iran	ethical behaviours regarding IT use
Cilliers (2017)	- evaluating the information ethical issues	- 312 first-year students; - closed-ended questionnaire	Eastern Cape Province	opinions towards the ethical use of IT
Sargolzaei & Nikbakht (2017)	- identifying ethical issues in the field of information technology	- 283 students; - questionnaire	Iran	opinions towards the ethical use of IT

The themes identified from the analysis presented in Table 02 were the following: attitudes, perceptions, judgments, opinions or beliefs towards the ethical use of IT, ethical or unethical behaviour in computer use, the relationship between personality and unethical Internet use, awareness about computer ethics, ethical decision-making in using IT, ethical code on IT use. Of the 36 analysed studies, 31 are conducted on students and only 5 on teachers or university members to explore the ethical aspects of IT use. According to the region where the studies were conducted, there is very little research on exploring the ethical aspects of IT use in European universities.

## 7. Conclusion

The results of the systematic literature review indicate that most studies are focused on investigating attitudes towards the ethical use of information technology in higher education. It also finds that most studies involve university students and very few are addressed to university members. The implications of the research are multiple for the representatives of the university environment. First of all, there is highlighted the importance of the ethical aspects of the responsible use of computer technology in higher education. Secondly, university members may be more aware of the role of ethical aspects of using information technology and can act to make good use of them. Thirdly, the results of this study can be used to initiate new research to assess the impact of ethical use of information technology and to prevent violations of their proper operating rules in higher education.

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