

ІСТОРІЯ ТА МЕТОДОЛОГІЯ ПОРІВНЯЛЬНО-ПЕДАГОГІЧНИХ ДОСЛІДЖЕНЬ

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Ethics of scientific research as a component of students' methodological competency

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У статті проаналізовано підходи до попередження академічної несправедливості і стратегії викладання етики наукових досліджень студентам. Привернено увагу до необхідності базування академічної цілісності на усвідомленні студентами етичних проблем і на розвитку моральних якостей і дій як основи самостійності і відповідальності, а не формальних знань про етику наукових досліджень як предмет.

Ключові слова: академічна цілісність, методологічна компетентність, етика наукових досліджень.

The ethics of scientific research

Scientific ethics is a set of values – truth, knowledge, integrity, responsibility, morality – on which the scientific research practice is based. These values also form the core of academic integrity¹.

Ethical standards in the form of declarations and ethical codices were created with the purpose of protecting science and society from scientific dishonesty. The creators of these documents are universities, academies, scientific associations. Despite their differences in considerations, the base of all these documents is the tendency to promote scientific integrity and regulation of scientific research. On an international level, UNESCO, in its documents², proclaims scientists' responsible and ethical behaviour and indicates the changes in the contemporary 'scientific landscape' which open new opportunities, but also new challenges. The scientific knowledge is a common possession of the mankind, and the accumulated scientific knowledge, thanks to the development of information technologies, is rapidly disseminating, making the science a global good. In the contemporary era of global science, the necessity of creating and implementing universal values and codes of behaviour on which national legislatives³ will rely, becomes an imperative.

¹ According to Prpić (1997), distinguished Croatian scientists consider the 'core' of scientific ethics to be comprised of: the devotion to seeking the truth, responsibility for the results and effects of research, scientific rigidity of applied and developmental research, avoidance of fast generalizations, support of scientific institution quality and introduction of gifted students into scientific work.

² Declaration on science and the use of scientific knowledge and the Science agenda – Framework for action, 1999, Science for the twenty-first century; a new commitment, 1999, Code of conduct social science research, 2006.

³ In Croatia, the issues related to ethics of scientific behaviour are regulated by the Law on scientific activity and higher education, universities' ethical codices and specific professions.

On teaching ethics of scientific research

Considering that scientific and academic communities are inseparable, the teaching about scientific ethics is a constituent part of students' academic education. Scientists who alongside with researching, also teach professionally, have a duty to teach scientific ethics to students, acquaint them with the principles and moral behaviours through which the ethics of scientific research practice is accomplished. It is necessary to direct the teaching about scientific research towards incorporation with students' value system, and base students' behaviour on comprehension of theoretical foundations, consideration of values and grasp of the essence of scientific ethics in accordance with scientific integrity.

Procedures such as instructing students about the rules of citing and paraphrasing, alongside with practicing the applications of norms of proper literature references and analysis of examples of correct and incorrect citations and paraphrases, follow the approach in which teaching about ethics is not reduced to memorizing rules, but includes development of skills and construction of beliefs. The procedures in which students analyse scenarios in which the actors are faced with ethical dilemmas or in which scientists or students violate scientific ethics are also useful, because in this way they deepen their sensitivity for ethical issues and develop critical reasoning. These scenarios are shaped as stories whose 'heroes' violate ethics of scientific research in various ways, and the subjects assess the (un)justification of these procedures, position themselves as actors and estimate what kind of sanctions the violators should receive. The analysis of these properly chosen and representative fictional and real situations and examples of unethical behaviour, identification of the type of 'violation', consideration of the motives, consequences and appropriate sanctions with active and argued discussion about these issues and dilemmas deepens understanding, develops critical thinking and helps students see the 'abstract' ethical norms in a real-life context. Including students into conducting a research through their research projects enables them to go through all research phases with the guidance of their mentor, from selecting a problem to writing a report about the conducted research. In this way, students actively apply acquired knowledge and question various ethical issues of conducting a scientific research (methodologically and ethically proper use and referencing of literature, ethical treatment of subjects, processing and interpretation of research results, writing the research report). In addition, in case the research is conducted in pairs or in teams, it provides an opportunity to question ethical issues related to authorship. Coherent monitoring over ethical compliance in students' seminar, bachelor's-degree diploma papers or master's-degree diploma papers, alongside with an example of ethical behaviour of the teacher in his/her own scientific research, are also a worthy contribution to construction of students' scientific integrity.

Students need to get acquainted with ethical codices and sanctions against violation of scientific ethics; however, the ethics of their behaviour will be based on comprehension of ethical principles, and not on fear of punishment. The analysis of standards and prescribed sanctions in various ethical codices and a discussion about them, application to concrete and fictional cases, is an active way of introducing these documents.

In case the teaching of ethics of scientific research is based on a problem approach and active participation of students, and not just a verbal presentation about scientific ethics, valuable learning outcomes are to be expected. In this case, thanks to the instruction, students will be able to clearly define scientists' ethical rules and ethical

procedures, understand their essence and value, differ ethics from scientific dishonesty, understand ethical problems a scientist is faced with while conducting a research, develop skills of ethically and methodologically proper use of references, citing and paraphrasing, be able to critically analyse and consider read reports about scientific research and follow scientific ethics in their own research.

Students' plagiarism and how to prevent it

Plagiarism is a complex ethical problem, 'a phenomenon with many faces'. Alongside with literally taking over another person's text without naming the reference, plagiarism also includes 'stealing' other people's ideas and thoughts, paraphrasing without referencing and self-plagiarism, and in the context of students' plagiarism it also includes 'purchasing' or presenting other people's complete papers as their own. In addition, some authors emphasize the distinction between complete and partial plagiarism, and between deliberate plagiarism and negligent and inexperienced reference use caused by methodological illiteracy. Results from a research on academic dishonesty among students, along with ethics violation such as cheating on exams, stealing, purchasing and giving away authorship of seminar and other papers, using references without naming it, point to a pandemic of plagiarism on universities around the world. Empirical data of various research⁴, despite variations in representations of plagiarism, indicate students' plagiarism as a serious problem. Plagiarism is a cultural construct that can be completely comprehended only by placing it into a social and cultural context. In societies in which individuality is less appreciated, individual intellectual property is more often considered 'a common good', therefore the sensitivity towards plagiarism is lower, and in environments in which individualism is more appreciated, the sensitivity for recognizing plagiarism is larger. In addition, the shift of higher education from an elitist position to a massive scale, along with a shift from individual to group learning tasks can also be considered environmental factors increasing the phenomenon of students' plagiarism. Peterson, Haviland, Mullin (2009) point out how group tasks and common students' projects can, as a by-product, create a 'fruitful context' for forms of plagiarism, as 'giving away authorship', as well as, accepting the beliefs of the group, that plagiarism is something 'everyone does', and is therefore acceptable.

Despite cultural and environmental differences, the tendency of plagiarism increase among students is noticeable as a ubiquitous phenomenon, and, in addition to that, it has lately been expanding. For example, Ercegovic, Richardson (2004) present data according to which plagiarism among American students has tripled since the 80s and 90s. This tendency can for the most part be attributed to the digital era, as agreed by numerous authors (Bilić-Zulle, 2007; Børsen, 2006; Hayes, Introna, 2012). Easily accessible internet sources expose students to the 'copy-paste' temptation, and the numeracy of the internet sources supports their belief that their plagiarism will remain undetected. Furthermore, plagiarizing students are becoming more and more refined by replacing the 'copy-paste' plagiarism with less obvious and more disguised forms of 'cyber-cheating'. The 'patchwriting' or 'pastiche' procedure is more refined than the 'copy-paste' procedure, in which a person's text is taken over without naming the reference with 'cosmetic changes' in the formulation which are an attempt to conceal the

⁴ In the Jones, Reid, Bartlett (2005) study, between 63 % and 87 % students of American universities (depending on the academic discipline) have, according to their own admission, committed a plagiarism during their study. In the Pupovac, Bilić-Zulle, Petrovečki (2008) study, conducted at four European universities, 66 % Spanish students, 35 % British students, 47 % Bulgarian students and 80 % Croatian students admit to plagiarism during their study.

plagiarism. More complex and difficult to detect are also cases in which the plagiarist combines different ways of plagiarism – e.g. a complete and partial plagiarism so that changes i.e. fragments of texts ‘stolen’ from various other sources are incorporated into the text that is ‘entirely stolen’. Also, ‘unattributed’ paraphrases are more difficult to detect than ‘unattributed’ citations. However, the technology making plagiarism easier also makes the detection of plagiarism easier. Computer programs detecting ‘internet’ plagiarism are becoming more common and more sophisticated, and are no longer limited to the English language area⁵. Despite the more and more sophisticated computer programs for detection of plagiarisms, the human remains an irreplaceable factor. Above all, what is crucial in detecting students’ plagiarism is the resolution and consistence of the professor valorising students’ papers, who is able to recognize even the more refined forms of plagiarism. Plagiarism can also be detected even with the ‘naked eye’, based on numerous indicators – from passages that differ from the main text in style or quality of contents, to inconsistency in text formation.

Even though computer programs detecting plagiarisms are useful instruments in the ‘fight’ against students’ plagiarism, they are only a tool. If those educating students do no deal with uncovering the reason students plagiarize, if they reduce teaching about the ethics of scientific research to verbal presentation of principles and rules, to ‘flaunting’ ethical codices and threatening with sanctions, a step ‘forward’ will not be undertaken. There will also be no progress without a change in the wider social and academic climate in which the cases of scientific dishonesty are relativized, in which the educator himself is sometimes a plagiarist (although more skilfully than the students), a climate in which the educators rather choose ‘to turn a blind eye when they encounter students’ plagiarism (at least when it is not too obvious) in order to avoid the time and the effort necessary to ‘prove’ the plagiarism. Devlin (2008, 8) elaborates the reasons why the academic community is not sufficiently persistent and consistent in the struggle against students’ violation of scientific ethics: „(...) a fear by some staff of risking collegial relationships with students by seeming or becoming authoritarian through a highly visible focus on minimising plagiarism; a reluctance by some staff to become the one who ‘dares to differ’ where it has been somewhat common cultural practice to ‘turn blind eye’ to some relatively minor cases of plagiarism; a reluctance by some staff to process a case of suspected plagiarism due to the time and workload involved in ‘proving’ the plagiarism; a belief by some staff that the University may be reluctant to act on some cases of suspected plagiarism and that therefore the effort expended in bringing a case may be fruitless in terms of dissuading or punishing plagiarism; a concern by some senior staff that following through with cases of repeated plagiarism that may lead to students’ expulsion might damage the international reputation of the faculty or university; and a further concern by some senior staff that such damage to reputation may result in reduced international enrolments“.

Hinman (according to Olasehinde-Williams, 2009) names three approaches to suppression of academic dishonesty: ‘Police’, ‘Virtues’ and ‘Prevention’ approaches. The ‘Police’ approach leans on detection and punishment of violations of scientific ethics, ‘Virtues’ approach focuses on the construction of moral and ethical values, and the

⁵ The most well-known network services for detecting plagiarism by determining correspondence of the paper in question with the network texts, and which are often used in an academic environment are Turnitin® and EVE – Essay Verification Engine, CaNexus.com and Glatt Plagiarism Screening Program (this program for detection of plagiarisms is supplemented with a tutorial Glatt Plagiarism Teaching Program which teaches the user about plagiarism and the ways to avoid plagiarism and self-plagiarism).

'Prevention' approach builds upon the creation of conditions that discourage students' attempts to violate the norms of scientific ethics. McInnis, Devlin (2002) suggest four strategies of prevention of students' scientific ethics violation: (1) joined efforts of academic institutions in recognizing and sanctioning 'academic misconducts'; (2) thorough education of students about copyright and rules of citing and paraphrasing; (3) creation of environment that discourages violation of academic integrity through a consistent monitoring of students' papers; (4) improvement of procedures to detect plagiarism. Devlin (2006) criticises reducing the action against students' violation of scientific ethics to 'catch and punish' policy in which the environment and the reasons of violation are not questioned, and instead advocates a proactive agency of the academic community directed towards improvement of students' methodological literacy and construction of moral values.

We estimate that the construction of academic integrity and students' methodological competency should not only be based on formal knowledge about scientific ethics as a discipline, but also on students' sensibilization over ethical issues and towards developing the ability of moral reasoning and acting as a stronghold of autonomy and responsibility of students', future scientists. The basic steps in this process are affirmation of basic values of truth, knowledge and integrity; encouragement and reinforcement of motivation for learning through meaningful and adequately challenging and interesting contents and tasks; promoting an environment of trust and a gradual transfer of responsibility from the professor onto the students; determination of clear and transparent rules of behaviour, high, but realistic expectations and standards.

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