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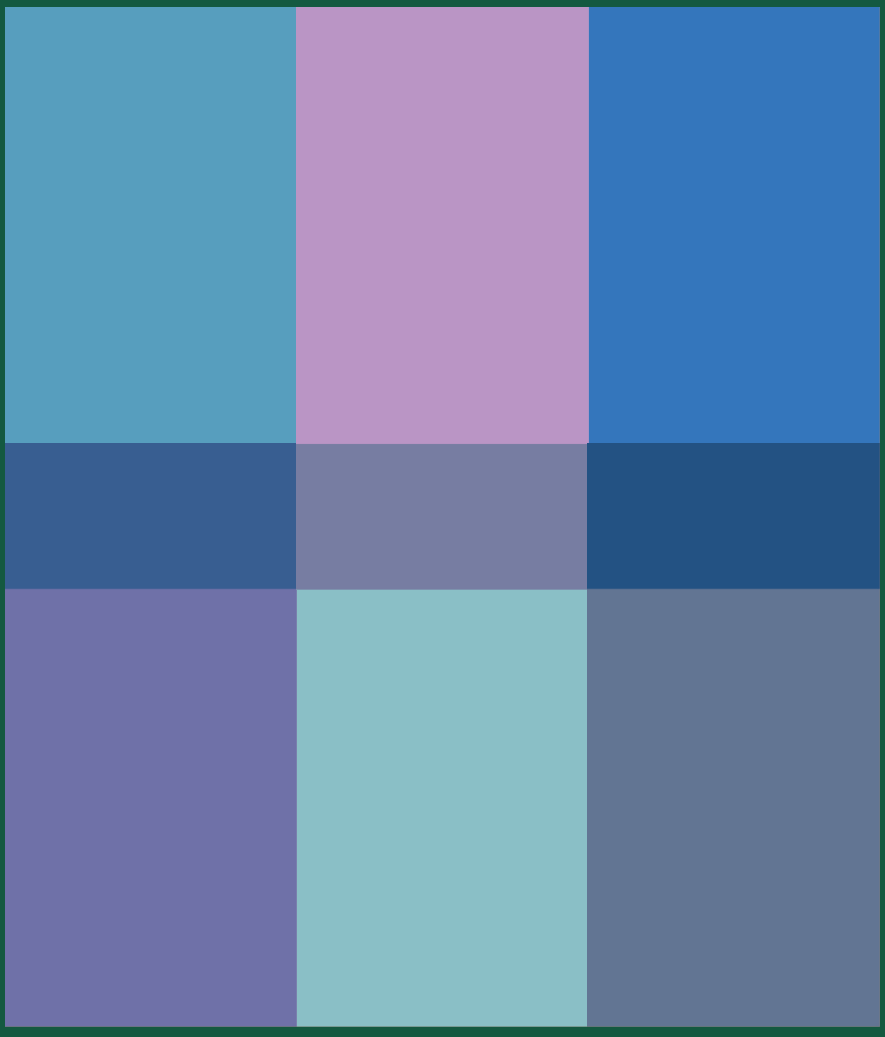

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C·E·P·S *Journal*

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The CEPS Journal is an open-access, peer-reviewed journal devoted to publishing research papers in different fields of education, including scientific.

Aims & Scope

The CEPS Journal is an international peer-reviewed journal with an international board. It publishes original empirical and theoretical studies from a wide variety of academic disciplines related to the field of Teacher Education and Educational Sciences; in particular, it will support comparative studies in the field. Regional context is stressed but the journal remains open to researchers and contributors across all European countries and worldwide. There are four issues per year. Issues are focused on specific areas but there is also space for non-focused articles and book reviews.

About the Publisher

The University of Ljubljana is one of the largest universities in the region (see www.uni-lj.si) and its Faculty of Education (see www.pef.uni-lj.si), established in 1947, has the leading role in teacher education and education sciences in Slovenia. It is well positioned in regional and European cooperation programmes in teaching and research. A publishing unit oversees the dissemination of research results and informs the interested public about new trends in the broad area of teacher education and education sciences; to date, numerous monographs and publications have been published, not just in Slovenian but also in English.

In 2001, the Centre for Educational Policy Studies (CEPS; see http://ceps.pef.uni-lj.si) was established within the Faculty of Education to build upon experience acquired in the broad reform of the national educational system during the period of social transition in the 1990s, to upgrade expertise and to strengthen international cooperation. CEPS has established a number of fruitful contacts, both in the region – particularly with similar institutions in the countries of the Western Balkans – and with interested partners in EU member states and worldwide.

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Revija Centra za študij edukacijskih strategij je mednarodno recenzirana revija z mednarodnim uredniškim odborom in s prostim dostopom. Namenjena je objavljanju člankov s področja izobraževanja učiteljev in edukacijskih ved.

Cilji in namen

Revija je namenjena obravnavanju naslednjih področij: poučevanje, učenje, vzgoja in izobraževanje, socialna pedagogika, specialna in rehabilitacijska pedagogika, predšolska pedagogika, edukacijske politike, supervizija, poučevanje slovenskega jezika in književnosti, poučevanje matematike, računalništva, naravoslovja in tehnike, poučevanje družboslovja in humanistike, poučevanje na področju umetnosti, visokošolsko izobraževanje in izobraževanje odraslih. Poseben poudarek bo namenjen izobraževanju učiteljev in spodbujanju njihovega profesionalnega razvoja.

V reviji so objavljeni znanstveni prispevki, in sicer teoretični prispevki in prispevki, v katerih so predstavljeni rezultati kvantitavnih in kvalitativnih empiričnih raziskav. Še posebej poudarjen je pomen komparativnih raziskav.

Revija izide štirikrat letno. Številke so tematsko opredeljene, v njih pa je prostor tudi za netematske prispevke in predstavitve ter recenzije novih publikacij.

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Izdajanje revije v letih 2023 in 2024 sofinancira Javna agencija za raziskovalno dejavnost Republike Slovenije v okviru Javnega razpisa za sofinanciranje izdajanja domačih znanstvenih periodičnih publikacij.

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Varia

Reviews

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Editorial

Teaching Research Integrity

Contemporary research is extremely competitive and the pressure to "publish or perish" is high, especially among young researchers. As a result, the risk of sloppy science and scientific misconduct is increasing. While it is difficult to precisely determine the scale on which scientific misconduct occurs, we can see, for example, that the number of retractions of papers from journals is increasing. There is therefore an urgent need to educate young researchers in responsible research practices and make them "streetwise" with regard to the topics they will encounter in their research. The increasing international cooperation between universities underscores this urgency. It is now widely accepted that most questions in daily research practices belong to a grey area (questionable research practices – QRP) in which the right or wrong nature of decisions and conduct is not always immediately clear, as opposed to the clear-cut cases of FFP (falsification, fabrication and plagiarism) that we find in the media. Moreover, the concept of Responsible Conduct of Research (RCR) focuses on what is needed in order for students and scientists to learn to recognise problematic situations, to discuss these situations with their peers, and to devise strategies for dealing with them.

The impetus for the focus issue was the 'Integrity' project, which ran from 1 October 2018 to 31 August 2021 under the Erasmus+ programme (project number: 2018-1-NL01-KA203-038900).[1] In addition, colleagues from two other projects on academic and research integrity were invited to report on their research findings: the 'Integrity' project, funded by the European Union's Horizon 2020 research and innovation programme under grant agreement No. 824586,[2] and the project 'Strengthening Academic Integrity – An Interdisciplinary Research-Based Approach to Ethical Behaviour in Higher Education', funded by the Ministry of Science of Montenegro.[3] Thus, the articles presented in the focus issue report on research findings from three international projects that address issues of integrity in research education. The second and fifth articles report on research conducted within the Erasmus+ Integrity project, the fourth article relates to the H2020 Integrity project, and the first, third and sixth articles report on the results of the 'Strengthening Academic Integrity' project. The last, seventh article in the focus issue is not related to the aforementioned

1 https://erasmus-plus.ec.europa.eu/projects/search/details/2018-1-NL01-KA203-038900
2 https://h2020integrity.eu/
3 https://www.sai.ucg.ac.me/

projects, but was published as part of an open call for papers and extends the issue of integrity in research, which in the first six articles is mainly focused on the European context, to the global context.

The published articles address questions regarding teaching related to research integrity, such as: How can research integrity policies (codes of conduct, institutional policies, government policies, etc.) be translated into the educational setting and curricula of higher education institutions? How can the "grey area" in teaching related to research integrity be addressed? How can we successfully train students to make them streetwise regarding RCR? What is needed to build the capacities of students and researchers regarding research integrity? How can we deal with research integrity education in complex environments, such as multidisciplinary or interdisciplinary environments and international collaborations? What are the complex reasons behind violations of research integrity?

The papers presented in the focus issue address these topics in various ways and in different national and cultural contexts. They are arranged as follows.

The issue opens with a theoretical article by Miloš Bošković entitled *Rethinking Legislation Governing Academic Integrity in the European Context*, which argues that legislative intervention rather than deontological rules might be an appropriate tool to address academic integrity concerns, especially in civil law jurisdictions, which is the case in most European countries. The article does not offer a ready-made approach, but its reflections may serve as inspiration for governments seeking to improve existing academic integrity rules.

The issue continues with the article by Jurij Selan and Mira Metljak *Developing and Validating the Competency Profile for Teaching and Learning Research Integrity*, in which the authors argue for the competency profile they have developed for teaching and learning research integrity based on four assumptions: inclusion of all levels of study (BA, MA and PhD); integration of research integrity into research education itself; addressing research integrity issues in context-specific practices; and special attention to the "grey area" or questionable research practices (QRPs).

The third article by Sanja Čalović Nenezić, Milena Krtolica, Milica Jelić and Suzana Šekarić, entitled *Perceptions of Students and Teachers of the University of Montenegro on Academic Integrity*, examines the perception of students and teachers of the University of Montenegro on various segments of academic honesty. The results show that the respondents understand the importance of academic integrity and honesty as its principle, but they do not recognise all of the areas it encompasses in the same way.

In the fourth article, *Empowering Supervisors Towards Responsible Research Conduct in Supervision via an Online Course: A Pilot Study*, authors Miriam van Loon and Mariëtte van den Hoven report on a course for supervisors that addresses their responsibility and role in training junior researchers in research integrity. They describe the evidence base that helped design the course and how the course is experienced by the supervisors who participated in the pilot study in early 2022.

The fifth article, entitled *Academic Writing in Teaching Research Integrity* by Mateja Dagarin Fojkar and Sanja Berčnik, evaluates an online course for undergraduates (BA) focused on developing their academic writing skills as a foundation for responsible research practice. The participating students rated the course positively, but concluded that they needed more practice in this area. The authors therefore suggest that a university course be established to provide all students with the necessary academic writing skills.

The sixth article, written by Dijana Vučković, Sanja Peković, Marijana Blečić, Jovana Janinović and Rajka Đoković, is entitled *Opinions of Montenegrin University Students and Teachers about Plagiarism and its Prevention*. The article identifies the opinions of university students and teachers about plagiarism and its prevention. It reports that the participants take plagiarism seriously when academic stakeholders commit to it, but that there is a need to provide training on academic writing so that they feel confident in their writing.

The focus issue is concluded with the article *Plagiarism in the Research Reports of Indian Doctoral Students: Causes and Remedial Action Plan* by Tapan Kumar Pradhan and Ajit Kumar. In the article, the authors identify possible causes and remedial action plans to address plagiarism in research reports of Indian doctoral students. The article assumes the widespread occurrence of plagiarism and its causes, and presents a remedial action plan that includes: establishing a research ethics committee at all academic or research institutions; proper understanding of plagiarism and its implications by conducting training, workshops and awareness campaigns early in the life of doctoral students; clarity about the purpose of research for doctoral students and emphasis on the quality of research work; development of academic writing skills; and free availability of anti-plagiarism software for all students and faculty members. The focus issue is complemented with two articles from the Varia section and two book reviews.

The first Varia article is written by Janez Drobnič and is entitled *People with Special Needs and Career Development Based on Strength*. The article deals with career counselling for people with special needs based on the paradigm of positive psychology, which is becoming increasingly relevant in counselling and

therapeutic processes. The author argues that in the case of counselling for persons with special needs, a balance needs to be achieved between a strength approach and other approaches that focus on personal problems and weaknesses.

The second Varia article is written by Mateja Ploj Virtič, Andre Du Plessis and Andrej Šorgo and entitled *Development and Validation of the "Mentoring for Effective Teaching Practicum Instrument"*. In the paper, the authors introduce, evaluate, and adapt the Mentoring for Effective Primary Science Teaching instrument so that it is more universal and can be used in follow-up studies to improve learning outcomes in classroom practice.

The first book review is related to the research integrity issue. Bert Theunissen reviews Jaap Bos's book *Research Ethics for Students in the Social Sciences* (Published by Springer Cham, 2020; XVI, 287 pp.: eBook ISBN 978-3-030-48415-6). In the second review, Alenka Žerovnik reviews a book from the field of informatics: Nataša Hoić-Božić and Martina Holenko Dlab, *Uvod u e-učenje: obrazovni izazovi digitalnog doba* (Published by Sveučilište u Rijeci, Odjel za informatiku, 2021; 215 pp.: ISBN: 978-953-7720-53-7.)

The focus issue is well rounded and provides relevant perspectives on research integrity topics, with an emphasis on the role of teaching in enhancing and promoting research integrity. There is perhaps one topic that is missing from the focus issue because it came to light after the issue was conceived and the research reported in the articles was conducted. It is the problem of the influence and impact of artificial intelligence (AI) on research integrity. Although the problem of AI in relation to research integrity did not appear out of nowhere and had been recognised earlier, it was not until November 2022, when ChatGPT was launched, that the use of AI tools was publicly perceived as an opportunity for research, on the one hand, but also as a threat to research integrity, on the other. As a result, in 2023, many government agencies, universities, scholarly journals and publishers have already rushed to include safeguards related to AI tools in their protocols and codes of conduct, and many researchers committed to academic integrity have raised the issue of AI in the scholarly public sphere. From this perspective, therefore, this focus issue could be seen as an opportunity that could lead to another focus issue of the CEPS Journal in the near future that would specifically address the influence and impact of AI on academic and research integrity.

Jurij Selan, Bert Theunissen and Mariëtte van den Hoven

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Rethinking Legislation Governing Academic Integrity in the European Context

Miloš Bošković[1]

This paper argues that legislative intervention rather than deontological rules could be an adequate tool to address academic integrity concerns, particularly in civil law jurisdictions, which is the case in the majority of European countries. The recently enacted Montenegrin law on academic integrity offers a promising foundation for developing such an intervention in the European context, along with suggested improvements drawing upon four years of the implementation experience. Analysis of the law is also conducted with regard to several provisions of the Council of Europe's recently adopted Recommendation on Education Fraud. The paper does not offer a ready-made concept, but its deliberation can serve as an inspiration for governments trying to improve existing rules on academic integrity. A legal approach will be taken in examining the problems and the relevant legislation.

Keywords: academic integrity, law, Montenegro, Council of Europe

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Ponovni razmislek o zakonodaji, ki ureja akademsko integriteto v evropskem kontekstu

Miloš Bošković

Ta članek zagovarja tezo, da bi bila lahko zakonodajna intervencija namesto deontoloških pravil ustrezno orodje za reševanje vprašanj akademske integritete, zlasti v civilnopravnih jurisdikcijah, kar velja za večino evropskih držav. Pred kratkim sprejeti črnogorski zakon o akademski integriteti ponuja obetavne temelje za razvoj takšnega posega v evropskem kontekstu skupaj s predlaganimi izboljšavami, ki temeljijo na štiriletnih izkušnjah izvajanja. Analiza zakona je opravljena tudi glede na več določb pred kratkim sprejetega priporočila Sveta Evrope o goljufijah v izobraževanju. Članek ne ponuja pripravljenega koncepta, a lahko njegova obravnava služi kot navdih za vlade, ki poskušajo izboljšati obstoječa pravila o akademski integriteti. Pri preučevanju problemov in s tem področjem povezane zakonodaje je bil uporabljen pravni pristop.

Ključne besede: akademska integriteta, pravo, Črna gora, Svet Evrope

Introduction

In the dynamic landscape of modern education, upholding academic integrity has become an imperative task. The ever-evolving nature of scholarly misconduct, coupled with the technological advancements that facilitate it, has brought a need for effective strategies to safeguard the principles of ethical conduct. Among the strategies under consideration, the prospect of enacting legislative interventions at the national level has emerged as a topic of heightened relevance. Not all legal systems are inclined to employ legislative enactment to tackle the problem. Countries normally address academic integrity through institutional regulations or deontology as a set of informal rules that professionals within a particular field adopt in an empirical manner to guide their conduct (Terré, 2004, p. 485). The professional code of ethics may, however, lack legal recognition and therefore be regarded as falling within the realm of morality (Kodama, 2019). Moreover, other legislation exists (e.g., copyright, criminal or civil codes) that can address some important aspects of academic integrity. The question nonetheless arises as to whether such rules are sufficient. Recent studies have found that in plagiarism cases, for example, academic institutions have in many instances failed to protect their authors and readers against plagiarism as well as courts, mostly due to inadequate legislation that is not sensitive towards academic misconduct (Bergadaà, 2021).

Today, academic integrity encompasses a broad spectrum of misconduct that extends beyond its conventional interpretation. More importantly, academic misconduct can inflict substantial harm, affecting not only the institution but broader society as well (Hallak & Poison, 2005). Is it therefore necessary to establish a distinct national legislative domain specifically dedicated to academic integrity? This will depend upon multiple factors. It does, however, seem that the difference between common law and civil law regulatory regimes is the first thing that should be examined. Ultimately, every country has its own unique legal culture, within which such legislation needs to fit.

The present paper examines whether implementing a legislative intervention at the national level would constitute an adequate response to the contemporary challenges to academic integrity. The investigation is particularly attentive to the European legal context, as the majority of countries within Europe adhere to the civil law tradition. In an attempt to model such a legal intervention, the paper is centred around an analysis of Montenegro's recently enacted law on academic integrity.

Theoretical framework

As a research topic, academic integrity has attracted a great deal of attention in recent years. Some authors tend to research possible causes and consequences for violations of academic integrity among academics and students (Bergadaà, 2021), while others direct their attention towards ethics policy and educational approaches to integrity in academia (Bertram Gallant, 2008). Additionally, the issue has been explored across diverse scientific disciplines (Bretag, 2016). Plagiarism, as a prevalent form of academic misconduct, has also received a great deal of attention in the literature (Bergadaà, 2021; Gilmore, 2008; Posner, 2007). When speaking about policies and the regulation of academic integrity, people generally find it easier to relate to relevant discussions in legal science (Sudamantri & Yusuf, 2020).

This legal research focuses on positive law and does not involve empirical effort, such as collecting data about social realities. In the present paper, as is common among legal scholars, an interpretive approach is utilised for conducting descriptive or explanatory research. Although ethical theories have extensively used a normative approach, law science considers the norms of law as part of the social and institutional practice of law (Taekema, 2018). Academic integrity has rarely been studied by normative interpretation of law. A similar approach to investigating research integrity and scientific misconduct from a legal perspective can be found in the report *Promoting Integrity as an Integral Dimension of Excellence in Research* developed by Gonzalez Fuster and Gutwirth (2016). This study analyses the role of law in the existing normative frameworks on research integrity and scientific misconduct in Europe. It argues that the normative frameworks in Europe in this respect are a mixture of legislative and non-legislative mechanisms, and it provides a solid overview of such mechanisms, concluding that "it emerges that the regulation of research integrity and scientific misconduct in Europe leaves open numerous questions regarding the relationship science, ethics and law" (Gonzalez Fuster & Gutwirth, 2016, p. 22). In an attempt to address such questions, the paper discusses civil law and common law systems in the context of academic integrity in order to identify the friendliness of a country's legal environment with regard to introducing specific legislation pertaining to academic integrity. The paper emphasises the Montenegrin law on academic integrity because such legislation is a very uncommon phenomenon, not only in Europe but also beyond. This frames the law as somewhat of an experiment, the preliminary findings of which could offer useful insights for researchers and practitioners seeking improvement in this area. Normative questions of academic integrity in the

Montenegrin law are evaluated against the relevant leading literature and *CM/Rec(2022)18/Recommendation of the Committee of Ministers to Member States on Countering Education Fraud* (Committee of Ministers of the Council of Europe, 2022; hereinafter: the Recommendation) as the only relevant intergovernmental standard available on the matter.

Method

The methodology applied in the present paper consists of an analysis of primary and secondary sources of data. The Montenegrin law on academic integrity and the Council of Europe Recommendation on Education Fraud are the primary sources relevant to the research. Secondary data useful in defining and explaining the terms used in the primary sources are relevant publications such as books, journals, articles, research papers, reports and policy papers. The literature was reviewed through online scholarly databases such as ResearchGate and Semantic Scholar, but also through subject-specific databases. This was followed by scanning the literature through a semi-systematic approach, then applying a narrative review. Given that the paper discusses a wide range of academic integrity topics, the relevant materials were searched by a variety of keywords, using the most relevant ones for separate sections of the paper. When discussing academic integrity principles, for instance, such a keyword would be used. Reports or policy papers on the topic commissioned or sponsored by well-known international or national organisations such as the Council of Europe, the European Commission, UK QAA for Higher Education are *per se* credible sources. Although the number of cases finalised before ethical bodies since the enactment of the law in 2019 – cases that could provide material for empirical research – is not significant, the observations in the reports related to these cases are used to reflect the law implementation challenges. The analysis also builds on the results and achievements of the European Union/Council of Europe projects *Strengthening Integrity and Fighting Corruption in Higher Education in Montenegro* and *Quality Education for All*, which have been enacted since 2016. Within these initiatives, distinguished international experts and national counterparts took part in debating the need for the law and, later, the challenges in its implementation. Their input was extremely valuable for drawing reliable conclusions.

Results and discussion

The road to the Montenegrin law on academic integrity

The Montenegrin higher education system is quite unusual by international standards in that it comprises only one public university, which enrols around 80% of the total student population, and three private universities. Montenegro's small population (c. 620,000) is clearly the underlying demographic cause of this (Hamilton & Smith, 2017). Most of the focus is thus on the state-owned University of Montenegro. As with the majority European countries, Montenegro belongs to the civil law tradition (Boskovic & Vukcevic, 2016). The size of the country's higher education system was one of the key arguments for putting the law into practice.

The academic achievements of politicians and public figures are highly valued in Montenegro and academia is one of the best ways to gain prestige. This has led to cases of alleged plagiarism by university professors and high-profile politicians, as reported by national media. Academic fraud has also involved fake qualifications obtained from uncontrolled bogus universities from the Western Balkan region, cheating in exams, falsified records and grades, ghost-writing and even cases of *vulgar corruption* (Baseline assessment, 2017; Blecic et al., 2020; SEEPPAI, 2017; Selic & Vujovic, 2010). The scene was set for such behaviours by general problems with higher education governance, particularly transparency in financing, quality assurance and ambiguous implementation of the Bologna model (Jørgensen, 2018). Numerous deficiencies were found in safeguarding academic integrity, including weak control of higher education institutions, poor investigative procedures and policies (or a lack thereof), a lack of awareness of the issue as documented by many surveys and watchdog reports, and a tendency to sweep such matters under the rug. At the time, the non-governmental sector appeared to be most proactive in exposing misconduct cases (Popovic et al., 2016).

Two events drove the government's initiative to prepare the law on academic integrity: the publication of the World Bank's *Feasibility Study on the Proposed Tailor-Made System(s) for the Prevention of Plagiarism in Montenegro* and the launch of the Council of Europe/European Union project *Strengthen Integrity and Combat Corruption in Higher Education* 2016–2019. The World Bank study proposed the enactment of a law, while the European project provided expertise during the drafting process, drawing upon materials and norms developed within the Council of Europe's *Platform on Ethics, Transparency and Integrity in Education* (ETINED).

According to an explanatory note to the law, its objective is "the prevention of all forms of academic integrity violations, as well as the promotion of academic and democratic values in higher education" (Explanatory Note, p. 2). In 2019, the Parliament passed the law. The present paper draws lessons from more than four years of the law's implementation.

The nature and title of the law

The law on academic integrity is reactive rather than preventive, meaning that it mostly provides administrative procedures for handling academic integrity breaches. To a limited extent, it codifies rules scattered around various legal acts and tries to establish a national standard for safeguarding academic integrity. Given all its features, the law should be called the *law on safeguarding academic integrity*. The current title (the law on academic integrity) suggests that it only deals with a preventive or educative approach to unethical behaviour, which is not entirely the case.

Brief commentary on the law

Subject matter

Article 1 regulates three segments: academic integrity principles, types of academic integrity violations, and the procedure for safeguarding academic integrity. Substantively, the law covers all types of academic fraud except diploma mills, interpersonal relationships in academia, labour and copyright disputes, or behaviours inclined towards criminal offences, such as sexual harassment, bribery, embezzlement, etc. Procedurally, the law applies to the ethics and disciplinary procedures when dealing with allegations of academic dishonesty.

When it comes to questions regarding to whom the law applies, the provision covered the widest range of individuals holding an academic diploma, not only those who belong to academia. As noted, the few cases of individuals outside academia who resorted to academic dishonesty in order to quickly obtain a prestigious position indicated that the law must apply to them as well.

Definition of academic integrity

The law provides a definition of academic integrity that can be found in a number of ethics documents. As such, integrity should not be the concern of the law, but of the institutional code of ethics. It appears more beneficial to provide an operational definition of its *dark side*, that is, academic misconduct:

> *Academic misconduct is behaviour or action occurring in the field of higher education in learning, teaching, research, conflicts of interest or publishing for all scientific disciplines, intended to deceive and obtain an unfair advantage.*

The suggested definition follows the definition contained in the Recommendation, with the addition of the concept of academic integrity as understood by the Institute of Research and Action on Fraud and Plagiarism in Academia (Bergadaà, 2021) to emphasise a broader understanding of the concept, encompassing learning, teaching and research in academia.

Academic integrity principles

Pursuant to the law, academic integrity is based on the following principles: honesty, objectivity, openness, freedom in teaching and research, and responsibility towards academia and society. The listed principles correspond to the widely accepted international efforts to frame the core values of academic integrity (McCabe & Pavela, 2004).

As confirmed by the implementation practice, a normative approach suggests that, instead of the principles established by the law, the national standard of academic integrity should be based on the following principles:

1. The primacy of institutional autonomy

This well-known principle of higher education is to be reaffirmed in the area of academic integrity. The *QAA Academic Integrity Charter for UK Higher Education* (2020) puts forward the principle of institutional autonomy in the context of safeguarding academic integrity: "As autonomous institutions, UK higher education providers are the first line of defence against academic misconduct" (QAA Academic Integrity Charter, p. 3).

The practical implications of the principle suggest that most of the breaches of academic integrity must be investigated and resolved by the university, and should be framed as follows:

> *Higher education institutions assume responsibility for defining, preventing, investigating and penalising cases of academic fraud, except when such responsibility falls under mandate of the Ethics Committee.*

2. The principle of prevention

"Prevention is a critical line of defense against academic dishonesty" (McCabe & Pavela, 2004, p. 14). The Council of Europe recommends that member states take appropriate measures "to provide information on and raise awareness about the prevention of education fraud" (Committee of Ministers of the Council of Europe, 2022, p. 5). The concretisation of this principle in practice means that universities should be held to the standard of designing clear integrity policies, conducting regular campaigns, introducing text-matching software, and setting up initial and continuous ethics training, as well as courses in academic writing and so forth. Furthermore, institutions need to embrace an important commitment to pursuing integrity values in their own self-evaluation procedures. Hence, the principle should take the following formulation:

> *Learners, researchers and teachers are aware of the mechanisms for the prevention of academic misconduct. Higher education institutions develop a culture of academic integrity and ensure internal quality assurance in this respect.*

3. Fair and equitable academic fraud processes

Member states should ensure "a fair and impartial process for persons and organisations accused of education fraud" (Committee of Ministers of the Council of Europe, 2022, p. 7). In 2021, the UK QAA for Higher Education published advice for its members to support the development of fair and equitable academic misconduct processes. The requirement of a fair process implies that all allegations of academic fraud are investigated and decided on the basis of fair process principles, such as presumption of innocence, as well as many others (Berger & Berger, 1999). Although this procedure has an administrative rather than judicial character, it must nonetheless provide the said guarantees, as confirmed by the European Court of Human Rights, which extended the principles of a fair trial to disciplinary and special proceedings under certain conditions (European Court of Human Rights, 2022). Importantly, in reviewing academic fraud cases, courts tend to defer to the outcome of the university's procedures (Berger & Berger, 1999). The civil law standard of proof is much higher than the common law standard (Clermont & Sherwin, 2002). There is no need to prove the case *beyond a reasonable doubt* at universities in the common law system; the standard of proof for academic misconduct is the *balance of probabilities*, which is much lower than what would be required in a court.

Disciplinary procedures in continental Europe appear to be mixed systems including both standards of proof. Universities, however, are advised to investigate academic misconduct by a balance of probabilities, particularly in cases that are hard to prove (e.g., contract cheating). Using the lower standard of proof could raise the issue of diminishing fair process guarantees. If the accusation of academic fraud is so serious that it threatens to stain the reputation of the accused, greater procedural safeguards should apply (Berger & Berger, 1999).

Special attention should be given to the principle of proportionate sanctioning. It is often the case that students face very rigorous sanctions for cheating in exams, such as long-term suspension or expulsion. On the other hand, experienced professionals, researchers and high-ranking politicians have gained huge benefits from falsified credentials, but when caught, they have received sanctions that barely damage their benefits and reputation. Disproportionate punishment can cause more harm than good, particularly in the case of young people. Experienced students, those pursuing advanced degrees or serial cheaters should be treated with greater rigor than inexperienced undergraduates. These and many other factors that may mitigate the severity of the sanction should be formulated and applied consistently (Council of Europe, 2016). Hence, the law should contain the following provision: *The right to fair and equitable process shall be guaranteed to everyone faced with accusation of academic misconduct.*

4. Protection of privacy and confidentiality

Given that academic misconduct cases are deeply sensitive and can hurt the alleged perpetrator and/or the victim, they must be treated with the greatest confidentiality. The victim or the person who has made the allegation of academic fraud can face retaliation in many ways. On the other hand, allegations can be brought in bad faith, thus damaging the reputation of the falsely accused individual. In order to prevent or reduce such effects, the confidentially and privacy of the proceedings must be ensured (Bassler, 2001). The principle should be balanced when the public interest to disclose information related to academic misconduct without consent prevails over the privacy breach, usually in cases of a grave misconduct. Against this background, it is important that institutions use confidential counselling or mediation services in dealing with delicate cases of alleged misconduct, which often involve complicated and even hostile inter-personal relations. An ombudsperson can perform this role, given that it safeguards students against unfairness, discrimination and poor

service delivery (Behrens, 2017). Therefore, the principle should be spelled out as follows:

> *Allegations of academic misconduct must be treated confidentially and in accordance with data protection regulations, except in cases when public interest requires an alternative approach.*

5. The principle of adapting to the digital and online environment

A great deal has been written about internet and digital technologies providing an environment conducive to academic misconduct, and there are also acute concerns regarding academic integrity within online learning. In the digital age, institutions are compelled to update their policies and processes related to academic integrity both in terms of prevention and punitive approaches (Dawson, 2020). The law should address the issue by spelling out that *policies, procedures and practices in higher education need to be up to date in order to prevent academic misconduct and promote integrity in the digital environment.*

The institutional code of ethics

The provision on the code of ethics seems redundant, as every institution has already adopted such a document. There are, however, two reasons why it is good to include this provision in the law: firstly, the existing codes should be harmonised with the principles of the law; and secondly, new higher education institutions will, as a matter of priority, design a code that is fully harmonised with the law.

Definition of plagiarism and corresponding sanctions

"Plagiarism is listed among the three deadly sins in science along with fabrication and falsification in most international literature on research integrity" (Penders, 2018, p. 29). Hence, the law provides a definition of plagiarism, while a plethora of plagiarism definitions currently exist in the literature. The definition of plagiarism in the law is well suited to the Montenegrin context. European countries can work around the definition provided by the Recommendation: "'Plagiarism' means using work, ideas, content, structures or images without giving appropriate credit or acknowledgment to the original source(s), especially where originality is expected. The term 'plagiarised' applies to the ideas, content, structures or images in question" (Committee of Ministers of the Council of Europe, 2022, p. 5).

The law suggests that plagiarism needs to be committed deliberately to qualify for sanctioning. It only tackles plagiarism of professional or scientific

work, or any ideas or materials developed in academia. Other creations or intellectual property, such as speeches, blogs and writings in media, are not covered by this law. The law provides sanction(s) when plagiarism is established by the competent authority (the Ethics Committee or institutional ethics boards). A single sanction envisaged is declaring plagiarised work revoked, as well as "the revocation of the corresponding grades, awards, titles and ranks" (Article 10). It seems that only a severe form of plagiarism is addressed, while less serious cases of plagiarism are left behind.

Types of plagiarism

Direct plagiarism, self-plagiarism and paraphrasing without reference are common types of plagiarism that are recognised as such in the relevant literature.

Despite its controversial nature, self-plagiarism also amounts to academic fraud. The IPPHEAE survey revealed that "many respondents denied the existence of self-plagiarism, asserting that 'you cannot plagiarise yourself'" (Glendinning, 2016, p. 64). Some authors also deny self-plagiarism as fraud (Callahan, 2014). Institutions need to approach the issue cautiously by setting up detailed criteria when incriminating self-plagiarism, for instance, "when the author fails to develop or improve the previous work" (Santosa & Siaputra, 2016, p. 78).

Fabrication, falsification, contract cheating and quoting out of context

The law also recognises fabrication, falsification, contract cheating and quoting out of context as a standard list of academic integrity violations that can be found in the literature. Fabrication and falsification in scientific research are potentially very harmful to society and tend to incline to criminal behaviour. For example, faked research data may lead to the approval of unsafe drugs or the construction of dangerous buildings. Researchers who are found to have fabricated or falsified data can face severe sanctions, such as loss of funding, termination of employment, or even imprisonment (Resnik, 2014).

Contract cheating is also a serious threat to the quality of higher education around the world (Draper & Newton, 2017). It is very complicated to regulate contract cheating because in addition to "three actors (student, university, third party), it may include many more; a company, regulated by a government, hosted on a website, with advertisers and advertising, a bidding system with multiple writers etc." Things get worse when "every single one of these actors could be in a different country" (Draper & Newton, 2017, p. 7). The law on academic integrity addresses consumers, while legislation specifically targeting

the banning of contract cheating providers should be separate. When contract cheating is investigated, the standard of proof should be on *the balance of probabilities*, as it appears to be very difficult to prove and because this offence is particularly dishonest, fraudulent and deceitful in nature.

Quoting out of context should not be part of the law, as the classification and the practical process for investigating and establishing such misconduct lacks clarity.

The Ethics Committee

The law establishes the Ethics Committee as the highest national authority for monitoring and promoting academic integrity principles. Appointment, dismissal, term and membership of the committee are in line with the administrative tradition in Montenegro. Other countries can use different models, such as an "academic integrity committee, disciplinary committee, ethics committee or research ethics committee" (General Guidelines for Academic Integrity, 2019, p. 23). It is recommended to include students and civil society representatives in the committee in order to achieve greater transparency, to ensure impartiality and to prevent conflicts of interest.

The Ethics Committee's powers

The Ethics Committee is not a typical body for safeguarding integrity in academia. It is a national committee with limited powers: it only investigates cases with an international element, such as when a student, professor or any person with an academic title has published work in foreign journal or defended a PhD or master's thesis abroad. The committee is not an appellant body, as appeals should be dealt with through a general administrative procedure.

The committee's *Charter of Ethics* is in place but has no practical use given that the law itself and the institutional code of ethics sufficiently address all of the relevant issues. However, the committee's *Rules of Procedures* may serve as a powerful operating instrument, as they provide additional procedural arrangements. Based on the activities observed so far, it is evident that the committee should assume a more influential role in upholding academic integrity.

Ethics boards

Established by institutions, ethics boards play a central role in addressing academic misconduct. In civil law systems, academic misconduct procedures are inclined to inquisitorial process requiring a stronger role of ethical and disciplinary bodies and their specialisation and training. In contrast, an adjudicative body in the common law adversarial system serves as an arbiter between two

opposing parties (Clermont & Sherwin, 2002).The law does not mention disciplinary bodies and rules, and the organisation of such bodies is entirely in the hands of the institution. The law may use the term *ethics/disciplinary board* just to acknowledge that disciplinary proceedings are relevant in this respect.

The ethics board's decision-making

The law is self-contradictory because, despite the provision that the decision-making of the ethics board shall be regulated by an act of the institution, it still sets out this procedure. The procedure is nonetheless strictly a matter of the institution's internal regulations.

"The ethics board shall decide the case within six months from the date of submission of the motion for academic integrity violation" (Article 17). This provision is the *raison d'ĕtre* of the law! In the past, universities often swept non-academic behaviour under the carpet. As a result, not a single case was properly investigated until recently. This provision prevents universities from dragging investigations of academic misconduct on until they are cold and forgotten. The six-month time limit is believed to be a reasonable period to complete the process and take a final decision, particularly since there are no international elements involved. However, it is not clear how to sanction the institution if it fails to meet the six-month time limit. The most appropriate solution would be to transfer the case to the Ethics Committee for handling if the six-month time limit is not met. The law mentions a *professional body* as an appeal entity and refers to the Senate as the highest professional body at universities in Montenegro. The Senate decision can be challenged before the Administrative Court. The law outlines the Committee's decision-making procedure. It also establishes the time limit of six months for deciding each case, which may not actually be adequate, as exchanging information with international entities can take much longer than six months. The committee's final decision can be challenged before the Administrative Court.

The ethics statement

The ethics statement is a very common instrument employed by universities, research institutes and journals. It is basically a statement of originality when submitting a thesis/paper. Presumably, it does not apply to undergraduate or secondary research when exploring the work of others, which, by default, must also observe integrity and ethics principles. Given the wording of the article, the ethics statement is concerned with the publication of academic work and promotion to a higher academic rank. It is questionable whether the provision on the ethics statement should be part of the law as an exclusively internal tool.

Originality check

The law suggests that only master's and doctoral theses are subjected to mandatory verification.

An interesting issue was raised during the law drafting process, namely, the *mentor's responsibility* when supervising the development of an academic thesis. The academic community is strongly opposed to explicitly stating the mentor's liability in the case that the thesis does not meet integrity standards, so the paragraph is just a statement of the obvious *the mentor supervises*…. As such, this provision should not constitute part of the law, despite the fact that mentoring is the most powerful tool in preventing non-academic behaviour (Löfström, 2016). Perhaps the most rational suggestion is to acknowledge that *the mentor shall perform his or her supervising duties with a reasonable degree of care (or to a reasonable extent). A reasonable degree of care* is an abstract standard that needs to be concretised by a case law of ethics or other adjudicative bodies. For instance, the academic supervisor is to be held liable and negligent when he or she fails to detect that a student has undertaken verbatim plagiarism from a *Wikipedia* source. On the other hand, the supervisor can hardly be held responsible in the case of good *patchwriting* or skilful modification of a Google translation. By no means can technical solutions to prevent plagiarism replace intensive mentoring, despite the alienation of instructors and students from each other in the digital era (Howard & Jamieson, 2019).

Student cheating

It is not clear why student cheating is singled out in a separate article instead of being defined together with other types of academic integrity violations. Moreover, student cheating is fully handled by the institution, so there is no need to specify its definition in the law.

Sanctioning

The law suggests that penal provisions should constitute part of institutional regulations. However, it fails to define sanctions that can be imposed by the Ethics Committee, which appears to pose a difficulty in practice when a violation is established. By virtue of interpretation, the committee can apply the sanctions outlined in Article 10 concerning plagiarism cases. Nonetheless, revoking work that has been found to be plagiarised seems to be too harsh a sanction for some less serious types of plagiarism.

Other issues discussed in the context of the law

Two issues arose during the law drafting process: *retroactivity* and a *whistle-blower protection*. Civil society advocated for retroactive application of the law to tackle high-profile cases that had remained unresolved in the past. However, this was not possible due to the constitutional principle of non-retroactivity: punishment cannot be imposed for behaviour that took place before the punishment was established. This does not mean that credentials cannot be revoked retroactively when an academic integrity violation is established. Furthermore, alleged academic misconduct that occurred prior to the law entering into force can be addressed by regulations that were in force at the time (e.g., a code of ethics, disciplinary rules, criminal legislation, etc.).

Legal protection of whistle-blowers in Montenegro is ensured by the anti-corruption law. Hence, making the relevant provision in the law would, according to many, create unnecessary duplication of norms. On the other hand, there is a strong argument that whistle-blower protection should have been provided in the law itself, because "in science, where trust in processes and outcomes is vital, whistle-blowing is especially important" (Devine & Reaves, 2016, p. 957). The Recommendation also urges protection of whistle-blowers.

Does a country need a law on academic integrity?

Few countries have decided to resort to legal codes to address ethics issues in higher education. There are several possible reasons for this. Ethics issues are rarely addressed by legal codes, but rather by codes of conduct or honour codes. Furthermore, liability in research may be triggered under civil, criminal and administrative/disciplinary law (Gonzalez Fuster & Gutwirth, 2016). Thanks to the proliferation of American-style education, the importance of academic integrity has never been higher (Cinali, 2016). Most integrity and ethics journals originate from common law countries (Lin et al., 2021). As is well known, common law systems are not inclined to resort to statutes or any other act passed by parliament for achieving policy objectives. Statutes are used only when necessary, and ethics is not likely to fall under this necessity. Scholars from common law systems emphasise preventive and educational approaches to academic misconduct rather than punitive responses (Bertram Gallant, 2008; Carroll & MacDonald, 2006).

Approaches to governance on academic integrity will greatly determine the need for a special law. Here, the distinction between the common law and civil law paradigm may help explain cross-national differences in regulatory

culture. If the country belongs to a civil law regime, there is more room for considering such a law, because this system could be described as more authoritative, rigid and prescriptive, as well as having a strong element of codification in contrast to a common law system. For instance, Scandinavian countries, as typical civil law countries, were among the pioneers in the pursuit of dedicated integrity legislation, often coupled with the establishment of national structures characterised as *quasi-judicial* (Gonzalez & Gutwirth, 2016, p. 7).

These and other differences between the two legal systems, which have often been overlooked by European specialists in the study of academic integrity, entail a need to rethink the current legal mechanisms for addressing academic integrity matters in continental Europe. Relying only on an Anglo-Saxon education style cannot provide all of the answers. Of course, this does not prevent common law countries from adopting such a law, as there is a growing similarity between the two systems in many respects. When it comes to continental Europe, legal pluralism is part of its identity. Contrasts do, however, remain in approaches to academic integrity, which are attributable to the distinct cultural and social identity of each European country. Harmonisation of national higher education in this part of the world is achieved to some extent through the so-called Bologna process, which required very radical structural changes in many institutions (Glendinning, 2016).

Most importantly, each country should decide whether to introduce a dedicated law on academic integrity, considering factors such as country size, the higher education system, the prevalence of academic dishonesty, awareness within the academic community, existing governance approaches, and provisions on ethics in higher education. The decision could be driven by a commitment to enhance good academic practices, clarifying the roles of various stakeholders involved. Integrity might also be seen as part of a broader movement towards transparency in the public sector. Such reforms are usually triggered by a scandal and a desire to rehabilitate the reputation of academia (Drenth & Israel, 2016).

There have been few attempts to develop similar laws (Draft Law on Academic Integrity, Ukraine (2021); The Academic Integrity Bill, India (2021)), but their content suggests covering too many things at once, which will inevitably lead to their unimplementability. Norway enacted a law on ethics and integrity in research (in 2007 and 2017), which governs all research conducted within Norway, encompassing both public and private domains, and introduces a National Commission for the investigation of research misconduct. Its scope is, however, narrower, as it only regulates research misconduct such as falsification, fabrication and plagiarism (Gonzalez Fuster & Gutwirth, 2016, p. 8).

Finally, the Council of Europe encourages European countries "to take all necessary and appropriate action to use existing legislation, guidelines or practices to eradicate education fraud […] They should also consider introducing new legislation or policy measures where required and encourage all education institutions to adopt regulations consistent with that aim" (Committee of Ministers of the Council of Europe, 2022, p. 6).

Conclusion

The answer to the question of whether to resort to the national legislative regulation of academic integrity depends upon multiple factors. If a country belongs to the European civil law tradition, specific legislation could be considered. Ethical and disciplinary rules in academia appeared not to be sufficient in the case of Montenegro, as many cases had not come to a clear resolution in the past. Prior to making the decision to enact such a law, however, it is of outmost importance to avoid overregulation, prepare a detailed analysis of the existing regulatory framework, and demonstrate that there are benefits to legislative intervention in this policy area. The Montenegrin law on academic integrity can be characterised as a positive legal phenomenon, particularly if amended as suggested by the present paper. Guided by the principle of institutional autonomy, it sets only minimum standards in safeguarding academic integrity. Consequently, the law is a rather short legal text (31 Articles), which ensures its effective enforcement. Many observers have commented that the law refers more to publishing and corresponding plagiarism than to academic research and professional misconduct. This is partially true due to the high prevalence of plagiarism among academic misconduct. The Council of Europe offers "a common European approach in countering education fraud and promoting ethics, transparency and integrity in education" (Committee of Ministers of the Council of Europe, 2022, p. 2). Although a soft legal instrument, the Recommendation is an exclusive intergovernmental standard that can assist legislators in rethinking rules governing academic integrity.

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Developing and Validating the Competency Profile for Teaching and Learning Research Integrity

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Since research integrity is not external to research but an integral part of it, it should be integrated into research training. However, several hindrances regarding contemporary research integrity education exist. To address them, we have developed a competency profile for teaching and learning research integrity based on four assumptions: 1) to include all levels of study (BA, MA, and PhD); 2) to integrate research integrity into research education itself; 3) to address research integrity issues in context-specific practices; and 4) to pay particular attention to the 'grey zone' or questionable research practices. To assess the validity of the content of the competency profile and to determine if some adjustments to the profile are needed, we translated the competencies of the profile into items of a measurement instrument (a questionnaire) and conducted a survey amongst University of Ljubljana students that allowed us to 1) obtain information about students' attitudes toward issues of integrity in research; 2) analyse differences in these attitudes among BA, MA, and PhD students; and 3) statistically validate the competency profile and suggest possible improvements. The results showed that 1) students are highly aware of research integrity issues, as scores were high on all items assessed. However, there were some deviations to lower scores, especially in relation to questionable research practises, confirming our assumption that the 'grey zone' issues are those that should be particularly addressed and given special attention in contemporary research integrity education. 2) The differences in the attitudes of BA, MA, and PhD students showed that higher-level students showed significantly more awareness of integrity issues than lower-level students did, suggesting that research integrity issues should be given special attention at the BA study level. 3) The measurement characteristics showed that the reliability of the questionnaire was very high, suggesting a good overall structure of the competency profile. The principal component analysis

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also confirmed the four-field structure of the Competency profile (Values and Principles, Research Practise, Publication and Dissemination, and Violations). However, the analysis also showed that the substructure of the four main areas of the profile did not fully match the results of the factor analysis, suggesting that the distribution of competencies in the competency profile could be reconsidered, especially in the area of Research Practice. The most recent developments in the field of research integrity also suggest that the competency profile should be updated with issues regarding the impact of artificial intelligence on research integrity.

Keywords: competency profile, research integrity, responsible conduct of research, factor analysis, artificial intelligence

Razvoj in validacija kompetenčnega profila za poučevanje in učenje raziskovalne integritete

Jurij Selan in Mira Metljak

Ker raziskovalna integriteta ni nekaj ločenega od raziskovanja, ampak njen sestavni del, jo je treba vključiti v usposabljanje na področju raziskovanja. Obstaja pa več ovir v povezavi s sodobnim izobraževanjem o raziskovalni integriteti. Da bi jih odpravili, smo razvili kompetenčni profil za poučevanje in učenje raziskovalne integritete, ki temelji na štirih predpostavkah: 1) vključiti vse stopnje študija (dodiplomski, magistrski in doktorski študij); 2) vključiti raziskovalno integriteto v raziskovanje; 3) obravnavati vprašanja raziskovalne integritete v kontekstualno specifičnih praksah; 4) posebno pozornost nameniti »sivi coni« ali spornim raziskovalnim praksam. Da bi ocenili veljavnost vsebine kompetenčnega profila in ugotovili, ali so potrebne njegove prilagoditve, smo kompetence v profilu prevedli v postavke merilnega instrumenta (vprašalnika) in izvedli raziskavo med študenti Univerze v Ljubljani. Raziskava nam je omogočila naslednje: 1) pridobiti informacije o odnosu študentov do vprašanj raziskovalne integritete; 2) analizirati razlike v tem odnosu med študenti dodiplomskega, magistrskega in doktorskega študija; 3) statistično potrditi kompetenčni profil in predlagati morebitne izboljšave. Rezultati so pokazali naslednje: 1) študentje se zelo dobro zavedajo vprašanj raziskovalne integritete, saj so pri vseh ocenjenih postavkah dosegli visoke rezultate. Kljub temu je bilo nekaj odstopanj pri nižjih ocenah, zlasti v povezavi z vprašljivimi raziskovalnimi praksami, kar potrjuje našo domnevo, da so vprašanja »sive cone« tista, ki jih je treba v sodobnem izobraževanju o raziskovalni integriteti še posebej obravnavati in jim nameniti posebno pozornost; 2) razlike v stališčih študentov dodiplomskega, magistrskega in doktorskega študija so pokazale, da so se študentje višje stopnje bistveno bolj zavedali vprašanj integritete kot študentje nižje stopnje, kar nakazuje, da bi bilo treba vprašanjem raziskovalne integritete nameniti posebno pozornost že na ravni dodiplomskega študija; 3) merske značilnosti so pokazale, da je bila zanesljivost vprašalnika zelo visoka, kar kaže na dobro splošno strukturo kompetenčnega profila. Tudi analiza glavnih komponent je potrdila strukturo kompetenčnega profila (vrednote in načela, raziskovalna praksa, objava

in razširjanje ter kršitve). Analiza pa je pokazala tudi, da se podstruktura štirih glavnih področij profila ni povsem ujemala z rezultati faktorske analize, kar kaže, da bi bilo treba ponovno razmisliti o razporeditvi kompetenc v kompetenčnem profilu, zlasti na področju raziskovalne prakse. Nedavni razvoj na področju raziskovalne integritete prav tako kaže, da bi bilo treba kompetenčni profil posodobiti z vprašanji glede vpliva umetne inteligence na raziskovalno integriteto.

Ključne besede: kompetenčni profil, raziskovalna integriteta, odgovorno izvajanje raziskav, faktorska analiza, umetna inteligenca

Introduction

Research integrity as an integral part of research

In its project 'OECD Future of Education and Skills 2030', the Organisation for Economic Co-operation and Development (2019, pp. 59–70) emphasises 'reconciling tensions and dilemmas' and 'taking responsibility' as crucial transformative competencies that students need to develop in the future to meet the challenges of the 21st century. These competencies are closely related to issues of research and, therefore, to the issues of research integrity.

Acting in accordance with moral and ethical principles is an integral part of research. According to Böttcher and Thiel (2018), research competencies can be divided into five skills, which Hauser, Reuter, Gruber, and Mottok (2018) reconfigured into four factors that are particularly characteristic of research, one of which is 'ethical issues'. The United States' National Postdoctoral Association (NPA Core Competencies Committee, 2007–2009) also lists 'Responsible conduct of research (RCR)' among six core research competencies. Similarly, The US National Academies of Sciences, Engineering, and Medicine (2017, p. 174) lists the best practices in research related to Research Integrity, Data Handling, Authorship and Communication, Mentoring and Supervision, Peer Review and Research Compliance.

Thus, research integrity or responsible conduct of research (RCR) is not something external to the research but is an integral part of it and should, therefore, also be integrated into research education (National Research Council, 2002, p. 84).

Objectives and goals of RCR education: a four-component model

We can distinguish between the Objectives, Goals, and Benefits of Research Integrity Education (The US National Academies of Sciences, Engineering, and Medicine, 2017, p. 166). Objectives are the general aims that RCR education seeks to achieve in the long term. The US National Academies of Sciences, Engineering, and Medicine (2017) summons the eight major objectives of RCR education identified in the literature: 1) Ensuring and improving the integrity of research; 2) Promoting good behaviour and quality research conduct; 3) Preventing bad behaviour; 4) Decreasing research misconduct; 5) Making trainees aware of the expectations about research conduct within the research enterprise and as articulated in various federal, state, institutional, and professional laws, policies, and practices that exist; 6) Making practitioners

and trainees aware of the uncertainty of some norms and standards in research practices due to such factors as changes in the technology used in research and the globalisation of research; 7) Promoting and achieving public trust in science and engineering; 8) Managing the impact of research on the world beyond the lab, including society and the environment. (p. 197)

Since RCR educational objectives are difficult to measure within a given course, learning goals or learning outcomes, as opposed to objectives, are established to be narrower in scope and more specific to be measured in the assessment of a given activity. Therefore, learning goals are specific learning outcomes related to learning objectives in the sense that they can contribute to them.

Learning goals or learning outcomes are statements of what a learner knows, understands and can do on the completion of a learning process (The European Centre for the Development of Vocational Training, 2011). Learning goals are defined in terms of competencies, which '[…] represent a dynamic combination of knowledge, understanding, skills and abilities'. (Gonzáles & Wagenaar, 2008, pp. 16–17).

Learning goals in RCR education could be divided into four aspects according to Rest's four-component model of morality, which stresses four categories of research integrity learning outcomes: ethical problem-solving skills, ethical sensitivity skills, knowledge of research ethics, and attitudes and values (Rest, 1983, Antes & DuBois, 2014). These four aspects could be summarised as (Bebeau, 2002b; Bebeau, 2002c; Bebeau & Thoma, 1999; Davis & Riley, 2008; Davis & Feinerman, 2010):

1. *Ethical sensitivity* (interpreting the situation as ethical): improving and increasing students' sensitivity to issues concerning the standards of their profession and the ability to identify the ethical issues in a specific situation;
2. *Ethical knowledge or judgment* (judging which of the available actions are most justified): increasing and improving students' knowledge of how to resolve an ethical problem once it has been noticed (from being aware of the appropriate standard to consider (and how to interpret it) to know where to go to make a complaint or seek advice);
3. *Ethical motivation* (prioritising ethics over other important concerns): improving students' judgment and ability to develop an acceptable course of action and provide an appropriate rationale;
4. *Ethical commitment or character* (being able to construct and implement actions that serve ethical decision-making): reinforce and increase student commitment to the standards of their profession and the likelihood that the student will act on them.

According to the National Research Council (2002), the four-component model of morality, therefore, introduces the crucial abilities in research education that enable responsible conduct:

These include the ability to (a) identify the ethical dimensions of situations that arise in the research setting and the laws, regulations, and guidelines governing one's field that apply to those situations (ethical sensitivity); (b) develop defensible rationales for a choice of action (ethical reasoning); (c) integrate the values of one's professional discipline with one's own personal values (identity formation) and appropriately prioritise professional values over personal ones (showing moral motivation and commitment); and (d) perform with integrity the complex tasks (e.g., communicate ideas and results, obtain funding, teach, and supervise) that are essential to one's career (survival skills). (p. 86)

Intermediate concepts

The important aspect that should be introduced into RCR education is intermediate concepts that mediate two levels in moral or ethical cognition (Bebeau & Thoma, 1999). The most general level involves abstract concepts and related principles (e.g., the concept of equality and the corresponding principle, 'everyone must be treated equally'). However, such abstract concepts are difficult to apply to practice because they offer little guidance for one's actions. The six stages of moral development described by Kohlberg (1969, 1976) tend to be general and abstract, like epochs in history, rather than detailed. At the other end of the spectrum, there are very concrete concepts in professional codes of ethics, which are very specific and highly contextual, based on the profession, as different scientific groups have different codes. Such codes are rarely explained in terms of general ethical theories but are taken for granted, functioning like the Ten Commandments.

RCR education, however, takes place somewhere between the abstract and the concrete. It is organised around concepts that are somewhere 'in-between': They are concrete but still general enough to combine practical instruction with moral theory and reasoning. These are concepts such as 'professional autonomy', 'confidentiality', 'informed consent', 'whistleblowing', and similar. Such concepts mediate the abstract and the concrete and can be referred to as 'intermediate level' concepts, which provide more concrete guidance for actions than the general concepts and link concrete actions to theory (see Davis & Feinerman, 2010, pp. 354–355, footnote 5, for a list of such intermediate concepts for teaching RCR to graduate engineering students).

How can research integrity be taught?

Having identified the four aspects of learning outcomes in RCR education, the most important question that follows is: How should these four aspects be taught?

One might draw an analogy to the training of students in the critical analysis of research literature. Students are first introduced to the primary literature, and then complexity is added, for example, through critical reading of journal articles under the supervision of a mentor, through scholars teaching other aspects of the research serving as primary role models, and through assessment of student competence when students are asked to provide evidence for their theories and conclusions. Students are assessed and receive ongoing feedback from the initial seminar presentation through the dissertation defence and submission of the manuscript for publication. (National Research Council, 2002, p. 85)

Similarly, just as a critical analysis of research literature is an integral part of training in all subjects in a study programme, RCR education should be an integral part of training in all subjects in a field of study. In this sense, the four aspects of RCR education (ethical sensitivity, ethical knowledge, ethical judgment, and ethical commitment) should be considered from the perspective of Teaching Strategies and Assessment Methods (National Research Council, 2002, pp. 87–97).

Ethical sensitivity

Ethical sensitivity involves the researcher's awareness of how his actions affect others. It includes the following skills: anticipating the reactions and feelings of others involved in the research (colleagues, mentors, participants, etc.); anticipating alternative courses of action and their effects on all those involved in the research; constructing possible scenarios with knowledge of cause-and-effect chains of events; having empathy and the ability to assume roles; seeing things from the perspective of others involved in the research and considering research scenarios from the perspective of legal, institutional, and national viewpoints; recognising when to apply laws, regulations, and standards in one's profession.

Ethical sensitivity (to issues) differs from the capacity for ethical reasoning (about issues) in the following ways. Ethical sensitivity is the ability to recognise (and not overlook) an ethical issue in a complex situation. In contrast, ethical reasoning is the ability to argue and discuss why an already identified ethical problem is a problem. Thus, focusing on policies and practises related to

the conduct of research (e.g., the use of humans and animals in research; codes related to health and safety; procedures for dealing with allegations of misconduct; authorship practices and policies; data management; conflicts of interest, etc.) is merely a foundation that allows students to develop sensitivity to identifying ethical issues. Ethical sensitivity, however, is not about memorising policy documents and passing knowledge tests but about understanding that such policies and regulations exist and, more importantly, why they exist and how to apply them in real-world situations. Therefore, policies and regulations should be referred to as often as possible in courses so that students become familiar with them and their ability to identify ethical issues and refer to policies becomes habitual.

In training ethical sensitivity, students should develop the ability to recognise ethical problems in complex situations. Therefore, a useful training strategy for improving students' ethical sensitivity is to design complex, real or hypothetical cases or situations that require students to refer to policies, identify stakeholders, consider consequences, and engage in probabilistic reasoning. Sensitivity training differs from standard ethics courses in that cases are presented without any preconceived interpretation to stimulate sensitivity in identification and subsequent discussion. The cases simply present clues to an ethical problem, and students should refer to guidelines and codes themselves to demonstrate proper behaviour. Therefore, the student ethical sensitivity test should assess the student's ability to identify ethical problems, meaning to distinguish relevant from irrelevant information in the cases presented and to identify the norms and values from the guidelines by which the cases should be considered. Several such tests have been developed in which students are presented with hypothetical situations via video; students respond to the cases presented to them, and their responses are assessed.

Ethical reasoning or judgement

Ethical reasoning implies that professionals should be able to critically analyse their own moral arguments and develop defensible points of view for new problems that are likely to emerge during the course of their professional lives (National Research Council, 2002, p. 90).

Students should develop the ability to determine how to modify existing rules to meet the new moral problem. The most useful instructional strategy for promoting ethical reasoning is a teaching and assessment strategy that incorporates the dilemma discussion technique (see also Bebeau, 2002a). The greatest improvement is achieved when the teacher's intervention is added gradually with instruction to enable students to develop well-reasoned written

arguments. In this way, the intervention affects students' reasoning in two ways: developing new thinking to meet new moral problems and reducing or rejecting students' simplistic thinking based on personal interest arguments.

According to the US National Research Council (2002, p. 92), ethical or moral reasoning is defined as the ability to systematically examine a situation and then choose and defend a position on that issue. Arguments are evaluated in terms of the respondent's ability to describe ethical issues and points of conflict, including precedents, principles, rules, or values that support the prioritisation of one interest over another; stakeholders or parties that have a vested interest in the outcome of the situation; likely consequences of possible courses of action; and ethical obligations of central characters.

The difference between hypothetical cases intended to stimulate ethical sensitivity and those intended to stimulate ethical reasoning is this: cases designed to enhance sensitivity are designed to make finding and understanding the ethical problem or conflict difficult (to stimulate sensitivity to ethical issues); in contrast, cases for improving reasoning are designed so that ethical problems or conflicts are relatively easy to identify. However, they are presented as dilemmas that stimulate argumentation and interpretation. Because discussion of dilemmas can lead to fruitless exchanges of student opinions, the teacher should intervene and encourage students to explore the criteria for evaluating moral arguments before engaging in discussion and then to use the criteria to critique each other's oral or written arguments. Assessing ethical reasoning is, therefore, different from assessing ethical sensitivity. In assessing sensitivity, students are presented with complex cases in which they are asked to detect an ethical problem; in tests assessing ethical reasoning, ethical problems are presented through dilemmas, and students are expected to be able to reason and debate them.

Ethical motivation

Why be moral? This is the fundamental question that promotes ethical motivation. Ethical motivation requires the individual to weigh many legitimate concerns that may be incompatible with moral choices (e.g., financial and professional pressures, established relationships, personal concerns) that compete for the researcher's attention (National Research Council, 2002, p. 94). Ethical motivation is the responsibility to bridge the gap between knowing the right thing to do and doing it. Therefore, ethical motivation (doing the right thing) is linked to personal responsibility in identity formation (doing the right thing because I truly believe it is my responsibility to do so). Indeed, individuals may do the right thing not for the sake of personal responsibility but for

other opportunistic reasons (e.g., to gain rewards or esteem to avoid negative consequences) without achieving personal responsibility.

Although the development of personal responsibility in identity formation is a lifelong process, instructional strategies could be used to encourage it. In the past, personal responsibility was developed informally through social interaction with a positive research environment and role models, such as mentors and colleagues; today, it can also be developed in more formal ways, such as through lectures on norms and values in science or by presenting exemplary scientists and their stories. Doing so encourages students to identify with good examples of scientists who have contributed to a larger society and thus develop their sense of responsibility.

Assessment of ethical motivation can be achieved by asking students to write and reflect on the role of scientists ('What does it mean to be a scientist?') and to refer to the norms and values of science in their writing. This work is then assessed by a teacher. Another more quantitative method, as described by Bebeau (2002c), is to use a norm-referenced measure of role concept that measures the extent to which the individual incorporates norms and values of the profession into their identity.

Ethical commitment or character

Becoming 'streetwise' in research integrity requires not only ethical sensitivity, reasoning, and judgement but also commitment: these are the 'survival skills' that enable researchers 'to perform the complex tasks of the discipline with integrity' (National Research Council, 2002, p. 96). A researcher can be ethically sensitive and make good ethical decisions, but if he or she slacks off under pressure or has a weak will, moral failure can result because of a lack of character.

Ethical commitment or courage could be fostered so that students develop skills that are often neglected in research training but are essential as survival skills for a scientist: how to present results at scientific meetings; how to defend one's methods; how to write written reports; how to learn from critical comments made by one's colleagues and how to comment or evaluate one's colleagues; how to obtain funds for one's research; how to hire collaborators; how to teach courses; and how to mentor students. Therefore, the assessment of ethical commitment could be achieved by asking students to edit a description of an experiment, review a research article written by a colleague, and perform similar tasks. The point of stimulating and assessing ethical commitment is that students should develop the courage to communicate with the research community, to express and accept criticism of their work, and thereby be prepared for the types of evaluation they will encounter and experience in their careers.

At which study level should RCR be taught?

Historically, the primary responsibility for training scholars in RCR has rested with their mentors, meaning RCR training occurred informally, led by examples within a research group, led by a senior researcher who served as a mentor to all novices in the group. In recent decades, RCR has been formalised at the initiative of national agencies and governments, resulting in widely varying approaches to RCR education, with the majority of institutions adopting a framework that requires students to complete online courses (Diaz-Martinez et al., 2019). Despite these efforts, according to Diaz-Martinez et al. (2019), the following three hindrances remain: 1) Research integrity is mostly reserved and taught at the PhD level when students are more intensively engaged in research and research collaboration. 2) Although RCR is an integral part of research, RCR training is mostly taught in a stand-alone format that places it outside the context of the research sphere. 3) RCR education is most often designed to address issues in general and does not address context-specific practices and standards of research integrity.

With the recent impetus to include authentic research opportunities as part of the undergraduate curriculum, there is also a growing need for undergraduate RCR education that does not stand alone but is integrated with research itself. Diaz-Martinez et al. (2019) suggest that teaching teams seeking to implement RCR education effectively within their undergraduate research consider an approach that includes: 1) identification of appropriate RCR student learning objectives (SLOs) and specific topics that are relevant to the research; 2) The design and/or identification of curricular minilessons that are aligned with assessment(s) and SLO(s); 3) development and/or identification of appropriate assessments that are aligned with respective curriculum and SLO(s); 4) facilitation of professional development for those individuals implementing E/RCR education within CUREs (e.g., instructors of record, teaching assistants, peer leaders).

Grey Zone and Questionable Research Practices (QRP)

Butler et al. (2017) caution that obvious examples of overt fraud revealed in public, such as in falsification, fabrication, and plagiarism (FFP), obscure less blatant and more subtle instances of 'questionable research practices' (QRP), which often involve misrepresentations, inaccuracies, or bias (e.g., misattribution of authorship, omission of outliers, and the so-called salami slicing of data). They attribute the existence of QRPs to three reasons: the inadequate training of researchers, the pressures and incentives to publish in certain outlets, and

the demands and expectations of journal editors and reviewers. Studies have shown that QRPs are far more widespread than FFPs, with between 30% and 90% of researchers using them.

The rise of QRPs could be attributed – ironically – to the increasing awareness of FFP, which leads scientists to systematically 'push' their results in the desired direction by artificially inflating significance in some way while being careful not to cross the line into overt misconduct (Butler et al., 2017). Like athletes, scientists are aware of the 'black' line of misconduct and are therefore careful not to cross it but to approach it as closely as possible to increase 'performance'. However, the responsibility for QRP does not rest on individuals, and exposing a few individuals only masks systemic problems, such as the role of journals in creating an environment in which QRPs thrive (see also Western cultural bias by which publication is more complicated for non-Western academics and other discriminative practices in an academic environment; Alemu, 2020, p. 84; Hussain, 2023), as editors want to inflate impact factors and increase journal rankings, and therefore encourage authors to 'play the game' to increase their chance of publication. Therefore, we should emphasise that misconduct does not occur in a vacuum but arises from organisational or institutional constraints and incentives, so-called 'organisational misconduct.' (Hall & Martin, 2019, p. 415)

Wherever one chooses to draw the line, FFPs are seen as inherently negative, 'black' practices, while QRPs fall into an ethical 'grey area' between acceptable (scientific best practices) on the one hand and unacceptable ('black' FFPs) on the other. For this reason, the grey zone QRPs should be taken into full consideration to promote research integrity instead of merely simply exposing and punishing wrongdoers for their flagrant transgressions (Butler et al., 2017).

Focusing only on FFP allows a whole range of practices to fall through the cracks and results in published work that is misleading in some way (Butler et al., 2017, p. 106). Fanelli (2013, p. 149; see also Butler et al., 2017, p. 106) therefore suggests redefining academic misconduct as 'distorted reporting', which can refer to any omission or misrepresentation of information necessary to assess the validity and significance of the research, meaning any discrepancy between what was done and what was reported. Such an approach would capture not only FFPs but also QRPs, shifting the focus from the most egregious cases of FFP to more subtle forms of potential misconduct where the greatest public harm occurs (Steneck, 2006, p. 66).

For that reason, Hall and Martin (2019) developed a formal taxonomy that:

1. Distinguishes appropriate conduct from blatant misconduct but with a particular focus on the 'grey areas' between these extremes in the form of questionable and inappropriate behaviour. The taxonomy differentiates

between the categories of blatant misconduct (e.g., data fabrication, data falsification), inappropriate conduct (e.g., selective reporting, omitted data), questionable conduct (e.g., HARKing), and appropriate conduct (e.g., Winsorisation).

2. Assesses these categories based on the stakeholders (other researchers, employees, students, editors and journals, societal stakeholders) affected by the misconduct as well as the severity, ranging from very high severity (in premeditated dishonesty and intentional rule-bending) to medium (in less intentional poor behaviour that may arise due to complexity, sloppiness, ignorance) and to low severity (in honest error).

Research problem and research goals

Acting in accordance with the principles of research integrity is increasingly complex and challenging in contemporary science and research. Since research integrity is not something that is external to research but an integral part of it, it should be integrated into research training. Although there are many codes of conduct, policies, guidelines, and manuals on what research integrity encompasses and how it should be taught, our theoretical review shows that there is no common educational model–a competency profile–that could address all the drawbacks of current RCR education and thus provide a systematic and all-encompassing RCR education that activates the four levels of RCR education (sensitivity, reasoning, motivation, commitment).

The drawbacks regarding RCR education can be summarised in four interrelated points, as explored above: 1) Research integrity education is mostly reserved for the PhD level, while it is less systematically addressed at the undergraduate level. In particular, there is no set progression regarding how RCR education should become more complex from BA, MA, to PhD levels. 2) Although research integrity is an integral part of research, it is usually taught 'per se' and not integrated into the professional disciplines in which the research 'takes place'. 3) As a result, RCR training in such a stand-alone format is often very general but does not address the standards of research integrity in the specific context and practices within the professional fields. 4) Because RCR training mostly provides only general directions from codes of conduct, policies, and guidelines, it usually includes and addresses only the obvious research misconduct (FFPs), but not the 'grey area' or questionable research practices (QRPs) where the real research integrity issues occur.

With this in mind, we have developed a competency profile for teaching and learning research integrity (See Selan et al., 2021, for more detail on

the development and structure of the profile) that responds to these drawbacks and could serve as a basis for systematic and all-encompassing RCR education to students of different study programmes and at all three levels of study (BA, MA, and PhD).

Our competency profile (Selan et al., 2021) identifies four main areas of research integrity: Values and Principles, Research Practise, Publication and Dissemination, and Violations. Each area is divided into four sub-areas covering topics within the main area. The goal was to create a cross-section and unified set of competencies that name all possible aspects of research integrity that might be encountered. The profile thus includes 80 competencies (15 for Values and Principles; 16 for Research Practice; 17 for Publication and Dissemination; and 32 for Violations). This overall structure of competencies is then translated into specific actions or behavioural indicators that progressively increase in complexity according to the three levels of study (BA, MA, PhD) and are summarised in core learning objectives and outcomes for all levels of study (BA, MA, PhD) that round out the four levels of RCR education (sensitivity, reasoning, motivation, commitment).

It is important to emphasise that the competencies in the competency profile are conceptualised and designed as 'intermediate concepts' that link concrete actions (behavioural indicators) to abstract principles and theories. They are intended to cover all aspects of research integrity, and the user (teacher, student) can select from them those that are relevant to his or her field of research.

The competency profile has been implemented into educational practice and served as a basis on which the courses on research integrity for students of BA, MA and PhD levels of different study programmes were designed. The courses were designed and conducted at the University of Ljubljana, Karlova University, and the University of Utrecht within the project 'INTEGRITY' with the support of the Erasmus+ programme of the European Union, project number 2018-1-NL01-KA203-038900. Some of these courses are also evaluated in papers presented in this special issue of CEPS Journal (See article Academic Writing in Teaching Research Integrity on pages 129–154).

However, the competency profile has not yet been empirically validated with regard to the content of the competency profile and to see if some adjustments to the profile are needed. Thus, our goal for empirical research was threefold. Because the profile is intended to provide a foundation for teaching and learning about integrity in research for students at all levels of study (BA, MA, and PhD), we wanted to obtain information about 1) students' attitudes, awareness, and opinions about issues of integrity in research that are addressed

in a profile; 2) specifically, how students' attitudes, awareness, and opinions about issues of integrity in research differ among BA, MA, and PhD students; 3) because the competency profile is theoretically based, we wanted to validate it empirically and, if necessary, modify the categories in the profile (by accentuating some categories and eliminating others) based on a statistical analysis similar to how Hauser, Reuter, Gruber, and Mottok (2018) validated and modified the factor structure of Böttcher and Thiel's (2018) F-Comp questionnaire to measure research competencies.

Method

To achieve these three goals, we used a quantitative research method: a survey. We translated the categories of the profile into items of a measurement instrument: a questionnaire. Based on four fields (and corresponding subfields) of research integrity identified in the competency profile (Values and Principles, Research Practice, Publication and Dissemination, and Violations), the questionnaire also formed four basic scales with comparable items. The 80 competencies in the competency profile were translated into 74 items (18 for Values and Principles, 17 for Research Practice, 15 for Publication and Dissemination, and 24 for Violations) of a questionnaire that asked students to rate, on a scale of 1 (not at all) to 5 (fully), the extent to which they understand, know, are aware of, or are able to act as researchers in the area of research integrity.

Sample

A total of 177 University of Ljubljana students responded and participated in the survey: 84.2% were female, and 14.7% were male. The BA students represented 65.5% of the total, 29.4% were MA students and 5.1% PhD students. They were of different study areas; see Table 1.

Table 1
Area of study (FORD classification)

	f	f %
Natural sciences	26	14.7
Technical and technological sciences	18	10.2
Medicine and medical sciences	12	6.8
Social sciences	97	54.8
Humanities	24	13.6
Total	177	100.0

Instrument

The online questionnaire, designed in the 1ka platform[3], was sent via e-mail through administration support systems to all University of Ljubljana students of different study programmes and of all three levels of study (BA, MA, PhD). Data were collected between December 7, 2022, and January 5, 2023.

Based on the data and to obtain an answer to our research goals, we then 1) made descriptive statistics about the importance of each item (students' answers) in four designed scales; 2) analysed differences between subgroups (BA, MA, and PhD students); and 3) calculated the measurement characteristics of the questionnaire.

Data analysis

The questionnaire and students' responses were analysed and verified by statistical analysis in the following way. Data were processed using the SPSS software (version 22) for statistical analysis to measure the characteristics of four basic scales, individual items, and the profile as a whole. Descriptive statistics are presented with mean and standard deviation parameters; sub-groups differences were analysed with the Kruskal-Wallis test since the distribution was not normal. The Cronbach alpha coefficient was calculated for the reliability of the measurement characteristics of the questionnaire and, finally, a principal component analysis (PCA) was performed to test validity.

Results

Descriptive statistics

To measure the importance of each item, we analysed students' responses/assessments in four designed scales that provided answers to our first research goal: to obtain information about students' attitudes, awareness, and opinions about research integrity issues addressed in a profile.

The following four tables (Tables 2–5) show the three highest and three lowest-scoring items of the four scales: Values and Principles, Research Practice, Publication and Dissemination, and Violations. The entire questionnaire with descriptive statistics for all 74 items is included in the Appendix (see Appendix 1).

3 1KA is an application that enables online surveys (www.1ka.si).

Table 2

Three highest and lowest assessed items of the Values and Principles scale

Item no.		N	Min	Max	Mean	Std. Dev.
	3 highest assessed items					
6	I am aware that I must not encourage participants to participate in the research in an inappropriate way (coercion, bribery, etc.).	177	2	5	4.85	0,453
7	I am aware that, as a researcher, my conduct should not affect the judgment, actions, or responses of the participants in the research.	175	2	5	4.82	0.452
4	I am aware that participants in the research must participate on a voluntary basis.	176	2	5	4.82	0.521
	3 lowest assessed items					
17	I believe that research must be regulated at the national level with appropriate laws, codes, regulations and, as a result, sanctions for violations.	177	2	5	4.45	0.804
15	I am aware that, as a researcher, before starting the research, I have to check possible harmful effects or research implications.	177	1	5	4.44	0.909
10	I am aware that I can only conduct research with animals if I am properly qualified to do so.	177	1	5	4.40	1.056

All items in the Values and Principles scale scored quite high: the lowest mean score was 4.40 out of 5. Students indicated that they are most aware that they must not motivate participants to be part of research in the wrong way (e.g., coercion, bribery, etc.). They are least aware that they must not involve animals in research unless they are properly qualified to do so.

Table 3
Three highest and lowest assessed items of the Research Practice scale

Item no.		N	Min	Max	Mean	Std. Dev.
	3 highest assessed items					
25	I believe that older (more experienced) researchers should not abuse their position (e.g., to sign the research as authors, even though they did not participate in it).	140	2	5	4.84	0.517
33	If we are conducting research in a group, I understand that I must share the data I obtain with the other researchers in the research group.	141	3	5	4.82	0.441
34	If we are conducting research in a group, I am aware that everyone who participates in the research is responsible for the proper conduct of the research.	141	2	5	4.73	0.546
	3 lowest assessed items					
27	I know different research approaches.	141	1	5	3.84	0.973
26	I know the research methodology in my field of expertise.	141	1	5	3.82	0.968
29	I know the appropriate procedures for data processing (e.g., statistics).	141	1	5	3.70	0.941

The lowest average scores in the Research Practice scale are slightly lower than in the Values and Principles scale. It is interesting to note that the highest score is for the item that senior researchers should not abuse their position (e.g., sign as author of research in which they were not involved). The lowest scores were for items related to knowledge in the research field: knowledge of research styles, knowledge of methodology in the field, and knowledge of data analysis.

Table 4

Three highest and lowest assessed items of the Publication and Dissemination scale

Item no.		N	Min	Max	Mean	Std. Dev.
	3 highest assessed items					
40	I am aware that I must also publish negative results in the research report if they occur.	132	2	5	4.79	0.539
39	I am aware that I must include only real data and performed activities in the research report, and I must not subsequently modify the results and performed activities.	132	3	5	4.78	0.499
41	I am aware that I must not tailor data and research results to the expectation of the publisher (e.g., journal) where I want to publish them.	132	2	5	4.75	0.558
	3 lowest assessed items					
49	I am aware that I must publish the results of the research only in a journal/publication with an appropriate review process.	132	1	5	4.13	1.029
44	I am aware that as a peer reviewer, I must not share the results of the research I am reviewing with other colleagues before the paper is published.	132	1	5	4.11	1.148
45	I know that as a published author myself, I need to inquire about the different publication procedures of different media/magazines.	132	1	5	4.11	1.009

It is encouraging that in the Publication and Dissemination scale, participants, on average, gave the highest rating for being aware that negative results must also be included in the report. The lowest rating was for knowing that authors themselves are responsible for making inquiries about publication protocols in various journals/media.

Table 5
Three highest and lowest assessed items of the Violations scale

Item no.		N	Min	Max	Mean	Std. Dev.
	3 highest assessed items					
70	I am aware that no matter how many people do it, cheating in research is always just as problematic.	126	2	5	4,80	0,522
69	I am aware that I must not duplicate data/results, even if others do.	126	2	5	4,79	0,546
51	I am aware that I must not adjust the data afterwards in order to achieve desirable results that would confirm my hypotheses.	125	1	5	4,78	0,633
	3 lowest assessed items					
63	I am aware that I must not make the results public before they have been peer-reviewed.	125	1	5	4,13	1,164
58	I am aware that I should not publish the same research reports multiple times in different journals.	126	1	5	3,53	1,355
57	I believe that I should not use the results of one research study for several different publications.	126	1	5	3,30	1,358

The last scale referred to Violations. It is encouraging that students are aware that misconduct in research is always problematic, no matter how many others do it. The lowest mean score was for the assessment that students believe that the results of a research study cannot be used for more than one publication. Interestingly, the lowest scoring items on the Violation scale are those dealing with the 'grey zone' or Questionable Research Practices (QRPs), which was to be expected since QRP issues are not obviously right or wrong but require a subtle awareness of misconduct.

Sub-group differences

To obtain an answer to our second research goal, regarding how students' attitudes, awareness, and opinions about issues of integrity in research differ among BA, MA, and PhD students, we analysed the differences among subgroups in students' ratings of the items.

As can be seen in Table 6, statistically significant differences between

levels of study were seen in 2 of 18 items in the Values and Principles scale, 3 of 17 items in the Research Practice scale, 5 of 15 items in the Publication and Dissemination scale, and 7 of 24 items in the Violations scale.

For Items 2, 27, 28, 40, and 45, 47, the PhD students' assessment on average was higher than those of the other two groups (BA, MA). Most of the items are in the scales Research Practice and Publication and Dissemination; the reason for this could be that PhD students have more knowledge and experience in research and are more competent and confident in methods and publication. In the Violations scale, with the exception of one item, BA students rated their knowledge/awareness/belief lower than the other two groups (MA, PhD). For two items (38, 41), BA students' ratings were lower than those of MA students, and for one (26) they were lower than those of PhD students. The mean rating of Item 1 was highest for PhD students and lowest for BA students.

Furthermore, in assessing other items for which a statistically significant value was not found, there is a trend for higher-level students to show greater awareness or knowledge of the research integrity issues. This result is to be expected as MA students and doctoral students have more research knowledge and experience compared to BA students.

Table 6

Kruskal-Wallis test of between-group comparison on items where statistically significant differences were shown

Item no.		Study level	N	MR	M	SD	$X^2(2)$	
		Values and Principles						
1	I am aware that I must conduct the research according to ethical principles.	BA[2,3*]	115	83.77	4.66	0.62	6.425	.040
		MA[3]	52	95.76	4.87	0.35		
		PhD	9	107.00	5.00	0.000		
		Total	176					
2	I am aware that I must conduct the research objectively, honestly and in a transparent manner.	BA	114	82.17	4.65	0.624	7.791	.020
		MA	51	96.07	4.84	0.464		
		PhD[1,2]	9	106.50	5.00	0.000		
		Total	174					
		Research Practice						
26	I know the research methodology in my field of expertise.	BA	87	65.22	3.67	1.008	6.908	.032
		MA	45	77.00	3.98	0.866		
		PhD[1]	9	96.83	4.44	0.726		
		Total	141					

Item no.		Study level	N	MR	M	SD	X^2(2)	
27	I know different research approaches.	BA	87	67.64	3.76	0.988	7.777	.020
		MA	45	70.56	3.84	0.952		
		PhD[1,2]	9	105.67	4.67	0.500		
		Total	141					
28	I know the appropriate procedures for data collection.	BA	87	67.97	3.86	0.809	7.866	.020
		MA	45	69.92	3.89	0.935		
		PhD[1,2]	9	105.67	4.67	0.500		
		Total	141					
		Publication and Dissemination						
38	I am aware that I must prepare a research report (e.g., a paper) responsibly, regardless of the quality, importance, and reputation of the publication (e.g., journals, monographs, etc.) in which the report will be published.	BA[2]	82	61.15	4.54	0.670	7.122	.028
		MA	41	76.50	4.85	0.358		
		PhD	9	69.72	4.67	0.707		
		Total	132					
40	I am aware that I must also publish negative results in the research report if they occur.	BA	82	61.63	4.68	0.646	8.793	.012
		MA	41	73.93	4.95	0.218		
		PhD[1,2]	9	77.00	5.00	0.000		
		Total	132					
41	I am aware that I must not tailor data and research results to the expectation of the publisher (e.g., journal) where I want to publish them.	BA[2]	82	61.80	4.66	0.633	6.878	.032
		MA	41	74.59	4.90	0.374		
		PhD	9	72.50	4.89	0.333		
		Total	132					
45	I know that as a published author myself, I need to inquire about the different publication procedures of different media/magazines.	BA	82	65.88	4.11	0.981	7.141	.028
		MA	41	61.22	3.95	1.094		
		PhD[1,2]	9	96.17	4.89	0.333		
		Total	132					
47	I understand that the structure and style of a research report may vary by professional field.	BA	81	62.30	4.43	0.724	6.421	.040
		MA	41	67.82	4.49	0.840		
		PhD[1,2]	9	91.00	5.00	0.000		
		Total	131					
		Violations						
51	I am aware that I must not adjust the data afterwards in order to achieve desirable results that would confirm my hypotheses.	BA[2,3]	76	58.86	4.67	0.755	6.950	.031
		MA	41	68.93	4.93	0.346		
		PhD	8	72.00	5.00	0.000		
		Total	125					

Item no.		Study level	N	MR	M	SD	$X^2(2)$	
52	I know that I should not selectively interpret the research results in a way that would better answer my research questions.	BA[2]	76	57.59	4.54	0.807	9.586	.008
		MA	41	72.82	4.88	0.510		
		PhD	9	71.00	4.89	0.333		
		Total	126					
61	I know that I must properly cite (cite or paraphrase) when I summarise other authors.	BA[2,3]	76	59.39	4.66	0.684	5.981	.050
		MA	41	68.70	4.90	0.300		
		PhD	9	74.50	5.00	0.000		
		Total	126					
62	I know that I need to properly reference (cite or paraphrase) when summarising my past research.	BA[2,3]	76	58.32	4.47	0.887	7.706	.021
		MA	41	69.82	4.80	0.558		
		PhD	9	78.50	5.00	0.000		
		Total	126					
71	I am aware that I must avoid conflicts of interest when doing research (e.g., personal - I make a negative review because I don't like someone; financial - I manipulate the results of the drug's effectiveness because I am funded by the company that manufactures the drug; ideological - I disagree with research results because they contradict my beliefs; etc.).	BA[2,3]	76	58.05	4.58	0.753	8.942	.011
		MA	41	70.74	4.90	0.300		
		PhD	9	76.50	5.00	0.000		
		Total	126					
73	I believe that handling violations should be transparent, fair, and confidential/anonymous until the process is officially closed.	BA[2,3]	76	57.99	4.47	0.840	8.227	.016
		MA[3]	41	69.99	4.78	0.525		
		PhD	9	80.50	5.00	0.000		
		Total	126					
74	I believe that if I notice and report a violation, I should be properly protected (by the institution).	BA[2,3]	76	57.81	4.55	0.737	9.143	.010
		MA	41	70.87	4.88	0.331		
		PhD	9	78.00	5.00	0.000		
		Total	126					

*Indicates between groups comparison where Games Howell Post Hoc test showed statistical significance ($p \geq .05$)

Measurement characteristics of the profile

To obtain an answer to our third research goal, which was to empirically validate the competency profile and, if necessary, to modify its categories (competencies), we calculated the measurement characteristics of the questionnaire.

First, we calculated the Cronbach's alpha coefficient to determine the reliability of the questionnaire. As can be seen (Table 7), the reliability coefficients for the four scales and the questionnaire as a whole are all around .900 or higher. Therefore, we can conclude that the overall reliability of the questionnaire and also the reliability of all the individual scales is highly satisfactory and strong, so there is no need for adjustment, which also suggests that the overall structure of the competency profile is good. Since the Research Practice scale deviates slightly in the negative direction of reliability, perhaps some improvements could be made to this scale. The factor analysis we conducted (see Table 8) also suggests that the Research Practice domain of the profile could be reconsidered.

Table 7
Cronbach's Alpha coefficients

Scale	Cronbach's Alpha	N of Items	N of valid cases
Values and Principles	.918	18	171
Research Practice	.898	17	140
Publication and Dissemination	.909	15	131
Violations	.950	24	121
All items	.975	74	119

A factor analysis was then performed to determine the extent to which shared variance existed between the items of the questionnaire. The 74 items of the questionnaire were subjected to principal component analysis (PCA). First, the suitability of the data for factor analysis was checked. A review of the correlation matrix revealed that many coefficients were .3 and above. The Kaiser-Meyer-Olkin value was .766, which is well above the recommended value of .6, and Bartlett's Test of Sphericity reached statistical significance ($p \leq .000$), confirming the factorability of the correlation matrix.

Principal component analysis (Table 8) yielded several possible solutions, but a four-component option was the most robust, explaining a total of 55.84% of the variance, with Component 1 contributing 39.79%, Component 2 7.89%, Component 3 4.43%, and Component 4 3.74% of the variance. A four-component oblimin rotation was performed. Component 1 showed a loading of 28 items, Component 2 of 19 items, Component 3 of 22 items, and Component 4 of 5 items.

Table 8

Principal Component Analysis (PCA)

Item no.	Area in Competency profile	Component			
		1	2	3	4
74	Violations	.855			
70	Violations	.853			
40	Publication and Dissemination	.828			
71	Violations	.822			
67	Violations	.822			
69	Violations	.818			
68	Violations	.815			
61	Violations	.785			
60	Violations	.767			
41	Publication and Dissemination	.755			
66	Violations	.733			
51	Violations	.730			
55	Violations	.721			
38	Publication and Dissemination	.705			
52	Violations	.693			
6	Values and Principles	.686			
39	Publication and Dissemination	.678			
3	Values and Principles	.654			
7	Values and Principles	.650			
59	Violations	.638			
4	Values and Principles	.634			
62	Violations	.626			
33	Research Practice	.620			
65	Violations	.620			
46	Publication and Dissemination	.618			
73	Violations	.615			
25	Research Practice	.583			
72	Violations	.553			
49	Publication and Dissemination		.776		
50	Publication and Dissemination		.766		
45	Publication and Dissemination		.761		
58	Violations		.759		
63	Publication and Dissemination		.704		
28	Research Practice		.674		
57	Violations		.672		
64	Violations		.657		
22	Research Practice		.640		

Item no.	Area in Competency profile	Component			
		1	2	3	4
44	Publication and Dissemination		.633		
27	Research Practice		.602		
47	Publication and Dissemination		.581		
48	Publication and Dissemination		.566		
29	Research Practice		.561		
30	Research Practice		.552		
37	Publication and Dissemination		.549		
26	Research Practice		.548		
43	Publication and Dissemination		.535		
36	Publication and Dissemination		.420		
13	Values and Principles			.770	
14	Values and Principles			.767	
2	Values and Principles			.728	
15	Values and Principles			.715	
23	Research Practice			.699	
5	Values and Principles			.683	
18	Values and Principles			.670	
35	Research Practice			.666	
1	Values and Principles			.636	
21	Research Practice			.633	
31	Research Practice			.620	
17	Values and Principles			.620	
24	Research Practice			.615	
12	Values and Principles			.606	
42	Publication and Dissemination			.592	
11	Values and Principles			.589	
32	Research Practice			.584	
9	Values and Principles			.579	
20	Research Practice			.569	
16	Values and Principles			.552	
10	Values and Principles			.547	
19	Research Practice			.523	
56	Violations				-.727
34	Research Practice				-.647
54	Violations				-.636
8	Values and Principles				-.609
53	Violations				-.603

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalisation.

Discussion

Numerous codes of conduct, policies, guidelines, and manuals on what research integrity encompasses exist. However, our literature review shows that there is no common educational model, no specifically developed competency profile that could address all the drawbacks of current RCR education and thus provide a systematic and all-encompassing RCR education that activates the four levels mentioned above (sensitivity, reasoning, motivation, commitment). A competency profile we developed for teaching and learning research integrity (Selan et al., 2021) responds to the drawbacks that Diaz-Martinez et al. (2019) highlight regarding current research integrity training (1) RCR is mostly taught at the PhD level; 2) RCR training is mostly taught in a stand-alone format that places it outside of the research context; 3) RCR training is mostly designed to address general topics rather than context-specific practices) and, in addition to that, systematically include and address 'grey area' topics or questionable research practices (QRPs) in research integrity education, as emphasised by Hall and Martin (2019) and Butler et al. (2017). Therefore, the critical contribution of our competency profile to RCR education is to 1) progressively increase the complexity of research integrity competencies and enable students at all levels of study (Bachelor (BA), Master (MA), and doctoral (PhD)) to become progressively 'streetwise' about research integrity; 2) integrate RCR into research education itself; 3) provide context-specific behavioural indicators that can be used to address research integrity issues in different professional fields; and 4) pay particular attention not only to overt misconduct (FFPs) but also to more subtle and harmful questionable research practices (QRPs) from which, as pointed out by Steneck (2006, p. 66), the greatest public harm occurs.

Even though competency models are normatively justified and have a conclusive theoretical basis, they are not static, so they need to be validated and updated regularly in the process of gathering and analysing evidence to support the relevance and accuracy of competency models (Schaper, 2017; LinkedIn, 2023). Validation identifies strengths but also gaps and areas for improvement in competency models to determine if they must be updated (revised and refined) and how.

According to Schaper (2017), there are four criteria of validation, which must be met to assume that a competency model generates new insights and can be justifiably used for the intended purpose: for improving teaching quality, whatever the educational context may be. First, the model should be based on proven and evidence-based notions about the structure and ranking of competencies in a field of application. Second, a competency model should be

consistent and generalisable in their descriptions of competencies for a particular professional domain. Third, a competency model should be organised and formulated such that it can be understood by the target groups while making reference to needs and prior conceptions to ensure sufficient acceptance within the target group. Fourth, the practical applicability of a competency model should be based on theoretically and empirically supported evidence and arguments. Different empirical methods can be used to validate competency models, including interviews, surveys, observations, focus groups, and subject matter experts, among others.

In reference to the first criterion, our competency profile is constructed in such a way that it enables RCR education to be all-encompassing and thoroughly integrated into the research education itself, thus enabling students to become 'streetwise' and 'to perform the complex tasks of the discipline with integrity' meaning activating not only ethical sensitivity, reasoning, and judgement, but also commitment: as The US National Research Council (2002, p. 86, 96) emphasises, these are 'survival skills'. Activating the four aspects of RCR education according to Rest's four-component model of morality emphasised by many researchers (Bebeau, 2002b; Bebeau, 2002c; Bebeau & Thoma, 1999; Davis & Riley, 2008: Davis & Feinerman, 2010) is one of the key aspects of our competency profile.

Regarding the second and third criteria, the important aspects of our competency profile are that competencies are conceived and designed as 'intermediate concepts' that link concrete actions (behavioural indicators) to abstract principles and theories (Bebeau & Thoma, 1999). Thus, our competency profile can serve as a list that encompasses and covers all areas of research integrity (similar to Davis and Feinerman's (2010) list for teaching RCR to graduate engineering students; Davis and Feinerman, pp. 354–355, footnote 5) and can be applied to a particular professional domain in a way that it can be understood by the target groups.

However, in light of recent developments and regarding the all-encompassing nature of our competency profile, a highly relevant area is missing from our competency profile and list of intermediate concepts. We developed the competency profile in 2021 (Selan et al., 2021). Although the use of artificial intelligence (AI) in research did not appear out of the blue, and its threat to academic integrity was detected a few years ago (Nanda, 2021), it was not until November 2022, when ChatGPT was launched, and its ability to extract information and generate text was made widely publicly available, that it became an issue to be seriously considered within the research integrity education. Because AI tools can produce seemingly human-written texts by drawing on

knowledge disseminated throughout the internet, their use greatly compromises research integrity. Government institutions, universities, academic journals, and publishers have, therefore, in the past year begun desperately and intensively to implement safeguards to prevent the misuse of AI tools in research and its publication (Bison, 2023; Brent, 2023; Council of Europe, 2023; Eaton, 2023; Hussain, 2023; Ohio State University, 2023; Trachtenberg, 2023; Turnitin, 2023; University of Cambridge, 2023; York University, 2023; Zobel, 2023). The relationship between AI and research integrity has become one of the most active and vital areas of discussion on research integrity in 2023, with many scholarly articles and books already published (Currie, 2023; Dawson, 2023; Eke, 2023; Olatunde Oduoye et al., 2023), and thus the inclusion of this area also requires an improvement of our competency profile.

Regarding the fourth criterion of practical applicability (Schaper (2017), our competency profile has been put into educational use in the courses designed and conducted at the University of Ljubljana, Karlova University, and the University of Utrecht within the project 'INTEGRITY' with the support of the Erasmus+ programme of the European Union, project number: 2018-1-NL01-KA203-038900. Some of these courses are also evaluated in the articles of this special issue of the CEPS Journal (See article Academic Writing in Teaching Research Integrity on pages 129–154). These courses demonstrate and confirm the practicality and usefulness of the competency profile in terms of its all-encompassing nature. Indeed, the courses designed were highly diverse and served students of different levels and different study programmes, from BA, MA, to PhD levels and from humanities and social sciences to natural sciences.

However, to provide empirical validation and empirically assess the validity of the content of our competency profile and to determine whether some adjustments to the profile are needed, we also tested it statistically in a way Hauser, Reuter, Gruber, and Mottok (2018) validated and modified the factor structure of Böttcher and Thiel's (2018) F-Comp questionnaire to measure research competencies. The overall reliability of the questionnaire and the reliability of all the individual scales are shown to be strong; only the Research Practice scale deviates slightly, suggesting some improvements would be possible. In relation to the four-field structure of the competency profile, the factor analysis (i.e., principal component analysis (PCA)) also suggested that a four-component option was the most robust. Based on the PCA, we can thus make the following interpretation about the structure of our original competency profile. The four-component solution we derived from PCA seems to confirm that the four-field structure of the original Competency profile (Values and Principles, Research Practise, Publication and Dissemination, and Violations) is overall sound and firm. However, the

distribution of items in Components 1, 2, 3, and 4 is not as clear-cut as originally defined in the questionnaire (Table 8). Component 1 consists predominantly of Violation items (16 out of 28), Component 2 consists predominantly of items on Publication and Dissemination (10 out of 19), Component 3 consists predominantly of items on Values and Principles (13 out of 22), while Component 4 consists of only five items, most of which are from the Violations domain (3 out of 5). The Research Practice items are not predominant in any of the four components but are most prevalent in Component 2 (6 of 19) and Component 3 (8 of 22). Therefore, the substructure of the components does not fully align with our theoretically defined subdomains and competencies of the competency profile, suggesting that the distribution of subdomains and competencies in the original competency profile could be reconsidered and reorganised. In particular, the Research Practice area could perhaps be reconsidered, as also suggested by its somewhat lower reliability (Table 7). As suggested above, problems regarding AI and research integrity should also be included in the competency profile to keep it up to date with the most contemporary issues and dilemmas in RCR education.

Conclusion

The goal of our research was to develop and validate the competency profile for teaching and learning research integrity. The profile is based on four assumptions: 1) to include all levels of study (BA, MA, and PhD); 2) to integrate RCR education into research education itself; 3) to be specific enough to address research integrity issues in context-specific practices; 4) to pay particular attention to the 'grey zone' or Questionable Research Practices (QRPs).

To test and validate the profile, we developed a questionnaire that allowed us to 1) obtain information about students' attitudes toward research integrity issues, 2) identify differences in these attitudes among BA, MA, and PhD students, and 3) statistically validate the competency profile and suggest possible improvements.

The results showed that:

1. In general, students are well aware of research integrity issues, as the scores were quite high on all items assessed. However, there were some deviations to lower scores on the items in Research Practice and Violations scales. For Research Practice, the lowest score was related to knowledge of methodological procedures, and for Violations, the lowest score was related to the 'grey zone' or QRPs, confirming our assumption that the 'grey zone' issues are precisely the ones that should be addressed and given special attention in present-day research integrity education.

2. The differences in the attitudes of BA, MA, and PhD students indicated that the higher-level students have a significantly stronger awareness of integrity issues than the lower-level students. This suggests that special attention should be paid to addressing integrity issues in research, even at the lowest levels of study, and not only to PhD students. Again, this confirms one of the assumptions on which we based our profile, namely that research integrity should not only be taught to PhD students but that training in research integrity should begin at the BA level and gradually increase in complexity through MA to PhD level.
3. The measurement characteristics have shown that the 'overall reliability of the questionnaire and also the reliability of all individual scales is very high, so an adjustment of the questionnaire and its scales is not necessary, which also indicates a good overall structure of the Competency profile. Only the Research Practice scale deviates slightly in a negative direction, indicating that if improvements to the Competency profile are to be considered, they should be focused on Research Practice. The PCA also points in this direction. The four-component solution confirms that the four-field structure of the original Competency profile (Values and Principles, Research Practise, Publication and Dissemination, and Violations) is overall sound and firm. However, the distribution of items in Components 1, 2, 3, and 4 is not entirely clear, as the items on research practice do not predominate in any of the four components. Therefore, the substructure of the components does not fully match the theoretically defined sub-areas and competencies of the competency profile, suggesting that the distribution of competencies could be reconsidered, especially in the Research Practice area. Recent developments in the field of research integrity also suggest that the competency profile should be expanded to include issues related to the impact of artificial intelligence (AI) on research integrity.

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Appendix 1

Item no.		N	Min (1)	Max (5)	Mean	Std. Dev.
	Values and Principles					
1	I am aware that I must conduct the research according to ethical principles.	176	3	5	4.74	0.545
2	I am aware that I must conduct the research objectively, honestly and in a transparent manner.	174	2	5	4.72	0.573
3	I am aware that as a researcher I am responsible for the credibility of the research results.	176	3	5	4.76	0.513
4	I am aware that participants in the research must participate on a voluntary basis.	176	2	5	4.82	0.521
5	I am aware that I must provide information to research participants in an objective and honest manner.	176	2	5	4.76	0.534
6	I am aware that I must not encourage participants to participate in the research in an inappropriate way (coercion, bribery, etc.).	177	2	5	4.85	0.453
7	I am aware that, as a researcher, my conduct should not affect the judgment, actions, or responses of the participants in the research.	175	2	5	4.82	0.452
8	I am aware that I must allow participants to withdraw from the research at any time.	176	2	5	4.74	0.595
9	I am aware that I must be particularly careful when I intend to include special groups of participants in the research (e.g., persons with special needs, socially vulnerable groups, refugees, etc.).	177	2	5	4.67	0.696
10	I am aware that I can only conduct research with animals if I am properly qualified to do so.	177	1	5	4.40	1.056
11	I am aware that I must treat animals properly in research - in an ethical way (care, nutrition, accommodation, minimisation of pain and suffering, etc.).	177	1	5	4.67	0.822
12	I believe that research on animals should be properly regulated (e.g., by laws, regulations, and codes).	176	1	5	4.68	0.816
13	I am aware that, as a researcher, I must acquire adequate knowledge in the field of research methods before conducting independent research.	176	1	5	4.66	0.647

Item no.		N	Min (1)	Max (5)	Mean	Std. Dev.
14	I am aware that, as a researcher, I must acquire adequate knowledge in the field of research content before conducting independent research.	177	1	5	4.74	0.544
15	I am aware that, as a researcher, before starting the research I must check possible harmful effects or research implications.	177	1	5	4.44	0.909
16	I am aware that for the appropriateness of the quality and integrity of the research, it is not enough to follow only the minimum ethical standards ('what is not allowed according to the rules'), but I must strive to follow the highest possible standards.	177	2	5	4.54	0.691
17	I believe that research must be regulated at the national level with appropriate laws, codes, regulations and, as a result, sanctions for violations.	177	2	5	4.45	0.804
18	I believe that research must be regulated at the level of the institution with appropriate codes, regulations and, as a result, sanctions for violations.	177	2	5	4.59	0.670
	Research Practice					
19	I am aware that as the leader (or will have to as the future leader) of the research group, I have to familiarise younger colleagues with all phases of the research and be a suitable example for them.	142	3	5	4.69	0.535
20	I am aware that in order to carry out the research successfully, I must have appropriate research equipment available.	142	3	5	4.71	0.540
21	I understand that as a researcher I must ensure that the research data is properly archived and protected.	142	2	5	4.49	0.751
22	I am aware that, as a researcher, I must make the raw (unprocessed) research data available (to other subsequent researchers) to verify the relevance of the results.	142	1	5	4.35	0.932
23	I am aware that I have to prepare the research in such a way that other researchers can always check it or repeat (taking into account any new or different circumstances).	142	1	5	4.51	0.805
24	I believe that a research institution should provide adequate mentoring for junior researchers.	142	2	5	4.68	0.612

Item no.		N	Min (1)	Max (5)	Mean	Std. Dev.
25	I believe that older (more experienced) researchers should not abuse their position (e.g., to sign the research as authors, even though they did not participate in it).	140	2	5	4.84	0.517
26	I know the research methodology in my field of expertise.	141	1	5	3.82	0.968
27	I know different research approaches.	141	1	5	3.84	0.973
28	I know the appropriate procedures for data collection.	141	2	5	3.92	0.854
29	I know the appropriate procedures for data processing (e.g., statistics).	141	1	5	3.70	0.941
30	I understand that I must know the relevant statistical procedures and be able to interpret the results, even though data processing may be carried out by other researchers.	141	1	5	4.50	0.780
31	I am aware that without adequate methodological knowledge, I cannot interpret the results of the research.	141	2	5	4.65	0.623
32	Even if we conduct research in a group, I know that I need to know the whole or all phases of the research in which I participate.	141	1	5	4.56	0.740
33	If we are conducting research in a group, I understand that I must share the data I obtain with the other researchers in the research group.	141	3	5	4.82	0.441
34	If we are conducting research in a group, I am aware that everyone who participates in the research is responsible for the proper conduct of the research.	141	2	5	4.73	0.546
35	I believe that the results of the research I obtain should be freely available to the widest possible public (open access).	141	1	5	4.52	0.789
	Publication and Dissemination					
36	I understand that, if there are several authors of the publication, we are all equally responsible for the entire publication (not only for the part that we prepared ourselves).	132	1	5	4.39	0.808
37	I know that I must appropriately acknowledge everyone who, in addition to the authors, contributed to the research (e.g., sponsors, external collaborators, etc.).	132	2	5	4.30	0.906

Item no.		N	Min (1)	Max (5)	Mean	Std. Dev.
38	I am aware that I must prepare a research report (e.g., a paper) responsibly, regardless of the quality, importance, and reputation of the publication (e.g., journals, monographs, etc.) in which the report will be published.	132	3	5	4.64	0.607
39	I am aware that I must include only real data and performed activities in the research report, and I must not subsequently modify the results and performed activities.	132	3	5	4.78	0.499
40	I am aware that I must also publish negative results in the research report if they occur.	132	2	5	4.79	0.539
41	I am aware that I must not tailor data and research results to the expectation of the publisher (e.g., journal) where I want to publish them.	132	2	5	4.75	0.558
42	I am aware that if I discover an error in the results after publication, I must subsequently correct the published research report or withdraw it from publication.	132	1	5	4.42	0.917
43	I understand that when preparing a review (so-called peer reviewing; this also includes providing feedback or evaluating seminar and other assignments), I must not include my personal preferences (e.g., including favourite literature, theories, attitudes, beliefs, etc.).	132	1	5	4.38	0.861
44	I am aware that as a peer reviewer, I must not share the results of the research I am reviewing with other colleagues before the paper is published.	132	1	5	4.11	1.148
45	I know that as a published author myself, I need to inquire about the different publication procedures of different media/magazines.	132	1	5	4.11	1.009
46	I am aware that I must always prepare the review in an objective and transparent manner.	132	3	5	4.61	0.650
47	I understand that the structure and style of a research report may vary by professional field.	131	2	5	4.49	0.748
48	I am aware that I need to know the quality of journals/media that publish results in my field of expertise.	132	2	5	4.47	0.756
49	I am aware that I must publish the results of the research only in a journal/publication with an appropriate review process.	132	1	5	4.13	1.029

Item no.		N	Min (1)	Max (5)	Mean	Std. Dev.
50	I am aware that I may not publish in journals with inappropriate publication practices (so-called predatory journals).	132	1	5	4.40	0.881
	Violations					
51	I am aware that I must not adjust the data afterwards in order to achieve desirable results that would confirm my hypotheses.	125	1	5	4.78	0.633
52	I know that I should not selectively interpret the research results in a way that would better answer my research questions.	126	1	5	4.67	0.714
53	I understand that I must not take data from other research without permission in case I do not have enough of my own data available.	126	1	5	4.56	0.785
54	I am aware that I must not subsequently adjust/change the hypotheses when I see what the results will be.	126	1	5	4.58	0.804
55	I am aware that I must include all results in the report, not just those that I 'like' or provide a desired answer to my research questions.	125	2	5	4.70	0.622
56	I am aware that I must not exclude data that spoils 'good results' from the report.	126	2	5	4.74	0.609
57	I believe that I should not use the results of one research study for several different publications.	126	1	5	3.30	1.358
58	I am aware that I should not publish the same research reports multiple times in different journals.	126	1	5	3.53	1.355
59	I am aware that when preparing the report, I must also take into account sources that oppose or do not confirm the results of my research.	125	1	5	4.38	0.949
60	I understand that I must present the results realistically, without exaggerating their importance.	126	2	5	4.67	0.645
61	I know that I must properly cite (cite or paraphrase) when I summarise other authors.	126	2	5	4.76	0.572
62	I know that I need to properly reference (cite or paraphrase) when summarising my past research.	126	1	5	4.62	0.778
63	I am aware that I must not make the results public before they have been peer-reviewed.	125	1	5	4.13	1.164
64	I am aware that I must not hide the results of the research from the public.	126	1	5	4.39	0.938

Item no.		N	Min (1)	Max (5)	Mean	Std. Dev.
65	I am aware that I must not take advantage of personal acquaintances for the personalised review process.	126	1	5	4.58	0.763
66	I understand that the authors of the paper can only be those who participated in the preparation, execution, and analysis of the research.	125	2	5	4.76	0.614
67	I am aware that the funders/sponsors of the research must not influence the process and results of the research.	125	3	5	4.70	0.609
68	I am aware that ignorance and superficiality are no excuses for inappropriate research (and violation of research integrity).	125	2	5	4.67	0.645
69	I am aware that I must not duplicate data/results, even if others do.	126	2	5	4.79	0.546
70	I am aware that no matter how many people cheat in research, it is always just as problematic.	126	2	5	4.80	0.522
71	I am aware that I must avoid conflicts of interest when doing research (e.g., personal - I make a negative review because I don't like someone; financial - I manipulate the results of the drug's effectiveness because I am funded by the company that manufactures the drug; ideological - I disagree with research results because they contradict my beliefs; etc.).	126	2	5	4.71	0.631
72	I am aware that I must not ignore/be silent if I notice a violation or inappropriate research, but I must report this to the responsible person (at the institution).	126	1	5	4.51	0.807
73	I believe that handling violations should be transparent, fair, and confidential/anonymous until the process is officially closed.	126	1	5	4.61	0.737
74	I believe that if I notice and report a violation, I should be properly protected (by the institution).	126	2	5	4.69	0.626

Biographical note

Jurij Selan, PhD, is an Associate Professor in visual art theory and vice-dean for quality assurance at the Faculty of Education at University of Ljubljana. His research interests include the nature of visual art language and visual art grammar, the role of visual art language in art education, the nature of artistic development in children, the role of colour models in art education, the nature of art hermeneutics and interpretation etc. In recent years, due to his work as vice-dean for quality assurance, his research also extended to the field of academic and research integrity.

Mira Metljak works as a project administrator/manager at the National Institute of Biology. Before, she was working at the University of Ljubljana, Faculty of Education as a project manager and, for some time, as a Teaching Assistant for pedagogical methodology. Her main interests were quality assurance in education, developing research competence of students and professional development of in-service teachers. She was included in many national and international projects in different fields of education (students with special needs, quality assurance, digital competences in education, ...).

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Perceptions of Students and Teachers of the University of Montenegro on Academic Integrity

Sanja Čalović Nenezić*[1], Milena Krtolica[2], Milica Jelić[2] and Suzana Šekarić[2]

At the University of Montenegro, increasing emphasis has recently been placed on academic integrity. Academic integrity is based on the principles of honesty, objectivity, openness, freedom in teaching and research, and responsibility to academia and society/the community. One of the basic principles of academic integrity is honesty. The present study is based on examining the perception of students and teachers of the University of Montenegro concerning different segments of academic honesty. The aim of the research was to *examine ethical behaviour related to respect for someone else's work (using and referring to literature) and copying as well as using illicit means in exams*. The research was conducted using quantitative research on a sample of 200 students and 50 teachers at the University of Montenegro. For this purpose, the authors used a Likert-type assessment scale. The findings suggest that the respondents understand the importance of academic integrity, that is, honesty as its principle, but that they do not recognise all of the segments that it covers in the same way. For example, different answers were received regarding the claim that students copy papers without paraphrasing, and despite the observed negative attitude towards the disciplinary procedure in both groups, teachers seem to lead in this attitude.

Keywords: academic integrity, cheating, plagiarism, teachers, students

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Percepcije študentov in univerzitetnih učiteljev Univerze v Črni gori o akademski integriteti

Sanja Čalović Nenezić, Milena Krtolica, Milica Jelić in Suzana Šekarić

Na Univerzi v Črni gori (Univerzitet Crne Gore) se v zadnjem času vse bolj poudarja akademska integriteta. Ta temelji na načelih poštenosti, objektivnosti, odprtosti, svobode pri poučevanju in raziskovanju ter odgovornosti do akademske sfere in družbe/skupnosti. Eno izmed osnovnih načel akademske integritete je poštenost. Ta študija temelji na preučevanju percepcij študentov in univerzitetnih učiteljev Univerze v Črni gori glede različnih segmentov akademske poštenosti. Cilj raziskave je bil preučiti etično vedenje, povezano s spoštovanjem tujega dela (uporaba in sklicevanje na literaturo) in prepisovanjem ter z uporabo nedovoljenih sredstev pri izpitih. Raziskava je bila izvedena s kvantitativno raziskavo na vzorcu 200 študentov in 50 učiteljev na Univerzi v Črni gori. V ta namen so avtorji uporabili ocenjevalno lestvico Likertovega tipa. Ugotovitve kažejo, da anketiranci razumejo pomen akademske integritete, tj. poštenosti kot njenega načela, vendar pa ne prepoznavajo vseh segmentov, ki jih zajema, na enak način. Različni so bili na primer odgovori glede trditve, da študentje prepisujejo prispevke brez parafraziranja, kljub opaženemu negativnemu odnosu do disciplinskega postopka v obeh skupinah pa se zdi, da v tem odnosu vodijo učitelji.

Ključne besede: akademska integriteta, goljufanje, plagiatorstvo, univerzitetni učitelji, študentje

Introduction

Various forms of cheating have been recognised as a problem both in schools and in higher education institutions recently. The present paper examines various segments of academic honesty from the perspective of students and teachers at the University of Montenegro. The Code of Ethics of the University of Montenegro (Article 2, Point 14) includes the prohibition of any form of copying and the use of illegal aids in exams, as well as other forms of deception and fraud by students.

Academic Integrity, Article 2 of the Law on Academic Integrity (Official Gazette of Montenegro, No. 17/19), refers to academic behaviour that ensures the preservation of academic honesty, the dignity of the profession, the quality of work and work products, the spirit of equal cooperation with all participants in the academic process, focus on the truth as a fundamental value, and respect for legal regulations as the basic responsibility of members of the academic community, i.e., any behaviour that follows the principles of academic integrity (Law on Academic Integrity, 2019). All members of the academic community should behave following a code of ethics. The values that enable the academic community to implement these principles are trust, respect, sincerity, honesty, responsibility and courage. Academic autonomy is the result of the regulation (agreed or dictated) of the relationship between the government and the academic community (Zgaga, 2022), which is a segment of academic integrity.

Academic cheating or dishonesty refers to behaviour that violates the rules on taking exams or completing assignments and unfairly favours one student over another (Cizek, 2004). If one student copies from another, it is active cheating, and if s/he allows another to copy from him/her, it is passive cheating (Eisenberg, 2004). Behaviours that are considered academically dishonest can be classified into the following categories: copying during written knowledge assessment, cheating/plagiarism while writing written papers (essays, term papers), inventing a bibliography, handing in someone else's work (work written by someone else), and downloading someone else's text without citation (McCabe et al., 2001). It seems that the culture of tolerance and support for cheating among students, teachers and parents (all of whom work together to help students achieve the best possible results) is often present and that the actors do not recognise all forms of cheating (Šorgo et al., 2015).

Research results (Strom & Storm, 2007; Jones, 2011; Mercè et al., 2012) show that there are several key reasons why students exhibit this behaviour. One of them may be a lack of student success and the consequent need to find a way to pass difficult exams, but another source of this behaviour may be teachers

themselves, along with their lack of concern for rectifying poor student success. The reasons may also be sought in parents who believe that the ultimate goal is to achieve a good result regardless of the means. Additionally, the "spillover" of wider social influences on school learning and the individual, in the sense of achieving personal benefit at the expense of others, seems particularly important (Strom & Strom, 2007). Similar reasons have been noted by Jones (2011), who highlights grades, procrastination and a lack of time to study. Research shows a positive connection between academic dishonesty and procrastination, i.e., a high level of procrastination positively correlates with the occurrence of academic dishonesty (Mercè et al., 2012).

In contrast to those who procrastinate, there are students who self-regulate their learning. Self-regulation in the broadest sense refers to the ability to focus attention, manage emotions, and control and direct behaviour in order to achieve a certain goal (Blair & Razza, 2007; Calkins & Williford, 2009; Rimm-Kaufman et al., 2009).

Academic self-regulation implies the ability to direct one's own behaviour in the field of learning. Self-regulated learners are more aware of their own cognitive strategies, ways of thinking, and control of the learning process (Weinstein & Mayer, 1986; Hamman et al., 2000; Winne & Hadwin 1998; Zimmerman 1994; Schraw & Dennison, 1994; Pintrich & Schunk, 2002). Academic integrity represents one of the fundamental starting points on which academic self-regulation is based.

When it comes to academic honesty, motivational factors are seen as unavoidable. They shape the intention underlying academic cheating, while various contextual factors increase the likelihood that this intention will be realised (Murdock & Anderman, 2006; see also Ramberg & Modin, 2019, according to Putarek & Pavlin-Bernardić, 2020). In addition to the culture from which the students come, contextual factors also include the characteristics of the teachers, the conditions at the college and the quantity of student obligations, and access to the Internet and telephones during exams, but also the perceived severity of the punishment, the perception of cheating others and the existence of a code of ethics (Putarek & Pavlin-Bernardić, 2020). Torres-Cladera et al. (2021) understands the teacher's professional identity as an ongoing process of interpretation and reinterpretation of experiences. These experiences are shaped in social interactions constructed in professional spaces of relationships with others, where each person undergoes different processes of identification, representation and attribution, creating a spiral of continuous construction or reconstruction.

It is important to identify the factors associated with cheating and the ways they can be reduced or eliminated. In the present paper, we devote special

attention to attitudes about academic honesty, the use of literature and plagiarism, as well as the use of illegal means.

Citation of related literature and the problem of plagiarism

The citation of sources is one of the key means by which we try to confirm the credibility of our scientific work. Citing sources has been used to connect scientific texts only since 1910. Until then, the importance of respecting intellectual property was discussed, but no significant attention was paid to citing references (Hebrang Grgić, 2016).

When using a particular text in the form of a quotation, it is recommended to find the original source (if possible), transfer it to the text in an accepted form (exactly as it is), mark it with quotation marks to indicate that it is a quotation, and necessarily indicate the references. It is important to note that direct quotations should not be too long; they should be clearly marked and included in the text, thus enhancing it in terms of credibility and quality. If the quote is shorter, it is included in the text without any special formatting; if it is longer than ten words, it must be marked separately, in accordance with the instructions for citing sources.

When references are available, our work gains veracity and credibility, thus improving its quality. However, it is necessary to cite exact and complete references, so that, if required, the source can be found and interested readers can gain a broader insight into the topic and synthesise knowledge. Each work considered when writing the paper should be cited as a source. Therefore, the author should include all books (both printed and e-editions), articles, sources from the Internet, pictures, diagrams, illustrations, photographs, parts of the author's own works, unpublished works, segments of lectures, interviews, materials from meetings, conferences, and the like through paraphrasing, citing or downloading or redirecting to specific data (Gotal, 2018). "You must cite the sources (including images and graphs) used while creating presentations, posters, scripts or e-courses, video content, audio content, and posts on blogs or social networks. Citation is mandatory regardless of whether the contents will be published or not." (Hebrang Grgić et al., 2018, p. 10).

When citing sources, paraphrasing is also used in addition to citation. Paraphrasing should be such that the use of someone else's text is carefully cited, written in one's own words, but retaining the author's original ideas. This process is very complex, so it is necessary to carefully consider the ideas, thoughts and the entire work that we are paraphrasing. Therefore, if we are not sure that we have conveyed the original ideas in the right way, it is better to quote and

preserve them that way. When paraphrasing, it is very important to provide the correct information about the cited source. These data come at the end of the sentence and appear in the text as footnotes or text notes, depending on the selected method of citation or the instructions that have been received. *This helps readers easily find the original cited/paraphrased work.*

The quality use of literature significantly contributes to the foundation of one's own ideas, as well as the quality of the work. If paraphrasing is inadequately applied, whether due to ignorance or intentionally, it can turn into plagiarism, which is one of the segments of academic "dishonesty".

Plagiarism is explained as literal theft, appropriation of someone else's authorship, presentation of someone else's work under one's own name, as well as inclusion of parts of someone else's work in one's own (Gačić, 2012). Several types of plagiarism can be distinguished in professional and scientific work. The best known to us are copying (using someone else's text without citing the source), as well as appropriating and using someone else's ideas or work results. By imprecise referencing, someone else's work (the results of the work, knowledge, etc.) is presented as the author's own work. It is very important to point out that in all cases, the imprecise use of references is a criminal offence, and that there is a moral and criminal responsibility for all those who practise this type of fraud, which can result in the loss of titles and other rights achieved in this way (Gačić, 2012).

Plagiarism is becoming a complex, burning issue at all levels of education. Despite numerous verification services and the many researchers and academic professionals engaged in plagiarism research, the problems of plagiarism are still extremely salient (Altbach, 2005; Colella-Sandercock & Alahmadi, 2015; Eaton et al., 2017; Leonard et al., 2015). Studies have shown that academic "dishonesty", including plagiarism and inadequate use of literature, was already on the rise at the end of the twentieth century (Alschuler & Blimling, 1995; Ludeman, 1988; Park, 2003). Although there are indications that traditional cut-paste plagiarism is on the decline (Curtis & Tremayne, 2019; Curtis & Vardanega, 2016; McCabe, 2016), possibly due to the emergence and increasing use of plagiarism detection software, this certainly does not mean that non-academic behaviour is also declining. In her monograph on the topic, Eaton (2021) points out that all of the indicators suggest that "cut-paste" copying is only the tip of the iceberg, and that in practice there are numerous other varieties of academic "dishonesty", such as online services (writing papers, appropriating other people's papers), the emergence of predatory publishers and journals, paraphrasing software, and the like.

Plagiarism (and non-academic actions in general) among students is typically regarded as petty fraud, and students do not think about whether their

actions are correct (Baruchson & Yaari, 2004). They are often not even aware that they are doing something bad and illegal, usually because they are not familiar with the rules of quoting and citing references when writing. Universities should contribute to greater awareness and the adoption of knowledge related to the prevention of plagiarism, academic misconduct, cheating in exams, and the like. Many universities have clearly presented ways of citing sources and specific punitive procedures in case of non-compliance (Breen & Maassen, 2005). In the process of preventing academic dishonesty and cheating among students, procedures for detecting plagiarism (software and the like) make a significant contribution.

In order to recognise types of plagiarism, it is necessary to understand the forms in which plagiarism occurs. Certain forms show ignorance or carelessness, while others indicate a clear intention to plagiarise. Moreover, the imitation of the styles of other authors has also been identified as academic misbehaviour. However, the most serious form is conscious plagiarism, such as unauthorised downloads of a large part of the text, texts composed of segments of different works, plagiarism by translation, incomplete labelling, and the like (Barton, 2005).

Considerable attention has been paid to these problems recently. According to research by Finn and Frone (2004), about 30% of primary school students and as many as 70% of secondary school and university students have taken part in various forms of academic cheating, while students with lower average grades are more prone to cheating (McCabe & Treviño, 1997). Among the research that sheds light on the factors of illegal behaviour is a study conducted by Bernardi et al. (2012), which showed that cheating and the use of illegal means are associated with the degree of social (un)desirability, and that this further conditions the future behaviour of students. Another study links the frequency of cheating with work avoidance goals and contextual factors (Putarek et al., 2022).

Different forms of illegal acquisition of diplomas, plagiarism and cheating in exams are increasingly present in higher education institutions around the world (Magnus et al., 2002; Ćurak et al., 2016). This phenomenon has been recognised as a characteristic of both developed countries and countries in transition, where general conditions (economic uncertainty, insufficient number of jobs, etc.) lead to a lack of ethical principles and criteria for acquiring knowledge, diplomas and qualifications at all levels of education (Ćurak et al., 2016). Plagiarism is not and should not be a solution for a lack of inspiration; instead, responsible and quality writing should be promoted.

Academic cheating (use of illegal means in an exam)

Academic cheating is typically associated with copying in written exams: whispering answers to another student, copying from another student, using illegal written notes ("tubes"), electronic devices (mobile phones, bug microphones – "bugs"), etc. In the broadest sense, academic cheating includes all deliberate and conscious ways of achieving advantages in academic work that conflict with legal regulations, ethical and academic norms, and rules. In addition to copying in exams, this includes various forms of plagiarism, falsification of research data and results, corrupt activities such as taking advantage of friendship and family ties, and the provision of material and immaterial services in exchange for passing an exam (Ćurak et al., 2016).

The issue of academic cheating is the focus of numerous studies. In cooperation with the International Center for Academic Integrity (ICAI), Donald McCabe (2016) conducted a study on academic cheating at Texas Tech colleges on a sample of 1043 students and 479 members of the academic staff (community). The results showed that about 98% of the respondents from the ranks of students and academic staff reported having noticed or witnessed forms of academic cheating once, while 44% of the students and 33.9% of the teachers pointed out that it happens often or very often (DuPree & Sattler, 2010). In March 2020, the ICAI conducted research on a sample of 840 students, which showed that around 30% of the respondents cheat in exams in various ways (Facts and Statistics, 2022).

Hrabak et al. (2004) conducted research on a sample of students at the Faculty of Medicine in Zagreb. The results showed that 94% of students cheated at least once during their studies. In 2006, a large survey was conducted in Bosnia and Herzegovina on a sample of 500 students at four universities, with 55% of the students answering yes to the question of whether they had ever cheated on exams during their studies (Ćurak et al., 2016).

Štambuk, Maričić and Hanzec (2015) have carried out research on academic cheating on a sample of teachers in primary and secondary schools and colleges in Croatia. The results reveal that there is no difference in perception when it comes to the frequency of cheating in relation to the levels of education, that is, the majority of teachers at all levels encountered this problem sometimes (45.9%) or often (24.2%). However, the authors point out the worrying fact that more than half of teachers ignore cheating in some situations. The authors also highlight the importance of making a clear distinction between teachers' views on the acceptability of cheating and their actual behaviour: the teachers considered all allegations of cheating to be mostly or absolutely unacceptable, but were still willing to ignore them in some situations.

Although academic cheating is considered unethical behaviour, as it represents a violation of academic integrity, it seems that it is very widespread. The Code of Ethics of the University of Montenegro (2019, p.4) clearly states that "any form of copying and use of illegal aids on exams, as well as other forms of deception and fraud by students, is prohibited. Academic staff must not enable and tolerate copying nor other forms of student cheating during knowledge testing." However, research into this problem indicates that academic dishonesty has become so widespread that it is no longer possible to speak of incidental behaviour, but of widespread behaviour (Cerić, 2018), i.e., society regards cheating as an acceptable, even desirable, form of behaviour (Štambuk et al., 2015).

Research goal and hypothesis

The goal of the present research is to examine the perceptions of University of Montenegro teachers and students in relation to academic honesty as an important segment of academic integrity, namely: ethical behaviour in connection with respecting other people's work (using and referring to literature) and copying and using illegal means in exams.

The operationalisation of the goal resulted in the following hypotheses:

H1: It is assumed that teachers and students consider academic honesty as a significant segment of academic integrity.

H2: It is assumed that teachers have negative attitudes towards the use of literature and students have positive attitudes.

H3: It is assumed that teachers and students consider plagiarism undesirable.

H4: It is assumed that teachers and students perceive that illegal means are used during studies.

The independent variables in the research were: faculty, title and years of service for the teachers; and faculty, study programme, year of study and average grade in studies for the students.

Method

Instruments and research design

Quantitative research was conducted using Likert-type rating scales for teachers and students, which were created specifically for the purposes of this research. The respondents gave assessments in relation to the offered statements

on a scale from 1 to 5, with 1 indicating minimum agreement and 5 indicating maximum agreement.

The Academic Honesty Assessment Scale for Teachers has high reliability, as confirmed by the Cronbach's alpha coefficient ($\alpha = 0.85$). The Academic Honesty Assessment Scale for Students also has a high reliability coefficient ($\alpha = 0.87$). In addition to descriptive statistics, analysis of variance (ANOVA) was used when processing the data in order to determine whether independent variables influence variability within the groups (for teachers, the treated variables were years of experience, title and faculty, and for students, they were faculty, study programme, average grades and years of study).

Participants

Sample overview by independent variables

The research was conducted on a sample of 250 respondents (200 students and 50 teachers) at the University of Montenegro during the 2020/21 academic year. More than half of the respondents were teachers from the Faculty of Philosophy (54%), while 46% were from the Faculty of Philology. The sample consisted of 14% full-time and 16% part-time teachers, while 18% of the teachers had the title of assistant or associate professor with a doctorate, and 34% were teaching associates. The group of teachers with up to 5 years of experience accounted for 16% of the teachers surveyed, while 30% had 6–5 years of teaching experience. The largest group of the respondents (44%) had 16–25 years of service, while 8% had 26–35 years and only 2% had more than 35 years of service.

Of the total number of students surveyed, 68% were from the Faculty of Philosophy and 32% from the Faculty of Philology. The study programme for Pedagogy participated with 23% of the respondents, Psychology with 15.5%, Teacher Education with 14.5%, Preschool Education with 9.5%, Languages with 28.5% and other study programmes with 9%. The majority of the respondents (61%) were engaged in undergraduate studies and 39% were undertaking master's studies. The largest group of the respondents had an average grade of C (42.5%), followed by 31% with a grade of D and 16.5% with an average grade of B, while the grades of E and A were each represented by 5% of the respondents.

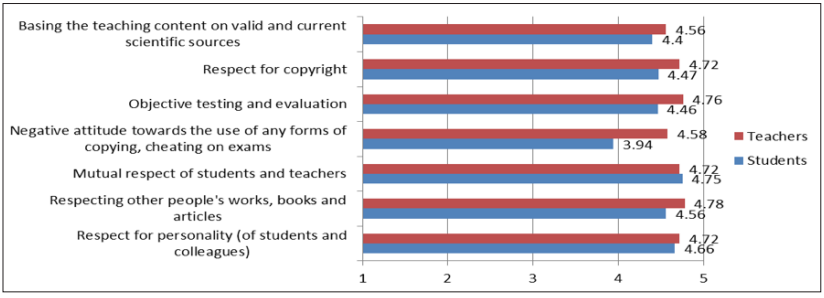
Results and discussion

The importance of academic honesty

The first research task was related to an assessment of the importance of academic honesty. The respondents had to evaluate the importance of certain segments of academic integrity, of which academic honesty is an integral part. The statements were rated from 1 to 5, where 1 is not significant at all, 2 is mostly not significant, 3 is moderately significant, 4 is mostly significant, and 5 is extremely significant. Figure 1 shows the results of the assessment, i.e., the calculated arithmetic means received for the answers given by our two groups of respondents: students and teachers.

Figure 1

The importance of academic honesty



The results obtained show that the majority of the teachers and students consider academic honesty to be extremely important. The most highly rated claim among the teachers is Respect for other people's works, books and articles (M = 4.78), while students placed the greatest importance on Mutual respect of students and teachers (M = 4.75). The lowest average score for the teachers was obtained for the statement Basing the content of the teaching on valid and scientifically current sources, with an average score of 4.56, while for students the statement Negative attitude towards the use of any forms of copying was rated with a mean score of 3.94. This is the only statement that is rated below 4 on a scale of 1 to 5.

Using literature

The second research task was related to attitudes towards the use of literature. The respondents expressed their views on certain claims (Figure 2) and evaluated certain segments concerning the proper reference to literature when writing papers (Figure 3).

Figure 2

Adequate use of literature: attitudes of teachers and students

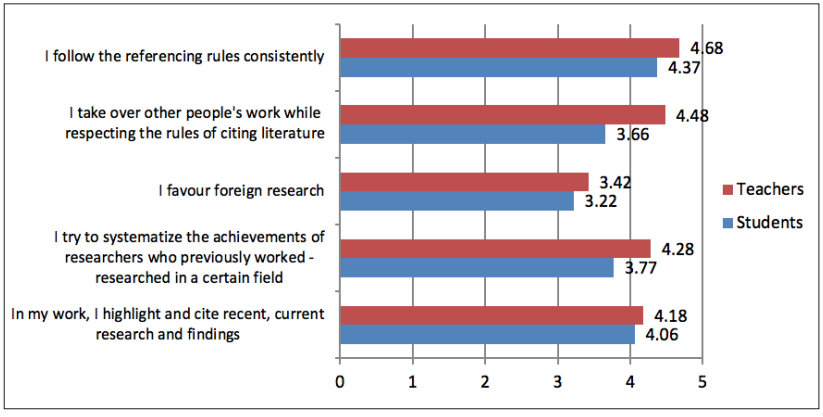
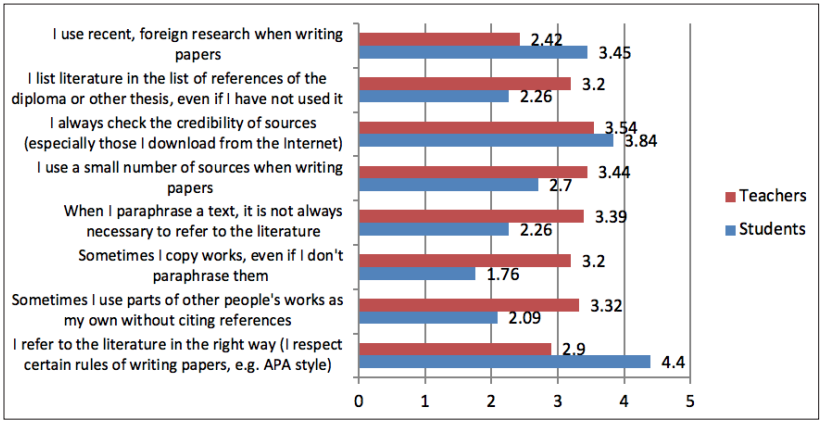


Figure 3

Adequate use of literature: attitudes of teachers and students

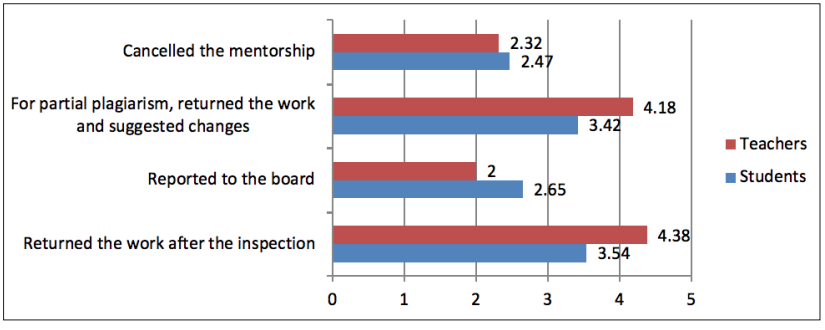


The findings of the research show that both teachers and students are aware of the necessity of the proper use of literature. Both rated respecting the rules when citing references as the most important statement (teachers: M = 4.68; students: M = 4.37). Contrasting attitudes of teachers and students can, however, be identified, as teachers think that students do not refer to literature in the right way (M = 2.90), while students think that they mostly do it well (M = 4.40). In terms of the importance and quality of references to literature, favouring foreign research received the lowest rating (teachers: M = 3.42; students: M = 3.22). When we summarise the attitudes of students and teachers in relation to the way they use literature, all of the grades are relatively uniform. The exception is the aforementioned reference to literature, as well as copying papers (teachers: M = 3.20; students: M = 1.76). Teachers believe that a much higher percentage of students copy papers than the students themselves indicate.

Plagiarism

The third research task examined attitudes towards plagiarism (the fourth and fifth questions in the questionaries). In the fourth question, the respondents of both groups were asked to state what happens when teachers notice plagiarism (Figure 4). The fifth question asked the teachers what they would do in a situation where they noticed plagiarism, while the students were asked to assess what teachers should do in that situation (Figure 5).

Figure 4
Reactions to plagiarism

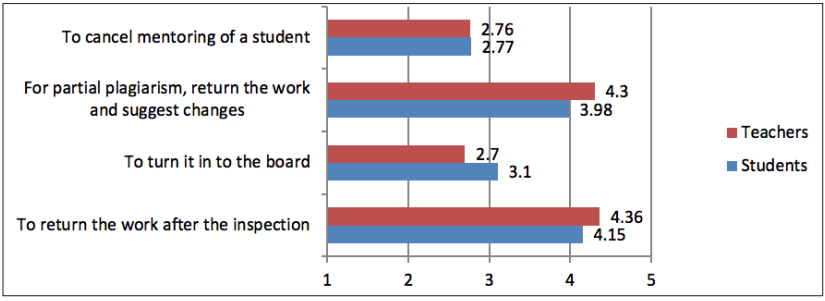


The results obtained indicate that in the case of recognition of plagiarism, the works are most often returned after the inspection (teachers: M = 4.38; students: M = 3.54), while the least popular measures are reporting to the board

(teachers: M = 2.00; students: M = 2.65) and cancelling the mentorship (teachers: M = 2.32; students: M = 2.47).

Figure 5

Reactions to plagiarism (forecast)



Since we could not assume with certainty that all of the teachers had encountered plagiarism, or that the students followed the reactions of teachers in relation to plagiarism, we also asked what the teachers would do in that situation (Figure 5). The results are complementary to the data received regarding the previous claims. The opinion is repeated that in case of plagiarism, the work would be returned (teachers: M = 4.36; students: M = 4.15), and the least popular measures are reporting to the board (teachers: M = 2.70; students: M = 3.10) and cancelling the mentorship (teachers: M = 2.76; students: M = 2.77).

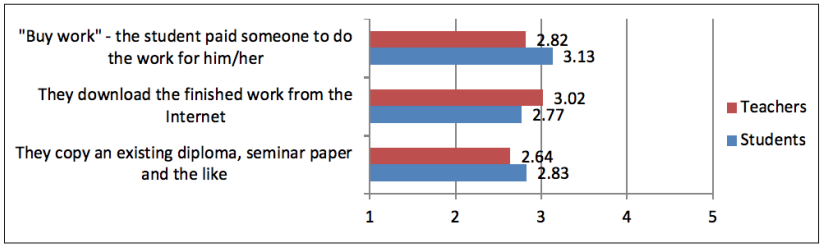
Use of illegal means

The fourth research task was related to the use of illegal means during different types of student performance checks. Arithmetic averages based on individual scale values are shown on the graphs.

The first question within this task was related to the assessment of whether the respondents had had an opportunity to observe the following situations regarding theses (graduation and seminar papers): a graduation thesis taken from another author and rewritten, a finished thesis downloaded from the Internet, or a so-called "bought" thesis. The average values of all of the answers are around the 3, that is, it happens, but rarely (Figure 6), which means that the situations mentioned are not unknown to the respondents, but nor are they a frequent occurrence at the faculties where the research was conducted.

Figure 6

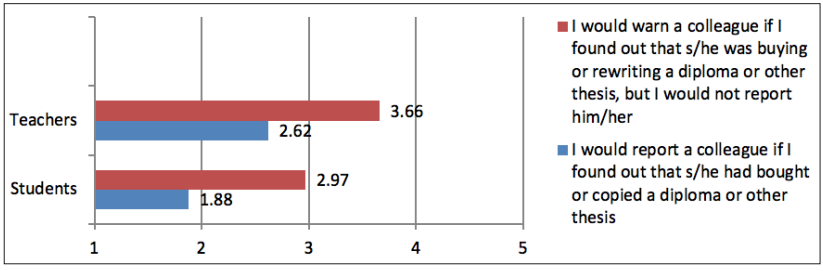
Use of illegal means: diploma and other theses



The seventh question investigated the attitude of the respondents regarding warning or reporting a colleague who had plagiarised work. The majority of the respondents from both groups answered that they would warn their colleagues, but not report them (Figure 7). It is important to point out that the teachers are stricter than the students in their reactions to the use of illegal means when writing papers, which was expected by the researchers.

Figure 7

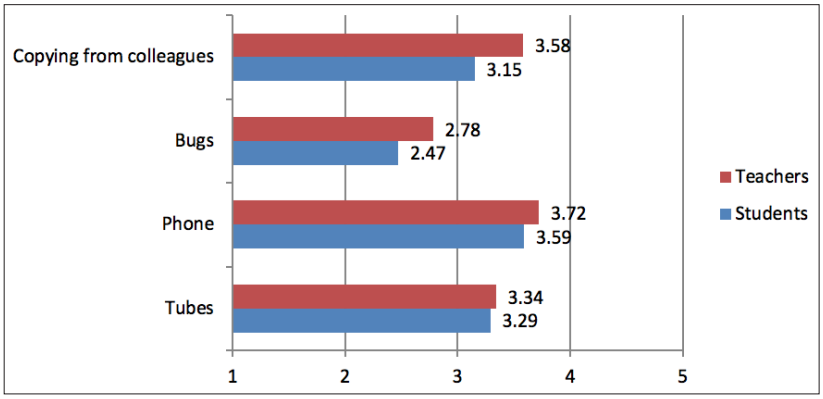
Reactions to the use of illegal means



In the eighth question, the respondents assessed the extent to which students use certain illegal means in written knowledge tests. The calculated arithmetic averages of the answers showed that the least used illegal means are bugs (teachers: M = 2.78; students: M = 2.47), and the most used are phones (teachers: M = 3.72; students M = 3.59). Overall, the results show that illicit means are used moderately.

Figure 8

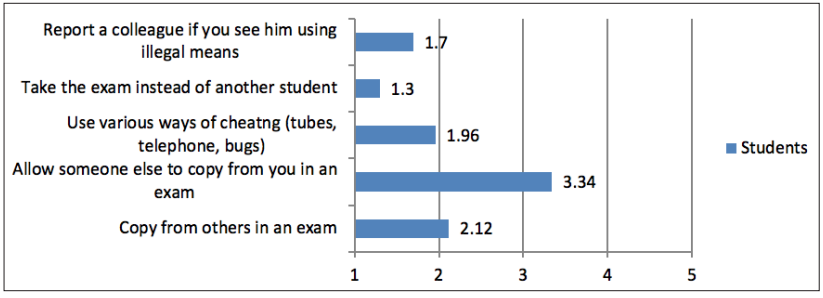
The most common illegal means used in written knowledge tests



The ninth question was aimed at the students. We wanted to determine the extent to which they consider certain behaviours correct, e.g., copying from a colleague's test, using illegal means, etc. (Figure 9):

Figure 9

Students' reactions to academic misdemeanour

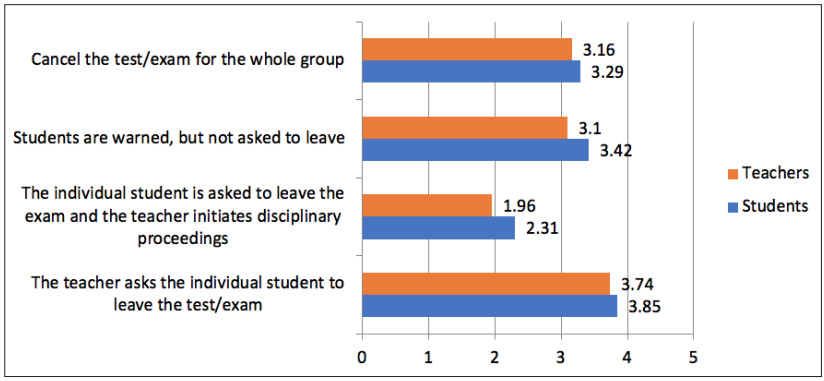


The results obtained showed that students do not think it is right to take an exam instead of another colleague (M = 1.3), use illegal means (M = 1.96) or copy from others in an exam (M = 2.12). On the other hand, they would not report a colleague who was using illegal means (M = 1.7) and partially consider it correct to allow another student to copy from them in an exam (M = 3.34).

The next question relates to examining the measures taken when a student uses illegal means. The answers are shown in Figure 10.

Figure 10

Measures for a committed misdemeanour

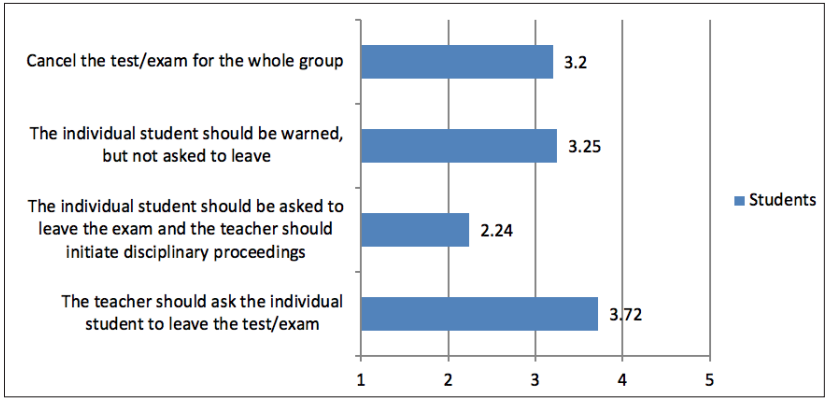


It is evident that, according to the opinion of both groups of respondents, teachers are least likely to resort to initiating disciplinary proceedings against those who use illegal means (teachers: M = 1.96; students: M = 2.31). Removal is the measure most often used (teachers: M = 3.74; students: M = 3.85).

Finally, the students assessed how teachers should react in the case of using illegal means (Figure 11). They believe that teachers should ask the student to leave the test/exam (M = 3.72), warn the offender (M = 3.25), or cancel his/her test/exam (M = 3.2). They mostly believe that the teacher should not initiate disciplinary proceedings (M = 2.24).

Figure 11

Students' preferred measures for use of illegal means



Differences in students' attitudes towards academic honesty regarding faculty, study programme, year of study and average grades

In this section, the differences in students' attitudes towards academic honesty are determined with regard to faculty, study programme, year of study and average grades. The first step is to determine whether there are differences in the aforementioned attitudes of the students of the Faculty of Philosophy and the Faculty of Philology.

Table 1

Differences in the students' answers regarding faculty (descriptive statistics and ANOVA)

Sums	Faculty	N	M	SD	F	df	sig.
S2	Philosophy	136	18.66	3.20	6.34	1	0.01
	Philology	64	19.92	3.51			
	Total	200	19.07	3.34			
S3	Philosophy	136	22.18	3.82	8.33	1	0.00
	Philology	64	20.56	3.38			
	Total	200	21.66	3.76			

Based on the presented results, it can be concluded that there are statistically significant differences in the attitudes of the students of the Faculty of Philosophy and the Faculty of Philology, particularly regarding answers related to the statements investigating attitudes about the use of literature (S2[3] and S3[4]: correct use and citation of literature). The following values were obtained: S2: $F = 6.34$ and $p = 0.01$ and S3: $F = 8.33$ and $p = 0.00$, which confirms statistically significant differences at the 0.01 level. According to these results, we can conclude that students from different faculties have different views on using and citing literature.

The following table presents the identified differences within certain study programmes. The differences were identified within the statements related to the

3 S2: Statements about attitudes: *When studying and writing papers, I try to use the most recent, current research and findings; I try to systematise the achievements of researchers who previously worked/researched in a certain field; I use foreign research and literature in English; I take over other people's work while respecting the rules of citing literature; I follow the referencing rules consistently*.

4 S3: Questions about use of literature: *I refer to the literature in the right way (I respect certain rules of writing papers, e.g., APA style); Sometimes I use parts of other people's works as my own without citing references; Sometimes I copy works, even if I don't paraphrase them; When I paraphrase a text, it is not always necessary to refer to the literature; I use a small number of sources when writing papers; I always check the credibility of sources (especially those downloaded from the Internet); I list literature in the list of references of the diploma or other thesis, even if I have not used it; I use recent, foreign research when writing papers*.

very understanding of academic integrity (S1),[5] use of references (S2), handling in the event of plagiarism (S4)[6] and copying and use of illegal means (S9).[7]

Table 2

Differences in the students' answers regarding study programme (descriptive statistics and ANOVA)

Sums	Study Programme	N	M	SD	F	df	sig.
S1	Pedagogy	46	31.61	2.43	2.94	5	0.01
	Psychology	31	31.77	2.93			
	Preschool Education	19	31.16	4.61			
	Teacher Training	29	31.31	2.90			
	Languages	57	31.53	3.60			
	Others	18	28.22	5.72			
	Total	200	31.22	3.62			
S2	Pedagogy	46	18.72	2.78	3.40	5	0.01
	Psychology	31	20.06	4.10			
	Preschool Education	19	17.21	2.74			
	Teacher training	29	18.07	3.05			
	Languages	57	19.98	3.55			
	Others	18	18.89	2.35			
	Total	200	19.07	3.34			
S4	Pedagogy	46	11.09	1.68	2.86	5	0.02
	Psychology	31	9.19	2.66			
	Preschool Education	19	10.74	1.94			
	Teacher Training	29	10.24	1.92			
	Languages	57	10.56	2.57			
	Others	18	10.22	2.31			
	Total	200	10.41	2.29			
S9	Pedagogy	46	17.52	3.32	3.64	5	0.00
	Psychology	31	15.19	3.92			
	Preschool Education	19	16.89	2.85			
	Teacher Training	29	17.14	2.81			
	Languages	57	17.89	3.39			
	Others	18	15.67	2.14			
	Total	200	16.99	3.35			

5 S1: Understanding of academic integrity: *Having respect for personality (of students and colleagues); Respecting other people's work; Mutual respect of students and teachers; Negative attitude towards the use of any forms of copying, cheating and other misdemeanours in exams; Objective testing and evaluation; Respect for copyright (independent creation of seminar papers etc.); Basing the teaching content on valid and current scientific sources.*

6 S4: Handling in the event of plagiarism: *Returned the work after the inspection; Reported to the board; For partial plagiarism, returned the work and suggested changes; Cancelled the mentorship.*

7 S9: Copying and use of illegal means: *Copy from others in an exam; Allow someone else to copy from you in the exam; Use various ways of cheating (tubes, telephone, bugs); Take the exam instead of another student; Report a colleague if you see him/her using illegal means.*

The results obtained indicate that there are significant differences in the attitudes of students whose answers were synthesised in the groups: Pedagogy, Psychology, Preschool Education, Teacher Training and Other Study Programmes. The conclusion is based on the obtained F values: F = 2.94 and p = 0.01 for the sums received in relation to the statements examining attitudes towards the importance of academic integrity; F = 3.40 and p = 0.01 for the statements regarding using a reference; F = 2.86 and p = 0.02 for the sums calculated for answers related to dealing with plagiarism; F = 3.64 and p = 0.00 for using illegal means and rewriting in exams. Further statistical processing involving multiple comparisons made it possible to compare individual study programmes.

Table 3

Differences in the students' answers regarding study programme (multiple comparison)

Sums	Study Programme (I)	Study Programme (J)	Difference AS (I-J)	Sig.
S1	Pedagogy	Psychology	-0.16	1.00
		Preschool Education	0.45	1.00
		Teacher Training	0.30	1.00
		Languages	0.08	1.00
		Others	3.39	**0.01**
	Psychology	Pedagogy	0.16	1.00
		Preschool Education	0.62	1.00
		Teacher Training	0.46	1.00
		Languages	0.25	1.00
		Others	3.55	**0.01**
	Languages	Pedagogy	-0.08	1.00
		Psychology	-0.25	1.00
		Preschool Education	0.37	1.00
		Teacher Training	0.22	1.00
		Others	3.30	**0.01**
S2	Psychology	Pedagogy	1.35	1.00
		Preschool Education	2.85	**0.04**
		Teacher Training	2.00	0.28
		Languages	0.08	1.00
		Others	1.18	1.00
	Preschool Education	Pedagogy	-1.51	1.00
		Psychology	-2.85	0.04
		Teacher Training	-0.86	1.00
		Languages	-2.77	**0.02**
		Others	-1.68	1.00
S4	Pedagogy	Psychology	1.89	**0.00**
		Preschool Education	0.35	1.00
		Teacher Training	0.85	1.00
		Languages	0.53	1.00
		Others	0.86	1.00
S9	Pedagogy	Psychology	2.33	**0.03**
		Preschool Education	0.63	1.00
		Teacher Training	0.38	1.00
		Languages	-0.37	1.00
		Others	1.85	0.62

The results shown in Table 3 highlight the differences identified in the domain of assessment of elements of academic integrity between students from the study programme Pedagogy and other study programmes (difference of arithmetic means 3.39; p = 0.01); the study programme Psychology and other study programmes (difference of arithmetic means 3.55; p = 0.01); and Language study programmes and other study programs (difference of arithmetic means 3.30; p = 0.01).

The students planning to become kindergarten teachers and psychologists show different attitudes towards the statements related to the use of literature (difference of arithmetic means 2.85; p = 0.04), as well as those studying at the Preschool department compared to those studying Philology (difference of arithmetic means -2.77; p = 0.02).

The students of Pedagogy and Psychology evaluate statements related to plagiarism of works differently (difference of arithmetic means 1.89; p = 0.00), as well as copying and use of illegal means (difference of arithmetic means 2.33; p = 0.03). These differences are somewhat surprising, as the two study programmes are related, being connected and referring to each other methodologically and in an interdisciplinary sense. One of the causes of the differences in relation to the use of literature may lie in the fact that in the preparation of future educators, more attention is paid to practical activities at the expense of academic writing and the use of literature.

Table 4 shows the differences in the students' answers regarding the use of literature. For example, some of the point states are: I follow the referencing rules consistently; I use foreign research and literature in English; I refer to the literature in the right way (I respect certain rules of writing papers, e.g., APA style). The results are presented with regard to the year of study (please note that only second-year, third-year and master's students were included in the sample, since freshmen are not sufficiently familiar with all of the elements of academic honesty and the rules of citing literature).

Table 4

Differences in the students' answers regarding year of study (descriptive statistics and ANOVA)

Sums	Year of study	N	M	SD	F	df	sig.
S2	Second	39	20.21	2.56	3.15	2	**0.04**
	Third	83	18.98	3.58			
	Master's degree	78	18.59	3.33			
	Total	200	19.07	3.34			
S3	Second	39	20.79	3.25	3.60	2	**0.03**
	Third	83	21.27	3.92			
	Master's degree	78	22.51	3.69			
	Total	200	21.66	3.76			

The starting point for the research was the assumption that students have different prior knowledge in relation to the year of study they attend, with regard to different segments of academic honesty. As we assumed, the most significant differences were observed in students' attitudes regarding the use of literature (F = 3.15; p = 0.04 and F = 3.60; p = 0.03). In order to supplement these findings, a multiple comparison for the variable of year of study was applied (Table 5).

Table 5

Differences in students' answers in relation to the year of study (multiple comparison)

Sums	Year of study (I)	Year of study (J)	Difference AS (I-J)	sig.
S2	Second year	Third year	1.23	0.17
		Master's degree	**1.61**	**0.04**
	Third year	Second year	-1.23	0.17
		Master's degree	0.39	1.00
	Master's degree	Second year	-1.61	0.04
		Third year	-0.39	1.00
S3	Second year	Third year	-0.47	1.00
		Master's degree	-1.72	0.05
	Third year	Second year	0.47	1.00
		Master's degree	-1.25	0.10
	Master's degree	Second year	1.72	0.05
		Third year	1.25	0.10

The most significant differences were observed between master's students and second-year students (F = 3.15, sig = 0.04 for the second question, and F = 3.60, sig = 0.03 for the third question). This result is somewhat expected,

since master's students have more experience and a wider body of knowledge (they have completed more seminar papers and essays, as well as final papers, which necessarily imply respect for the rules of using literature).

Tables 6 and 7 show the differences in the students' answers with regard to their average grades.

Table 6

Differences in the students' answers regarding average grades (descriptive statistics and ANOVA)

Sums	Average Grade	N	M	SD	F	df	sig.
S2	Pass grade E	10	16.40	3.98	2.78	4	**0.03**
	Sufficient D	62	19.24	3.20			
	Good C	85	18.76	3.33			
	Very good B	33	20.06	3.29			
	Excellent A	10	19.90	2.64			
	Total	200	19.07	3.34			

Potential differences in the students' answers regarding their success in studying (average grade) are illustrated by the presented results, i.e., the obtained values ($F = 2.78$; $p = 0.03$), at a statistically significant level of 0.05. Statistical indicators, including calculated arithmetic means and standard deviations, refer to the second block of statements with which attitudes to the literature were examined. When a multiple comparison was applied within this variable, it was possible to determine the categories of students between which differences were found, regarding their success and average grade.

Table 7

Differences in the students' answers compared to average grades (multiple comparison)

Factors	Average Grade (I)	Average Grade (J)	Difference AS (I-J)	sig.
S2	Pass grade E	Sufficient D	-2.84	0.12
		Good C	-2.36	0.33
		Very good B	-3.66	**0.02**
		Excellent A	-3.50	0.18

It is interesting that, in the segment related to referring to literature, statistically significant differences were found between the answers of students who have sufficient and very good success in their studies. It was assumed that the average grades could be the basis of the obtained differences, and the presented results show that the most prominent differences are between students

whose average grade is a pass grade E and very good B (difference of arithmetic means -3.66; p = 0.02).

Differences in teachers' attitudes towards academic honesty with regard to faculty, work experience and academic position

In addition to testing the differences in the students' attitudes, statistical analysis was used to identify differences in the teachers' attitudes according to the aforementioned variables. Applying descriptive statistics and ANOVA procedures, we did not identify any differences. However, with regard to the title of the teacher, a result was obtained that is at the very limit of statistical significance (F = 2.66; p = 0.045) and that is based on the sums calculated for the seventh block of claims, which refers to plagiarising papers from colleagues, more precisely dealing with plagiarism, and through possible procedures: warning, condemnation, reporting or ignoring. This result is noteworthy and could be a stimulus for further research in this area, as it relates to ethical behaviour in relation to colleagues in the academic community.

Conclusions

The results of our research indicate that academic honesty is a significant issue in the academic community of the University of Montenegro. All segments of academic honesty, such as respect for personality (of either students or colleagues), respect for other people's work, mutual respect between students and teachers, respect for copyright, and objective examination, were considered extremely important by our respondents. In the first research task, our attention was drawn by the result indicating that the worst average score was given to the statement: Negative attitude towards the use of any forms of copying and cheating (M = 3.94).

The students and teachers surveyed also stated that the rules were consistently followed when citing references. This result offers an even more optimistic picture, along with the previously obtained results on the importance of academic honesty. However, the mean score (M 2.90) obtained for the teachers' response to the statement Students refer to the literature in the right way, and the mean score for the same statement among the students (M 4.40) speak of different assessments of this extremely significant segment. In addition, different answers were received for the claim that students copy papers without paraphrasing (the arithmetic mean for the teachers' answers was 3.20, but it was only 1.76 for the students' answers).

Considering that the problem of plagiarism is defined in multiple ways – forms of plagiarism, inadequate use of sources, illegal copying of text, use of paraphrasing software (Rogerson & McCarthy, 2017), "cut and paste", inadequate transcription of material, as well as unauthorised and/or inadequate translations (Eaton, 2021) – we examined how teachers react when they notice plagiarism among students, or how they would handle it in the case that they had not encountered this problem in their practice to date. It is interesting that the results in both cases are complementary, i.e., the least popular measures are reporting to the board (teachers: M = 2.70; students: M = 3.10), as well as terminating mentoring (teachers: M = 2.76; students: M = 2.77).

The use of illegal means in exams is, along with plagiarism, a particularly important segment of our work. The fact that students undertake various illegal actions in exams was confirmed by the answers of our respondents. The average values obtained indicate slightly higher use of the telephone. Moreover, we consider the result that students would not report a colleague who uses illegal means (calculated arithmetic mean M = 1.7) to be worrying, even though students think it is wrong for someone to take an exam instead of someone else (M = 1.3) and to use illegal means (M = 1.96). The results obtained by examining teachers are entirely complementary to the results regarding students. Although teachers are keen on using removal as a disciplinary measure (M = 3.84), they avoid initiating disciplinary proceedings against those who use illegal means (M = 1.96). The students surveyed believe that the teacher generally does not need to initiate a disciplinary procedure (M = 2.24). It is interesting that, despite the observed negative attitude towards the disciplinary procedure in both cases, the teachers seem to lead in this attitude.

Limitations and recommendations for future studies

Certain limitations of our research should be mentioned with regard to generalisation of the obtained findings. Although the sample included teachers and students from the Faculty of Philosophy and the Faculty of Philology, more complete and objective findings would have been obtained by sampling respondents from others faculties at the University of Montenegro (not only faculties oriented predominantly towards social sciences and the humanities). Future research could include multidimensional analyses that would consider all of the factors that encourage academic integrity (the present research is predominantly of a quantitative type, and qualitative analysis would provide a significant addition). Furthermore, we must keep in mind that our respondents were making their own assessments in relation to the offered claims,

and that possible subjectivity in the answers received must also be taken into consideration.

The results of the research can help us identify problematic situations and define recommendations for work activities with students and teachers that would enable the prevention of unacceptable behaviour from the point of view of academic integrity. These results could be a starting point for future more extensive research on this topic, which would be part of the university's development strategy in the area of academic honesty.

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Empowering Supervisors Towards Responsible Research Conduct in Supervision via an Online Course: A Pilot Study

Miriam van Loon[1] and Mariëtte van den Hoven*[2]

Supervision and mentoring are highly relevant aspects of research integrity. Codes of Conduct, such as the ALLEA code of conduct, stipulate the relevance of training researchers how to conduct research well and about the role supervision plays in preventing unacceptable research practices. The Dutch Code of Conduct, for example, explicitly states that universities are responsible for facilitating training about research integrity. We developed a course for supervisors to address their responsibility and role in training early career researchers in research integrity. This contribution describes what evidence base was used to design this course and how the course is experienced by supervisors who participated in its piloting in early 2022. A total of 147 subscribed to the course in the testing phase, and seventeen participants obtained a certificate. The main lessons from the experiences with this course and the literature are 1) to tailor supervisor courses to the small amounts of time that supervisors can schedule to take these courses and to adjust the content and assignments to their needs, 2) to make online courses very attractive, but that need to be combined with 3) a face-to-face meeting to motivate them to finish the course in time and it might help to enable shared reflection by sharing personal experiences.

Keywords: supervision, RCR, training, online module

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Opolnomočenje nadzornikov za odgovorno raziskovalno ravnanje pri nadzoru prek spletnega tečaja: pilotna študija

Miriam van Loon in Mariëtte van den Hoven

Nadzor in mentorstvo sta zelo pomembna vidika raziskovalne integritete. Kodeksi ravnanja, kot je kodeks ravnanja ALLEA, določajo, kako pomembno je usposabljanje raziskovalcev za dobro izvajanje raziskav in kakšno vlogo ima nadzor pri preprečevanju nesprejemljivih raziskovalnih praks. Nizozemski kodeks ravnanja na primer izrecno navaja, da so univerze odgovorne za omogočanje usposabljanja o raziskovalni integriteti. Razvili smo tečaj za nadzornike, ki obravnava njihovo odgovornost in vlogo pri usposabljanju raziskovalcev, ki so na začetku kariere, na področju raziskovalne integritete. V tem prispevku je opisano, kakšna baza dokazov je bila uporabljena za oblikovanje tega tečaja in kako tečaj doživljajo nadzorniki, ki so sodelovali pri njegovem poskusnem izvajanju v začetku leta 2022. Na tečaj se je v fazi testiranja prijavilo 147 udeležencev; sedemnajst jih je pridobilo certifikat. Glavna spoznanja, ki izhajajo iz izkušenj s tem tečajem in literature, so: 1) tečaje za nadzornike je treba prilagoditi majhni količini časa, ki si ga nadzorniki lahko razporedijo za udeležbo na teh tečajih, ter vsebino in naloge prilagoditi njihovim potrebam; 2) spletni tečaji naj bodo zelo privlačni, vendar jih je treba kombinirati s 3) srečanjem v živo, da bi jih motivirali za pravočasno dokončanje tečaja in mogoče s tem tudi pomagali omogočanje skupne refleksije z izmenjavo osebnih izkušenj.

Ključne besede: nadzor, odgovorno izvajanje raziskav, usposabljanje, spletni modul

Introduction

Supervision and mentoring are considered highly relevant within the context of research integrity. In policy documents and codes of conduct, the relevance of good supervision is frequently mentioned (Lerouge & Hol, 2020; ALLEA, 2017). As supervision and mentoring are the main channels through which novice researchers learn to do research well (Bird, 2001) and learn how to behave in research practices (Fisher, 2019), this is a perfect window of opportunity to place responsible conduct of research (RCR) at centre stage. As stated by Lerouge and Hol (2020) in a position paper by the League of European Research Universities (LERU) on research integrity:

> Students and supervisors have a shared responsibility to develop attitudes and skills to deal with issues of research integrity and to create learning situations that encourage participants to behave with integrity while maintaining a realistic understanding of the hierarchical structures of academia. (p.16)

To that purpose, doctoral candidates should receive training in research integrity, to gain more knowledge on related topics, but also 'to empower researchers to recognise and deal with (potential) problems of research integrity and to understand its relevance' (Lerouge & Hol, 2020, p.16).

Indeed, within many institutions for higher education, training for doctoral candidates in research integrity (RI) has been widely embraced and embedded (Abdi et al., 2021). RI is explicitly mentioned in the codes of conduct in the relevance of training. The Dutch Code of Conduct, for example, states that universities are responsible for facilitating training about research integrity (Netherlands Code of Conduct for Research Integrity, 2018). However, it seems only obvious to expect supervisors also to be stimulated to reflect on their responsibilities towards RCR when introducing novice researchers to their research practices. Thus, training of supervisors has also been suggested: 'There is not only training needed on research integrity for supervisors but also specifically on how to supervise with integrity' (Lerouge & Hol, 2020, p. 16). Haven et al. (2022) call the relationship between supervision and research integrity bidirectional: 'poor supervision may increase the chances of the PhD candidate engaging in research misbehaviour' (Anderson et al., 2007 in Haven et al., 2022: p.2) while supervisors can also 'foster research integrity among their PhD candidates' (Haven et al., 2022, p. 2). They point out that research on misconduct cases often reveals that supervision has been inadequate in cases of misconduct of PhD candidates (Haven et al., 2022).

Good supervision can be jeopardised when supervisors are unskilled, overworked, or un-invested in research integrity (Roje et al., 2022). Also, the (inter)dependency within supervision and mentoring relations can negatively impact the relationship (Löfstrom & Pyhalto, 2020; Muthanna & Alduais, 2020), and studies have identified 'abusive and exploitative supervision, bullying, confounded or dual relationships (Goodyear et al., 1992; Mahmud & Bretag, 2013)' (Lofstrom & Pyahalto, 2020, p. 536).

If the purpose of research supervision is to 'help students develop critical, creative thinking and research skills, and contribute to the existing body of knowledge' (Muthanna & Alduais, 2020, p. 1), the urge to address supervisors more actively and prepare them better for their guiding role in the research and career trajectory of novice researchers needs to be embraced more widely. It would not only be beneficial for supervisors to become more knowledgeable on current high standards for responsible research practices but also for their own interpersonal skills in supervising junior researchers in order to learn how to give (and receive) feedback and address integrity topics like co-authorship more frequently with their supervisees. In an H2020 project that centres on the notion of empowerment (Theunissen & van den Hoven, 2021), the empowerment of supervisors can also be bidirectional; supervisors can better learn to reflect upon and handle situations in their own research practices in a responsible and integer way, and they can be trained to help empower their PhDs students. Training could, therefore, be beneficial for supervisors themselves as well as for their supervisees. Training could also enable supervisors to feel more confident and improve their academic leadership (Rathmell et al., 2019).

In this contribution, we describe the design, development, and piloting of an online module for supervisors and how this can contribute to filling the gap in good supervision as part of the H2020 project INTEGRITY (project no 82456). The module mirrors online modules that were developed for doctoral students, especially three small private online courses (SPOCS) and one massive open online course (MOOC) that use similar course materials and teaching philosophy to stimulate empowerment towards responsible conduct of research.

Methods

Designing and developing an online course for supervisors

In this section, we describe the main elements of the design and development of an online course for supervisors. First, the teaching philosophy will be explained based on the concept of empowerment. Second, the design

of the modules in the course and the process of development of the modules is described. The course consists of three thematic modules: 1) Being a good mentor, 2) Mentoring towards RCR, and 3) Empowerment. Finally, the first testing phase of the course and the different steps that have been taken in this process are illustrated.

Teaching philosophy underlying RCR education

Fostering responsible conduct of research involves more than gaining knowledge on research integrity, possible types of misconduct or required standards in research practices. Mike Kalichman (2007) states clearly:

> […] if researchers already have and/or are learning some RCR knowledge and skills […] then is the most important thing to do to provide them with more? Or, is it more important to arm them with a positive disposition toward RCR, with a sense that there are things they can do in the face of concerns, and with a belief that they are part of a culture that takes RCR seriously? (p. 70)?

Kalichman (2014) later asserts, 'These attitudes are arguably more essential than any particular piece of knowledge or improvement in skills. In their absence, it would matter little if someone had perfect knowledge and skills…' (p. 70).

In the H2020 project INTEGRITY, the concept of empowerment has been used to develop a teaching philosophy on how to foster responsible conduct of research. Operationalising the concept, five main aspects were defined: 1) RCR courses need to build the capacities of researchers and not only focus on knowledge or skills; 2) RCR training needs to stimulate the critical autonomy of researchers, enabling them to 3) learn to take control of integrity issues they encounter in practices, to which they will be 4) motivated to pro-actively react and 5) dare to speak up if necessary (Theunissen & van den Hoven, 2021).

In line with Freire's (1970) *Pedagogy of the Oppressed*, which has inspired the academic debate on empowerment, the idea of empowerment is not so much about lifting those who lack power into a situation where they will be less powerless but about seeking a system change. Misconduct in research communities is closely related to systems in which pressure to please, publish and get promoted is high, in which chances for a permanent position in academia are low, and time pressure to meet deadlines is increasing (Haven et al., 2019). Also, for many integrity issues in the grey area (Theunissen & van den Hoven, 2021), the 'pressures to perform' and a lack of sufficient time or openness to discuss dilemmas with

colleagues can jeopardise responsible science. Many integrity questions are recognised to be inherent to the research process, and more transparency and communication about these questions are required among research teams. For example, authorship issues often lead to disputes or dissatisfaction about the process of how authorship is decided or which order of authorship is decided upon (e.g., Lokhtina et al., 2022). Therefore, when offering training to researchers, empowerment aims to help participants recognise, reflect, and feel able to address, decide, and act upon integrity issues in a responsible manner. The responsible solution should become the obvious and attractive way rather than turning a blind eye, feeling uncomfortable or keeping silent. This core idea of empowerment has been operationalised in training modules for high school students, undergraduate students, doctoral students, and supervisors.

Literature shows that supervisors and mentors 'can shape young researchers' behaviour', hence that their influence as role models (positive or negative) can be significant (Roje et al., 2022). Research shows that supervising and mentoring relations offer excellent opportunities to address issues of responsible and good conduct, as junior researchers are introduced to research practices and will highly depend on the examples that supervisors give to them (Gray & Jordan, 2012; Clynes et al., 2019; Kalichman & Plemmons, 2018). Empowerment in supervisors is especially interesting because it can work upwards (by empowering the supervisors themselves) and downwards (by training the supervisors to empower their PhD students). It is, therefore, important that supervisors are also being trained to be good supervisors. Based on our teaching philosophy of empowerment, 'becoming more aware of and proactive towards integrity issues' (Theunissen & van den Hoven, 2021), the aim is to enable supervisors to reflect on their own experiences and behaviour. In the next section, we show how the empowerment teaching philosophy is used in designing a course for supervisors.

Design of the module and the process of development

The course *Supervision and Mentoring towards RCR* has been developed based on three online modules for doctoral students that were developed and implemented earlier: 1) Responsible research through supervision, collaboration and working together, 2) Integrity in academic publishing: authorship and peer review, 3) Data in responsible conduct of research. One module for doctoral students specifically focuses on supervision and collaboration with others. The topics of this module were: 1) Introduction to RCR, 2) Expectations and responsibilities in supervision and mentoring, 3) Culture, colleagues, and

communication, and 4) Collaboration outside the research team. To develop this module targeting supervisors and mentors, we could use elements of the doctoral course, background literature, and the experiences of doctoral students using online modules to design the module for supervisors.

Content of the course

An essential source for the content of the course was a document on the Office for Research Integrity (ORI) website, which mentions 11 possible challenges in mentoring: power differential, competing and conflicting roles, inability to meet research deadlines, failure to give credit, failure to ensure a supportive research environment, failure to provide sound advice, failure to monitor trainee's conduct, failure to treat trainees fairly, failure to ensure the trainee is making progress in a timely fashion, failure to recognise problems, and observing violations of research protocol. These aspects were incorporated into an assignment to make supervisors aware of possible challenges.

In addition to the sources described above, we added theory about supervision, mentoring and role modelling, and research culture (Haven, 2021; Fisher et al., 2009; *Making the Right Moves;* Embassy of Good Science, 2021) specifically relevant for the perspective of supervisors (e.g., how to deal with power differences and possibilities for power abuse (elephantinthelab, 2021)). Literature about specific topics related to research integrity was also added, providing background information about plagiarism (Office of Research Integrity, 2021); a data checklist for responsible data handling (UK Data Service, 2021); literature about ghost-writing (Gotschze et al., 2009; DeTora et al., 2019) and gift authorship (Harvey, 2018).

Combining important aspects from literature with the empowerment teaching philosophy, we decided that three aspects of supervision and RCR were particularly relevant for this course: 1) Reflections on being a good mentor, 2) Mentoring towards RCR, and 3) Empowerment. As explained earlier, empowerment in training aims to help participants 1) to recognise, 2) to reflect, and 3) to feel able to address, decide, and act upon integrity issues responsibly. These aspects of empowerment have been incorporated in the course (see also *Table 1: Learning goals)*: 1) Recognising integrity issues is stimulated by providing background information and examples of possible issues; 2) Reflection is stimulated within the different assignments, focusing on one's own experiences; 3) The ability to address, decide and act upon integrity issues responsibly follows from the first to steps; also respondents are encouraged to interact with peers about issues, lowering the threshold to speak up. Additionally, we added a third module, one

on Empowerment, making empowerment concrete and applicable to one's research practice, stimulating reflection on possible solutions for integrity issues.

Table 1
Learning goals

Topic	Learning goals
1) Being a good mentor	• Reflect on what the qualities of a good supervisor are • Reflect on your own supervising style
2) Mentoring towards RCR	• Learn core concepts and information about mentoring towards RCR • Reflect on the assignment on how to connect the concepts and information to your own work as a supervisor • Interact and give and receive feedback on each other's work and experiences as a supervisor.
3) Empowerment in Academia	• Learn how power dynamics in academia are related to RCR and what is needed for empowerment with effective strategies • Reflect on your role in power relationships in work and improving your situation • Interact with peers in the assignment about your personal goals in empowering yourself and your PhD students.

Structure of the course

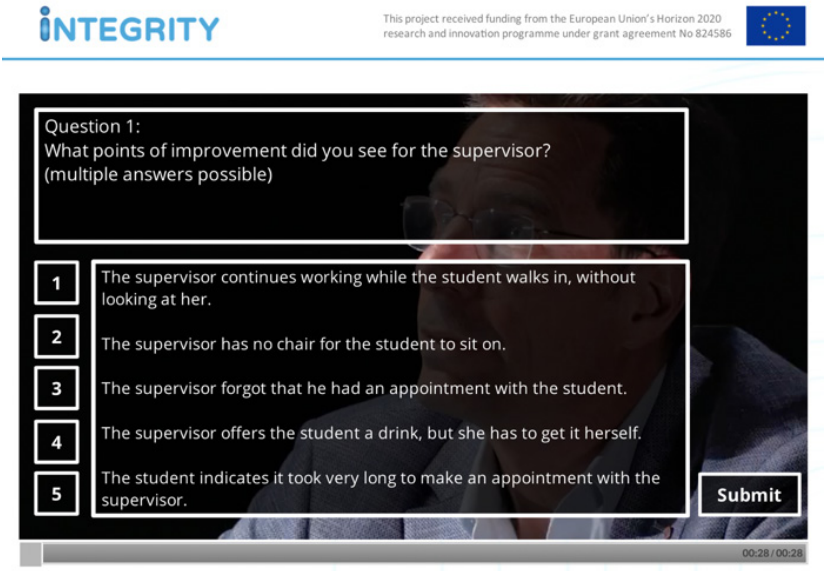
The course has been designed consisting of five online learning units (LU), which participants can follow at their own pace. LU 1, 2, and 3 each take about 45 minutes to finish, including the assignments. A LU is built around video scenes, with short assignments in between the clips complemented by information on integrity issues and supervision. The scenes, with actors playing a supervisor and a doctoral student, have been developed specifically to facilitate discussion and stimulate thinking about highly relevant and recognisable integrity issues, such as authorship and publishing; communication difficulties between supervisor and doctoral student shared expectations regarding power-play and providing and receiving feedback.

Personal reflection on one's own characteristics, skills, and behaviour as a supervisor is targeted. Each learning unit, therefore, concludes with a reflection assignment, inviting participants to apply learned knowledge to actual and relevant examples. Participants can also jointly discuss each other's reflections and share experiences in the comment section of the learning environment.

LU 0 'Introduction' introduces the aims of the course and the learning environment. Participants are encouraged to use their own experiences in the course and to learn to reflect on things they do well and things that can be

improved. Assignments are designed to apply concepts to one's daily research practice, stimulating thinking about behaviour; for example: 'Write down one example of what you, as a supervisor, positively stimulate in PhD students towards RCR'. Participants are also offered to participate under a pseudonym in order to feel safe sharing personal experiences.

Figure 1
Being a good mentor



LU 1, 'Being a good mentor' (see Figure 1, a screenshot), has been designed to reflect on the good qualities of mentors and on participants' own style of supervising. The scene 'Never waste a good talent' is used to portray how power imbalance could negatively influence a supervisor relationship when not taking into account the needs of the doctoral student; the supervisor does not provide proper feedback, ignores the high workload and is also generally rude to the student. This 'bad example' is used to stimulate critical reflection on what good supervision is.

In LU 2, 'Mentoring towards RCR', we discuss the role of instruction, modelling and research culture in mentoring PhD students towards RCR. The central scene is 'To publish or not to publish', in which the supervisor and the PhD student disagree about whether there is sufficient data to publish an article, both having different opinions and interests.

Power dynamics can affect working in academia, especially in supervising relations; the goal of LU 3, 'Empowerment in academia', shows the teaching philosophy on empowerment of the H2020 project and challenges supervisors to reflect on this. LU 3 consists of two parts: 'Power dynamics in academia' and 'Empowering your PhD students and yourself'. Power dynamics are discussed using the scene 'Standing on the shoulder of giants' in which a supervisor and PhD student disagree about adding an author, which is an example of gift authorship. The second part of LU 3 is built around an animation showing what empowerment is and how this can be achieved.

The final unit, LU 4 'Farewell and evaluation', is developed to gather experiences about the course from participants and to understand what could be improved. There is an evaluation form and the option to receive a certificate upon completion of the course.

Testing phase

The course was designed and developed in an iterative process with Elevate Health, an organisation specialised in designing online courses. Elevate provided a check on the didactical soundness of the course and its components and helped to decide which type of assignment was best suited to the different topics in each module. The design aimed to prompt (virtual) interaction, reflecting on aspects seen in the video scenes. All H2020 Integrity project partners were, during a hybrid project meeting in Porto, Portugal, invited to take a look at the first version of the course, test the modules, and share their experiences and opinions about the course. We collected feedback and made final changes. We decided to allow for continuous enrolment in the course, as most supervisors would probably want to follow the course at their own pace. After these final adaptations, the course was opened for participants. Recruitment started, including the development of a promotional video showing highlights to potential participants (https://vimeo.com/691431805/f966ec24cd).

The recruitment of participants was somewhat challenging; project partners warned that recruitment of senior staff might be difficult since they often lack time and/or motivation to participate in additional courses, especially if these are not obligatory. The INTEGRITY project partners were each asked to recruit participants in their own network. Additionally, we advertised the course using different departmental mailing lists of the University of Utrecht and some (inter) national newsletters for integrity networks. On August 2, 2022, 147 participants were enrolled in the course.

We gathered feedback and analysed discussion board posts in order to evaluate the pilot testing of the course to understand what works and what could be improved. Consent for analysing and publishing data in the course was asked by sending an e-mail to participants of the course, informing them about our goal, and asking for permission to publish about the evaluation and discussion board input. As we both used contributions in a so-called discussion forum as well as individual evaluation responses, we pseudonymised the data for our analysis and closed the course environment for all participants so that no one could re-identify quotes.

Results

Experiences with the module: First impressions

In this section, the first experiences with the module are described. We will first present some characteristics of participants in the pilot of the course, describing the origin of participants and their progress through the course. Then, we will give an impression of feedback on the pilot course provided by participants.

Participants

Participation in this course is voluntary and free of charge; in total, 147 participants are enrolled (August 5, 2022), mostly through snowball recruitment by project partners. An impression of the different countries' participants registered from (not all participants listed a country), shown in

Figure 2
Country of origin

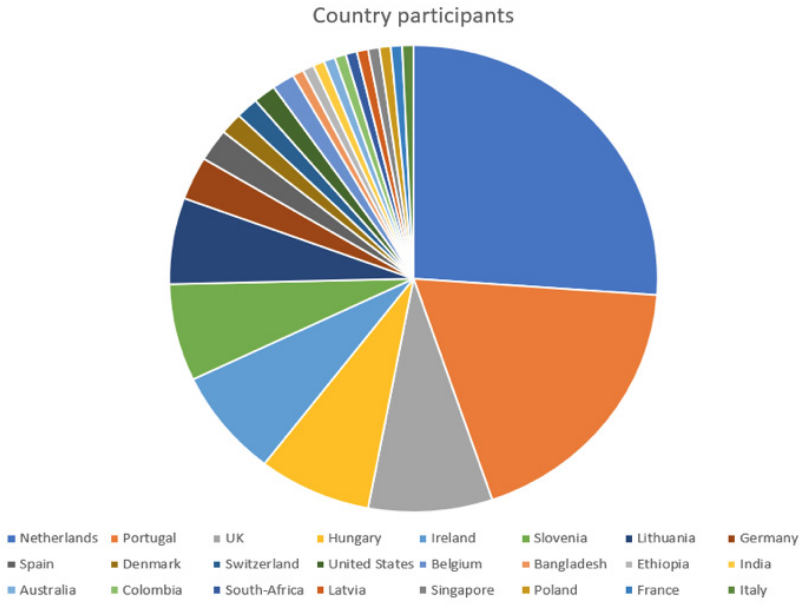


Table 2 shows the activity of participants throughout the course. The number of active participants decreases as the course progresses. After completion of the course, participants have the option to receive a certificate. Of the 147 participants who registered, seventeen applied for a certificate.

Table 2
Participant activity

LU 1	67 participants
LU 2	47 participants
LU 3	42 participants
Obtained certificates	17
Evaluations	18 (7 participants answered to open questions)

Empowerment

In this section, we discuss some participants' experiences and evaluate whether participants were able to build their empowerment capacities in some way.

In LU1, 'Being a good mentor', participants are encouraged to reflect on the qualities of good supervisors or mentors. The discussion board in this LU shows reflection on some aspects of good supervision. In the reflection assignment, three fictional cases are presented describing integrity issues to reflect on. Participants also interacted with each other, discussing personal dilemmas via a discussion textbox. Two general themes were discussed by participants: coaching students and authorship. Participants agreed on the importance of finding a balance in coaching, not pushing students too much or too little. Tasks should be done, and students need to be given responsibility, but students should not be overburdened. Participants said expectations can be managed by having clear and explicit agreements. Authorship, another relevant RCR issue, was also discussed, considering what the right thing to do is in certain cases. The main conclusions were that authorship should be discussed openly; refraining from authorship or offering shared authorship can provide an opportunity for your PhD career progress.

In LU2 'Mentoring towards RCR', participants are asked in the reflection assignment 1) to describe the research culture in their department, 2) to give an example of how they, as a supervisor, positively stimulate PhD students towards RCR in practice and 3) what their take-home message is regarding their supervision towards RCR. These questions were aimed to stimulate reflection and also to think of possible solutions, encouraging supervisors to take an active role in their own supervision regarding integrity issues. In the reactions, participants indicate recognising issues considering research culture. Specific examples of what could be improved were not offered, possibly because it does not feel safe enough to share this online, as explicitly mentioned by one participant. The importance of role modelling becomes clear by participants describing it as important to be a good example and show what RCR looks like in their own practice; participants say that supervisors have an important role in teaching good practices.

LU3 'Empowerment in academia' consists of two parts, 'Power dynamics' and 'Empowering your PhD students and yourself'. Participants were asked in the reflection assignment to think about 1) In what way their work is affected by power relations (both upwards and downwards); 2) How this may affect their own RCR and that of PhD students; 3) With this knowledge, how

they would advise the PhD students and how to empower them; 4) What is going well in their own empowerment and what could be improved; 5) What is going well in empowerment of their PhD student and what could be improved; 6) Write down a personal goal regarding their own empowerment and that of their PhD students.

With regards to empowering PhD students towards empowerment, participants reflected together on the discussion board, agreeing that as a supervisor, you can help build self-confidence by increasing their self-initiative and encouraging them to work on their own. With regards to power dynamics, it was suggested that PhD students should be told what options exist in case of a conflict; for example, they can switch supervisors or even leave institutions when necessary. Some power dynamics might be unavoidable, but a supervisor should endeavour to provide a safe and healthy group climate and maintain an open dialogue. Participants also said critical awareness of this power imbalance and having strategies to address it can be stimulated by empowering researchers. Little has been discussed during the course about career advancement or the personal empowerment of the supervisors.

Evaluation of the course

Participants provided feedback on assignments and the course content on the discussion board. In LU4, we also included a questionnaire to evaluate the course, using closed and open questions. This evaluation was completed by 18 participants.

Table 3

Outcomes course evaluation

This course has helped me to develop -Responses	not al all	to some extent	to a moderate extent	to a great extent
my knowledge of relevant values, rules, and guidelines pertaining to Responsible Conduct of Research (RCR)	3 (17%)	3 (17%)	**8** (44%)	4 (22%)
my ability to apply RCR values, rules, principle and guidelines to my own research project/practice	2 (11%)	**7** (39%)	6 (33%)	3 (17%)
my ability to explain what values and principles underlie my own research project/practice, and how these connect to RCR	2 (11%)	6 (33%)	**7** (39%)	3 (17%)
my ability to identify clear do's and don'ts, as well as grey area situations in my own research project/practice	3 (17%)	**7** (39%)	5 (28%)	3 (17%)
my ability to determine a responsible strategy and the necessary steps to take in a case at hand	3 (17%)	5 (28%)	**8** (44%)	2 (11%)
my ability to act in a responsible and accountable way when faced with dilemmas in my research project/practice	3 (17%)	4 (22%)	**8** (44%)	3 (17%)
my knowledge about what others may reasonably expect from me and what I may reasonably expect from others in collaborating with them	1 (6%)	4 (22%)	**8** (44%)	5 (28%)
my ability to transparently discuss the roles and responsibilities I and my mentors have during my PhD project, and how these will (have to) shift up until my graduation	2 (11%)	4 (22%)	**9** (50%)	3 (17%)
my ability to constructively and transparently work together with junior researchers and senior researchers	2 (11%)	5 (28%)	**7** (39%)	4 (22%)
my skills to provide and receive constructive feedback	3 (17%)	6 (33%)	**7** (39%)	2 (11%)
my ability to discuss potential ethical problems, wrong-doing, dilemmas and/or grey area issues with those I collaborate with in my own research project/practice in a constructive and transparent way	2 (11%)	5 (28%)	**6** (33%)	5 (28%)
my knowledge about where to find help within my institute regarding RCR issues	3 (17%)	**6** (33%)	3 (17%)	**6** (33%)

Even though the numbers are low, on average, we see that only a minority of participants did not feel stimulated at all by the content of the course. The responses are mainly to be found in the 'to a moderate extent' and to 'some extent'. The items that stand out the most concern the 'ability to transparently discuss the roles and responsibilities I and my mentors have during my PhD project, and how these will have to shift up until my graduation.'(rare…), 'my knowledge about what others may reasonably expect from me and what I may reasonably expect from others in collaborating with them', 'my ability to act in a responsible and accountable way when faced with dilemmas in my research project/practice', and 'my ability to determine to take the necessary steps to take an issue at hand'.

Some positive aspects mentioned were concerning the outstanding importance of the topic and the fact that content, both videos and activities, provided food for thought. The video scripts were considered valuable. The course was said to raise awareness about mentoring and supervising problems, and

raising awareness that researchers should step up 'to foster a better climate in their research group or institution' and: 'what I learned about research integrity is every researcher, student or supervisor should be responsible and should have good communication'. Also, the idea of addressing issues openly is valued, having learned that 'RI is always honest and states everything as clearly as possible'. Communication is thus mentioned by several participants, 'What I learned about research integrity is… that it depends not only on the theoretical basis but also highly on your personal example and how you communicate with your students.'

Some aspects for improvement were mentioned: the structure of the course could be clearer, fine-tuning learning aims in each module, and developing downloadable summaries of the main topics for future reading. We received feedback that some assignments (e.g., fill-in-the-blank exercises) or certain feedback on interactive assignments were not appropriate for the level of supervisors. Another remark was that some topics might be too sensitive to discuss in an online discussion board, for example, discussing personal experiences of power differences. A participant said the course was 'a bit short and not as interactive as it should be'. Another participant: 'Taking into account that most of these problems are structural and due to internalised and perpetuated behaviours, I miss suggestions or ideas on how to be proactive at the department and institutional levels'.

Finally, the videos are exaggerations of integrity issues to encourage reflection and make people think about what the right thing to do is. This exaggeration was not appreciated by all respondents, however, making some feel uncomfortable because they deemed some scenes to be 'highly inappropriate'. Also, some issues were mentioned to be missing in this course: 'Issues about race, religion, politics, harassment, and abuse'.

Discussion: What is needed with regard to training for supervisors?

This course is an attempt to educate senior researchers on some important issues in integrity and supervision relationships. In this section, we discuss what we can learn from our experiences in developing and evaluating this course. What do we need to take into account in the further development of training material for supervisors, tailoring it to their needs and wishes?

Empowerment

This course aimed to increase empowerment of supervision in RCR by training participants 1) to recognise, 2) to reflect, and 3) to feel able to address,

to decide and to act upon integrity issues responsibly. The first two aspects of empowerment, recognising and reflecting upon integrity issues, were present in the contributions of participants throughout the course. Participants reflected on how to improve the empowerment of their PhD students. There was hardly any reflection, however, on supervisors' own empowerment and career advancement. As suggested by some participants, this might be because it felt unsafe to discuss their own empowerment in an online environment. For future training, a live (online) meeting might be included to discuss personal experiences together in a safe environment guided by a teacher/facilitator. In this way, participants may feel encouraged to discuss personal experiences and learn from each other about empowerment in their own practice. Also, a more individual portfolio assignment can encourage participants to share their own experiences more. In the SPOCs we developed, such individual portfolios are already included.

The third element of the empowerment philosophy: feeling able to address, to decide and to act upon integrity issues responsible; was less evident in the course contributions of participants. This probably is related to the type of assignment asking specifically to reflect. In the course evaluation, participants were asked how empowerment was improved. Some results indicated improvement in the ability to act responsibly in facing a dilemma and the ability to take necessary steps.

The evaluation inspired us to think of further improvements for the course. Empowerment could be enhanced by providing more practical tips that participants can apply to their own research practice. Also, ideas about recognising harassment and abuse and tips on how to handle these issues could be included to empower participants to address harassment. Additionally, practical tips to improve one's own research culture could be added.

Sensitive topics and confidentiality

Topics that are part of this course can be experienced as sensitive, for example, personal experiences with power dynamics in academia or experienced personal dilemmas. Discussing sensitive topics could be difficult in an open online environment since there is no real-life interaction, and participants might not feel safe sharing experiences with other participants they do not know. We provide the option to participate under a pseudonym and ask to anonymise cases and experiences shared during the course in order to safeguard privacy and confidentiality. However, participants may still feel a barrier to being open. The safety of the online environment could be improved by providing more possibilities to share anonymously or by writing a personal, private reflection in a portfolio.

Another option to improve a safe learning environment and encourage active contribution of experiences could be to combine the online course with live meetings, enabling a dialogue about personal experiences with research integrity and supervision, preferably facilitated by a trained teacher who is aware of the sensitivity. Teachers should be professionally trained in teaching these topics, and especially in this context, they should be able to 'manage behaviour effectively to ensure a good and safe learning environment' (Saqipi & Vogrinc, 2020). During this meeting, more impersonal, general examples could also be discussed during a brainstorming session to make participants feel safe to share without having to share their own examples. Live meetings, in addition to online meetings, can increase to 'engage in collaborative learning, interactions, and discussions with diverse others' (Dumford & Miller, 2018). Also, including elements of flipped learning, for example, by encouraging participants to prepare cases, could increase engagement and satisfaction (Gasparic, 2017). A live meeting could also stimulate further reflection between participants and encourage participants to interact with each other and come to joint solutions for certain integrity issues.

Comparison of doctoral student & supervisor training

Training of supervisors is important because they are in the position to be a role model for all the people they supervise. The material from previous courses used in the development of this course was aimed at doctoral students. As a result, the tone and level of the assignments and feedback did not always match the perceptions and levels of supervisors. For example, the videos used in the course are interpreted differently by supervisors and doctoral students because they experience the scenes from different perspectives. Therefore, we should further investigate what kind of material, assignments, and feedback supervisors value best and adjust material accordingly.

Recruitment & progress

The recruitment of supervisors was challenging since they often experienced high workloads. The course needs to fit into their busy schedule. An online course format that enables participants to follow the course at their own pace matches best with the template of a MOOC (massive open online course) (Guo, 2017; Filius et al., 2018). MOOCs are open course environments where continuous enrolment takes place, and limited interaction with other participants is possible. Our aim is to encourage one's own experiences and become actively involved with course materials often better fit with the characteristics of small group online courses (SPOCs). A clear advantage of an open online environment is that it can help to increase the scale without adding to the workload of a teacher.

Currently, supervisors from over 20 different countries are enrolled in the course. However, only 17 participants of 147 reached the final stage of receiving a certificate in our course, and the number of active participants was slowly diminishing throughout each consecutive learning unit. This is a well-known disadvantage of MOOCs (Filius et al., 2018). Combining the online materials with live sessions and presenting them in blended ways might improve the motivation to actively participate in the course.

A possible explanation for low participation in the course is the voluntary nature of the course. There has been some discussion about whether integrity courses for supervisors should be mandatory. In a study by Ten Haven et al. (2022), participants feared that.

> […] making training compulsory would diminish its value. […] you could risk bringing in participants that are not able or willing to critically inspect their own behaviour, and their counterproductive attitude would decrease the space for others to learn and reflect. (p.10)

This contrasts with the often-heard comments in the doctoral-level courses we teach on research integrity, by which students indicate that their supervisors should also take these courses. A mandatory course would at least have more outreach and help supervisors who are considered to be 'unwilling' to help them reflect on their role and position as supervisors. A course could make them aware of points of improvement in their supervision, especially if the course is focused on empowerment. This course is not mandatory yet, but further inquiries on embedding it in institutional contexts will be explored.

Overall, the recruitment of supervisors for integrity training and ensuring their completion of the training is crucial because they can influence the development of their supervisees' integrity to a great extent. Also, because of existing power dynamics, supervisors behaving badly can have a great negative impact on the (working) lives of their supervisees. More research should be done into recruiting supervisors for integrity courses: what do they need, what do they want, and how can they help to further increase RCR? Additionally, mandatory training in responsible conduct of research, such as training in RCR and supervision, could be considered as part of researcher assessment as this training is currently already standard for early career researchers.

Diversity

In the evaluation of the course, some issues were mentioned to be missing; 'issues about race, religion, politics, harassment, and abuse'. Some of these topics are present, for example, a scene depicting harassment, but it is not

explicitly mentioned. Taking into account the complexity and sensitivity of the topic, harassment and abuse could be introduced more clearly, stating the video is an exaggeration of these issues. Ideas about how to recognise harassment and abuse and tips on what to do could be included to empower participants.

We did not include any information on race, religion, or cultural differences. Participants from at least 24 different countries were involved in this training. For future training, it would be interesting to investigate how this course is interpreted by respondents coming from different countries and whether we can make changes in order to include additional perspectives or topics. It is also relevant to ask for further feedback on the design, the videos used, and how the course is experienced. Especially because we focus on improving empowerment, we should recognise and acknowledge power differences and inequality among participants (Schlossberg & Cunningham, 2016). Further research could thus increase our own awareness of possible sensitive issues, enabling us to acknowledge and address these.

Training supervisors is essential for stimulating RCR in academia. In the future, we should focus on the further evaluation of outcomes of training for supervisors and focus on research asking participants what they need, want, and like in terms of training. In this way, courses can be tailored to specific needs.

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Academic Writing in Teaching Research Integrity

Mateja Dagarin Fojkar*[1] and Sanja Berčnik[2]

The primary aim of this paper is to present the key elements that characterise online course design, addressing the process of designing, implementing, and evaluating an online course for Bachelor's degree students that focuses on developing their academic writing skills. These skills are essential for university students as they provide the knowledge necessary to express themselves effectively, analyse texts, think critically, cite correctly, and avoid plagiarism. Academic writing is also the foundation for responsible research practice. The Research Integrity Competency Profile Model, which includes four main areas, namely values and principles, research practice, publication and dissemination, and violations, was created prior to the design of the course and the skills students need to acquire at the Bachelor's level for successful academic writing were identified. A small private online course was carefully designed in 2020. It consisted of a variety of assignments, including interactive elements such as quizzes, videos, and work in international interdisciplinary groups. The participants of the course were 36 students from Slovenia, the Netherlands, and the Czech Republic. The course lasted four weeks and covered topics such as literature analysis, writing a research paper, avoiding plagiarism, paraphrasing, and citation styles, among others. The course was launched in 2021 for two consecutive instances. The participating students evaluated the course positively, describing the assignments as motivating, useful, and well-structured. However, they concluded that they need more practice in this area, and we suggest that a university course be established to provide all students with the necessary academic writing skills.

Keywords: academic writing, citation, online teaching, plagiarism, research integrity

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Akademsko pisanje pri poučevanju raziskovalne integritete

Mateja Dagarin Fojkar in Sanja Berčnik

Glavni cilj prispevka je predstaviti ključne elemente, ki so značilni za oblikovanje spletnih tečajev, vključno s procesi oblikovanja, izvajanja in vrednotenja spletnega tečaja za študente dodiplomskega študija, ki se osredinja na razvijanje veščin akademskega pisanja. Te spretnosti so za univerzitetne študente bistvenega pomena, ker zagotavljajo znanje, potrebno za učinkovito izražanje, analizo besedil, kritično razmišljanje, pravilno citiranje in preprečevanje plagiatorstva. Akademsko pisanje je tudi temelj za odgovorno raziskovalno prakso. Model kompetenčnega profila raziskovalne integritete, ki vključuje štiri glavna področja, tj.: vrednote in načela, raziskovalno prakso, objavljanje in diseminacijo ter kršitve, je bil oblikovan pred zasnovo tečaja, pri čemer so bile definirane spretnosti, ki jih morajo študentje pridobiti na dodiplomski ravni za uspešno akademsko pisanje. Leta 2020 je bil skrbno zasnovan manjši zasebni spletni tečaj. Sestavljen je bil iz različnih nalog, vključno z interaktivnimi dejavnostmi, kot so: kvizi, videoposnetki in delo v mednarodnih interdisciplinarnih skupinah. Tečaja se je udeležilo 36 študentov iz Slovenije, Nizozemske in iz Češke. Trajal je štiri tedne in je med drugim obravnaval teme, kot so: analiza literature, pisanje raziskovalnega prispevka, izogibanje plagiatorstvu, parafraziranje in slogi citiranja. Tečaj se je začel izvajati leta 2021 v dveh zaporednih časovnih obdobjih. Sodelujoči študentje so tečaj ocenili pozitivno ter naloge opisali kot motivirajoče, uporabne in dobro strukturirane. Ugotovili so tudi, da na tem področju potrebujejo več prakse, zato predlagamo, da se vzpostavi univerzitetni predmet, ki bi vsem študentom zagotovil potrebne veščine akademskega pisanja.

Ključne besede: akademsko pisanje, citiranje, spletno poučevanje, plagiatorstvo, raziskovalna integriteta

Introduction

Among the many challenges students face, academic writing is widely regarded as one of the most problematic. 'The ability to present ideas and arguments in a clear, concise, and logical manner is a critical skill for academics in all disciplines' (Celik, 2020, p.1). MacArthur and Graham (2016) assert that writing makes substantial demands on students' knowledge, strategies, language, skills, and motivational resources. Academic writing involves a range of skills. First, it is important for students to understand that writing is not only about what is written (the product) but also about how it is written (the process) (Ramadhanti et al., 2019). One key academic skill is communication, including writing, such as report writing and seminar writing (Schillings et al., 2018). Academic writing, at least in contemporary Western society, is 'a distinct style of writing used by those in academia and research communities that is noted for its detached objectivity, its use of critical analysis and its presentation of well-structured, clear arguments based on evidence and reason' (Sultan, 2013, p. 139). Academic writing skills are essential for university students because they provide the knowledge necessary to express themselves effectively, analyse texts, think critically, cite correctly, and avoid plagiarism. All four main types of academic writing (descriptive, analytical, persuasive, and critical) are used when writing an academic paper or assignment. Academic writing must be structured, balanced, precise, objective, and formal. All arguments must be supported by evidence and based on information from experts in the field, so it is important to reference the information appropriately (Smith, 2022). David and Anderson (2022) perceive academic writing as not only fundamental for overall academic success but essential for effective communication in students' future professional lives. They argue that university students need to apply higher-order thinking skills to solve content problems and lower-order thinking skills to learn correct citation techniques.

Many students begin their studies with little or no knowledge of the principles of academic writing and with heterogeneous educational backgrounds that require different methods for teaching complex academic writing skills. Research on academic writing support ranges from the use of exemplars or completed examples to the use of assessment criteria, the implementation of training or instruction, the use of different modes of feedback provision, the role of feedback in revising writing products, the role of self- and/or peer-assessment and the importance of the writing process itself (Sultan, 2013).

Academic writing is also the foundation for responsible research practice. Knowing how to properly cite, paraphrase, interpret the ideas of others,

and credit the original author, as well as the ability to read and summarise critically, are the skills that students need to learn and apply throughout their studies and professional careers. Integrity is related to basic human values such as honesty, trust, fairness, respect, and responsibility (International Center for Academic Integrity, 2021). Integrity is also central to teaching and teacher education. Gradišek (2012) investigated character strengths in in-service and pre-service teachers and determined that integrity was among the highest endorsed strengths, along with fairness, kindness, and love.

Academic writing and research integrity are two important aspects of responsible research practice with which every student should be familiar. During our work at the Faculty of Education, University of Ljubljana, we observed students' problems in dealing with academic writing and research integrity, which was the reason we joined the Erasmus+ Integrity project (academic writing and research integrity in higher education), as part of which we designed online courses for BA students. One of the objectives of the project was better preparation of students to act with integrity during their education and conduct research with integrity upon the level of completion of their education. The other objective was to increase the level of digital teaching skills and the use of digital tools for integrity teaching.

The development of information and communication technology has increased the demand for online learning. However, online teaching redefines the roles of learners and teachers as well as teaching approaches (Hampel & Stickler, 2005). For online instruction to be successful, it is not enough to be technologically proficient. Skills such as facilitating online communication and building community are essential to establishing meaningful communicative interaction within an online learning environment (Compton, 2009). Castrillo (2014) defined the roles of teachers in online instruction as follows:

a) Before course delivery: course designer-developer, content expert and creator, assessment designer and communication tools and structure designer.
b) During course delivery: course facilitator.
c) After course delivery: researcher: analysing the course analytics and course evaluation.

Transactional theory describes the phenomena of online teaching and learning in terms of two variables: *structure*, which refers to the course design and the teaching organisation and *dialogue*, which refers to the level of communication between instructors and students. Within structure and communication, we must consider all three types of interaction: content-student

interaction, student-teacher interaction and student-student interaction (Giossos et al., 2009). All three types of interaction are believed to have a positive impact on learning outcomes; however, well-organised courses are, according to Fern University in Germany and the Open University in the UK, the most important factor for effective learning. Well-organised online courses compensate for the lack of interaction and help students systemise and demonstrate new knowledge (Kim & Kim, 2021). The available literature is univocal about the importance of interaction in online courses; however, the lack of interaction is often the main source of criticism of online learning, since it can make students feel isolated and consequently fail to complete the course. Teachers in online courses are expected to reduce psychological isolation and create opportunities for students to communicate. It is important that the teacher establishes his presence and personality in course content, discussion, and activities. Effective teacher guidance can generate successful outcomes. 'Key factors such as course structure, student–student interaction and the sense of instructor presence strongly influence the level of student satisfaction and achievement in the online learning process" (Kim & Kim, 2021, p.2).

Online learning can take the form of asynchronous, synchronous, or hybrid online learning. Asynchronous online learning is the most appropriate for students because it includes the greatest amount of flexibility for them. There is a schedule and some time frames for assignments, but the advantage is that the activities are accessible 24/7, whenever and wherever they want (Amiti, 2020). The benefits of asynchronous learning also include more critical thinking and constructive feedback because there is more time and less pressure. Other benefits of online learning include better student engagement with course material, more variety, greater student participation, and more convenience (Nguyen, 2015). The principal way of encouraging student-student interaction is the use of online forums, where the entire online community can participate in an intellectual exchange (Carr-Chellman & Duchastel, 2000).

This paper chronicles the process of an online course design, course implementation and course evaluation. The course was part of the Erasmus+Integrity project.[3] The main aims of the process were how to tackle the gap in students' knowledge of academic writing, how to design an online course in academic writing for BA students of various majors in order to include all the competen-

3 The basic aim of the Erasmus+ Integrity project was that students become 'streetwise' when it comes to research integrity, meaning, that they become competent to recognize problematic issues and dilemmas with respect to research integrity, learn how to reflect upon these topics and employ strategies that help them to find solutions, take responsibility for their actions and decisions in specific situations and that they incorporate certain values and dispositions, such as the attentiveness, responsibility and courage that are needed to live up to standards of honesty and integrity in conducting research.

cies necessary for successful academic study and scientific research work and to evaluate how successful an academic writing intervention among university students is.

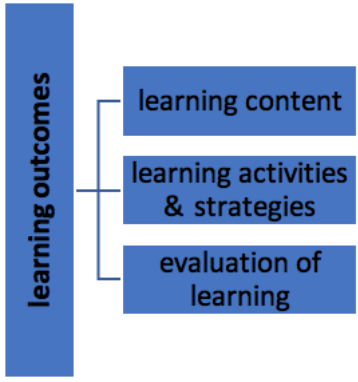
The objectives of the course were: 1) Students know different writing styles (e.g. APA, Chicago Manual, MLA) and are able to use them; 2) Students know elements of a responsible publication (e.g., IMRaD structure); 3) Students know that basic values of research are relevant also in a process of reporting research; 4) Students know what fabrication, falsification, plagiarism and self-plagiarism are (e.g. distinguish between referencing and citation); 5) Students know basic features of academic writing because these were the main problems we observed when working with students, especially when mentoring final assignments.

The entire process lasted from 2019 to 2022, with the course design phase lasting from September 2019 to December 2020, followed by two implementations of the course, the first in January 2021 and the second in November 2021. Each implementation was followed by the evaluation phase, with a more in-depth evaluation at the end of the course. As the course was an innovative intervention in the study programmes of the three universities (University of Utrecht, University of Prague, and University of Ljubljana), our aim was to evaluate the participants' experiences with the course in order to improve it in the future and offer it as an elective online or face-to-face module at the university level.

Course design

The course design process was based on Richards' (2013) backward curriculum design, which starts from the specification of learning outcomes, and methodology and syllabus are developed from the learning outcomes. This approach diagnoses the needs of learners first and carefully determines which activities and instructional processes will lead to the achievement of the learning objectives.

Figure 1
Steps of small private online course (SPOC) design



The designers of the course have attempted to follow the standards of the Quality Matters Program, which was developed in Maryland for designing high-quality online courses. The rubric includes eight standard areas that need to be carefully devised: 1) course overview and introduction, 2) learning objectives, 3) assessment and measurement, 4) instructional materials, 5) learner interaction and engagement, 6) course technology, 7) learner support, and 8) accessibility (MarylandOnline Inc., 2011). The course overview and introduction were part of the first learning unit, in which the moderators and the participants introduced themselves, and the participants had the opportunity to see the structure of the course and to become acquainted with the learning environment. The learning objectives were aligned with the assessment techniques and the instructional materials. Learner interaction and engagement were encouraged through collaborative tasks, course technology was provided by the expertise of the Elevate Online Academy learning environment, learner support was facilitated by the e-moderators, and the course was made accessible to the students at the three universities. The following chapters present the most important design phases of the online course.

Course objectives

The main objective of the course was that the students would learn how to write an academic paper. The course goals were aligned with the following learning outcomes set in the *Competency Profile for Teaching and Learning Research Integrity* for BA-level students (Selan et al., 2021, pp. 24–25):

1. Within the ***area of values and principles***, bachelor students are able to

recognise research integrity as an integral part of research practice, and they develop the skills necessary to do study and research consistent with research integrity.

2. Within the ***area of research practice***, bachelor students are able to 'collect and interpret relevant data in their research area to make judgements consistent with research integrity'.
3. Within the ***area of publication and dissemination***, students are able to 'communicate information, ideas […] about their research consistent with research integrity'. They are able to 'define and explain the difference between skimming, scanning, intensive reading and extensive reading and apply them in their writing'. They are able to 'recognise the skills needed to write an academic paper' and 'to identify and differentiate among various styles of writing'. They are able to 'identify and explain the structure of an academic paper (abstract, introduction, body, and conclusion) and elements of responsible publication and apply them in writing', … 'recognise different citation styles and apply knowledge of citation (citation styles, in-text citation, and end-of-text citation) in their writing, [they] know how to find information from reliable sources, [and] are able to write about a topic by analysing sources and literature'. They are able to 'distinguish between paraphrasing and quoting […] and make a proper citation or paraphrase'.
4. Within the ***area of violations***, they are able to 'define and distinguish plagiarism, identify different types of plagiarism, and identify ways to avoid plagiarism'.

Based on the academic writing literature review and the learning outcomes in the *Competency Profile for Teaching and Learning Research Integrity* (Selan et al., 2021), we formed the following course aims:

- ***developing academic writing skills,*** i.e., applying critical reading skills; understanding why academic writing skills are needed; recognising the skills needed to write an academic paper; knowing and demonstrating the difference between intensive and extensive reading; understanding and selecting reliable internet sources and identifying and describing the structure of an academic paper;
- ***developing analytical writing,*** i.e., defining and writing a summary; identifying analytical writing; and listing the structure of a research paper;
- ***understanding plagiarism,*** i.e., understanding why avoiding plagiarism is important; knowing when we need to cite; knowing how to avoid

plagiarism; evaluating and using paraphrasing strategies; using reference verbs in paraphrasing; evaluating and creating paraphrases;

- ***using citation properly,*** i.e., understanding why using correct citation is important; recognising different citation styles and distinguishing among them; using in-text and end-of-text citations appropriately; creating a reference list; getting to know online tools for creating a reference list.

The course aims were set according to the key skills of academic writing, which encompass the following: 1) the ability to scan research text efficiently to locate relevant information; 2) note-taking and summarising skills; 3) the ability to synthesise material from various sources; 4) an understanding of ethics in writing and the avoidance of plagiarism, and 5) competence in citation and referencing standards (Celik, 2020; Trzeciak & Mackay, 1994).

Participants in the course design

The course design process involved three content experts who were also performing the role of the course moderators. The content experts were trained in online moderation through two online courses prior to the course implementation. The main goal of the course was to teach the moderators how to facilitate the learning process by stimulating and encouraging participants to interact with each other and keep pace with the course. Another area of e-moderation training was learning netiquette, meaning the proper way of communicating online. Special emphasis was placed on providing feedback to students using forum posts, summarising, weaving, feedback, and reflection (Elevate Online Academy, n.d.).

The design process was supported by the Elevate Online Academy, a Netherlands-based but global organisation with a high level of expertise in online teaching, particularly in MOOC and SPOC courses. The learning platform for the course delivery was set up within the Elevate Online Academy learning environment. It was decided that a small private online course (SPOC) would be more appropriate than a massive open online course (MOOC). A SPOC is a more localised version of a MOOC; it is designed for smaller groups, and because it is perceived as a supplement to classroom teaching, it usually increases student engagement and achievement (Gielen, 2016). It is also more commonly used in university settings (Guo, 2017).

Course content

Online courses are usually divided into stages and series of models or learning units (Trentin, 2001). We formed a team of subject matter experts to

define the suitable structure to pursue our learning objectives. In accordance with the essential academic writing skills for university students (the knowledge necessary to express oneself effectively, analyse texts, think critically, cite correctly, and avoid plagiarism), we divided our course content into five units. Many authors (including Carr-Chellman & Duchastel, 2000; Ozcan-Deniz, 2018; Trentin, 2001) suggest setting weekly learning outcomes; therefore, we based the learning outcomes and the course content on weekly topics. The weekly topics were as follows: 0) Introduction, 1) The skills needed for academic writing, 2) Analytical writing and research paper, 3) Plagiarism, and 4) Citation.

Learning Unit 0 (LU0) was the introductory unit in which students learned about the course itself and its content and introduced themselves in a short video or written presentation. Students were asked to upload either a short text or video in which they had to complete the sentence 'I am motivated to follow this course, and I commit to follow this course because...'. In doing so, they could refer to their positive and/ or negative personal experiences with the academic writing and research integrity topic in their discipline and outline their expectations for the course.

Learning Unit 1 (LU1) focused on the basic skills of academic writing, as students are required to produce written work during their studies, and this also affects their professional development (Chokwe, 2013). The topics in this unit were aligned with the above course objectives (developing academic writing skills) and focused on the skills students need to write an academic paper, critical reading, the structure of an academic paper, and using reliable internet sources.

Learning Unit 2 (LU2) focused on analytical writing, which requires students to re-organise facts and information. The topics in this unit were aligned with the course objectives above (developing analytical writing) and focused on summary writing and analysing the structure of a research paper.

Learning Unit 3 (LU3) dealt with plagiarism, as it is the most common problem in academia, especially with the increasing use of the internet. Even though several plagiarism detection software tools are available, it remains important to recognise what plagiarism is and how to avoid it (Borg, 2000). The topics in this unit were aligned with the above course objectives (understanding plagiarism), within which students developed their skills of correct paraphrasing.

Learning Unit 4 (LU4) focused on proper citation. After reading scientific articles, students must be able to integrate the information into a new intellectual statement, one that 'explicitly recognises the contribution of other

writers' (Borg, 2000, p. 27). The topics in this unit were aligned with the above course objectives (using citation properly), within which students developed their proper citation skills.

Course activities and materials

Students need to have an overview of the course objectives and activities so they can plan their weekly study load. We used the following activities from the Elevate Online Academy teaching online toolbox.

Table 1

Course activities in the online course on academic writing (adapted from Elevate Online Academy, n.d.)

Read/watch /listen	Individual	Social Interaction	Collaboration
reading material video/web lecture glossary	written assignment quiz	polls post a remark peer feedback chat questions and answers	discussion forum Google docs glossary

Because many studies (e.g., Croxton, 2014; Hawkins et al., 2013; Song et al., 2019, among others) confirm that increased performance and high learner participation in online courses can be achieved through active learner participation and well-designed interaction activities that encourage students to communicate with each other as well as with the moderators, we wanted to focus on activities that raise social interaction and collaboration among participants, as seen in Table 1. One of these activities that was almost always present was peer feedback because providing it requires students to actively consider the assessment criteria (Huisman et al., 2018). When students participate in polls, post a remark, give feedback to each other, chat, post responses in discussion forums and work collaboratively on a shared online document or glossary, they are more likely to follow the discussion or read each other's work and log into the virtual environment more frequently.

We also aimed for a variety of tasks in each unit to keep the activities engaging and prevent them from becoming monotonous. The units generally began with some input information, either by reading, watching, or listening, which was followed by activities that checked students' comprehension of the topic and its application, either done individually or in social interaction or collaboration with others. The learning activities that included students collaborating on a task in pairs or small groups had to be planned more carefully

and announced at the beginning of the course so that students had ample time to schedule a synchronous online meeting.

Some examples of tasks:

Figure 2

Example of an individual written assignment from the online course on academic writing (Elevate Online Academy, n.d.)

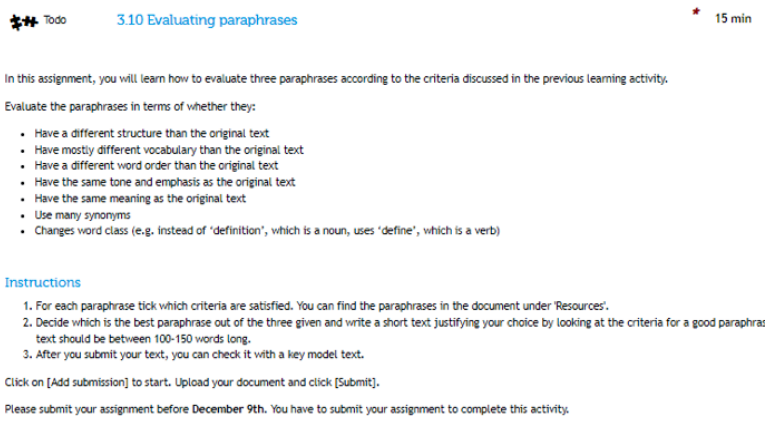


Figure 3

Example of a social interaction activity from the course on academic writing - post a remark (Elevate Online Academy, n.d.)

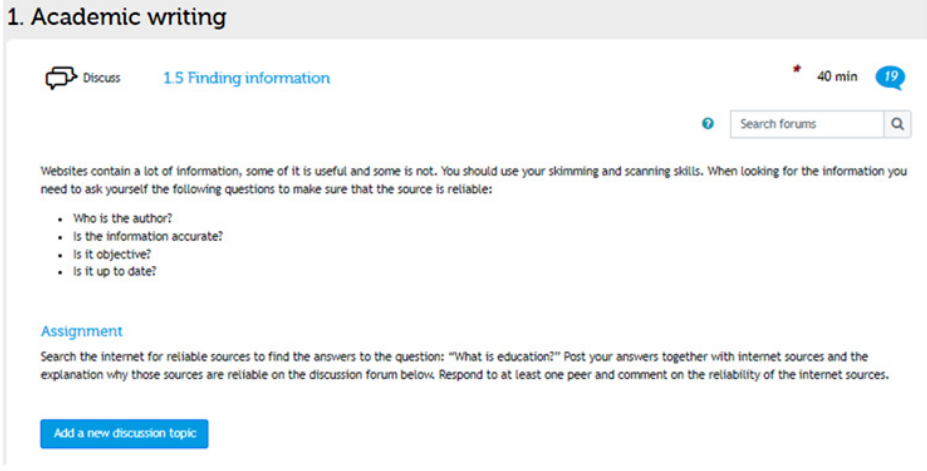
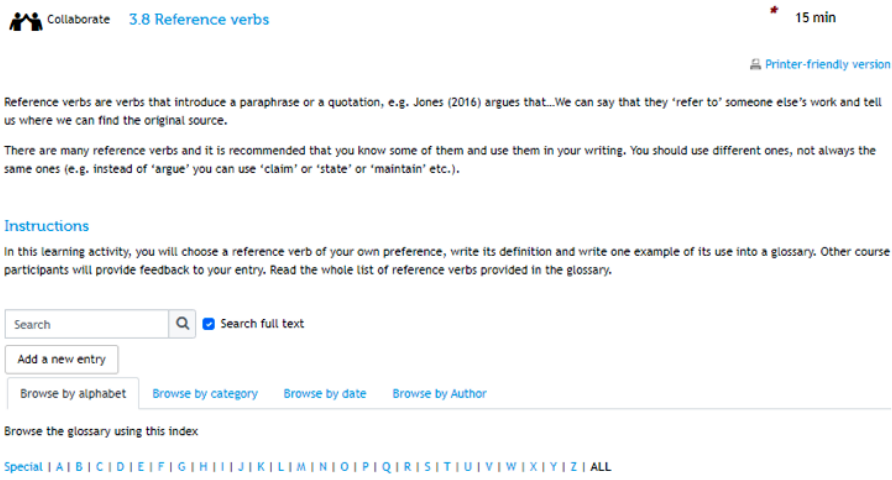


Figure 4
Example of a collaboration activity from the course on academic writing (Elevate Online Academy, n.d.)



When designing an online course, developers must align learning activities with learning outcomes (Sewell et al., 2010). Students' knowledge needs to be formatively assessed to foster their autonomy and improve their understanding of the content. Sewell et al. (2010) suggested that assessment techniques in online courses be based on the six levels of Bloom's Taxonomy. They proposed the following online assessment techniques accordingly:

Table 2
Online assessment techniques (Sewell et al., 2010)

Bloom's Taxonomy Level	Examples of assessment techniques
remember	flashcards, quizzes, games
understand	simulations, animations, tutorials
apply	simulations, instructional games, case studies
analyse, evaluate, create	case studies, multiple choice questions

We decided to follow this model in creating assessment tasks for the online academic writing course and included the following assessment techniques in the course: flashcards, quizzes, simulations, case studies, and multiple-choice questions to assess different levels of knowledge.

Course implementation

The participants in the course implementation were 36 students at the bachelor level from the University of Ljubljana, Slovenia (23); the University of Utrecht, the Netherlands (10); and the University of Prague, the Czech Republic (3). The students were either in their 2nd or 3rd year of study (20–22 years old). Their study programmes varied; all the Slovenian students (23) were primary education students studying at the Faculty of Education, two Czech students were English majors, whereas one was a biology student. The students from the University of Utrecht were studying computer science (4), biology (2), mathematics (3) and neurobiology (1). Thirty-two participants (88.9%) were female, and only four (11.1%) were male.

Kreie et al. (2017) write that the first step in an online course is to inform students about registration, the syllabus, and communication. After emails were sent with registration details and the participants registered, we launched the course by sending a welcome email and announcement, initiating a class-wide introduction, and asking students to read the course information. It is important to first explain the requirements for the online course and the technical requirements and to inform students of the expectations, weekly study load, and important deadlines. In the introductory unit, the students introduced themselves; Xi & Li (2020) pointed out that getting to know each other is a successful strategy for building a learning community, especially in asynchronous learning in which students do not need to be online at the same time, and social interaction is not immediate.

Online learning communities are described as offering social and emotional support and facilitating learning through collaboration and cooperation. There is no universally accepted definition for the term 'social presence'; however, we can describe it as the ability to participate personally and authentically (Lander, 2015). Lander (2015) found that social presence in online learning can be achieved through 1) affective responses (e.g., self-disclosure, humour, emoticons, etc.), 2) cohesive responses that build and sustain group commitment (e.g., use of salutations, vocatives, inclusive pronouns, and talking about weather and health, etc.), and 3) interactive responses (e.g., asking questions, continuing a thread, referring to the content of participants' postings, praising, expressing appreciation, quoting the words of other participants, etc.). Most of these strategies were used by the moderators throughout the course. The participants received a welcome email at the beginning of each week/unit. The email included a brief introduction to the unit and a prompt to begin the lessons. As mentioned above, we used various forms of social interaction, like

polls, posting a remark, peer feedback, chats, and questions and answers. Peer feedback is frequently applied in higher education and is considered beneficial to students' writing as 'it stimulates them to actively consider the task-specific processes and criteria' (Huisman et al., 2018, p. 956). Similarly, communicating through online discussion forums provides students with the opportunity to express their thoughts and discuss topics in more detail. They also feel more comfortable and flexible since they do not feel pressured to respond to questions or comments immediately and have more time to think about their response (Xi & Li, 2020).

In addition to peer feedback, moderator feedback is also important to the intensity of participation. According to self-determination theory, 'positive feedback works at the self-level and at the self-regulation level and should increase participation intensity' (Camacho et al., 2019, p. 143). Positive feedback increases participants' goal commitment. We used announcements to post welcome notes and notes with brief insights into the goals of the learning unit that was ending. Each lesson included a discussion forum, where participants answered specific questions, commented on the lesson, or commented on other posts. The moderators were always part of this discussion and provided personal feedback to the participants. Some posts were visible to all participants, but we also used individual posts, which had only one author. As Lander (2015) explains, moderators 'tread a fine line between ensuring the correct knowledge is constructed on the one hand and maintaining the sense of community and not exposing individual students to embarrassment on the other' (p. 113). It is essential to manage the delicate matter of assessment in a public manner. The single most powerful influence on performance is feedback (Huisman et al., 2018; Schillings et al., 2018). We used appreciation and engagement to refer to knowledge provided by individuals in posts. The moderator sets the parameters for community membership and participation, such as how, when, and what can be posted, and positions students as online learners who are aware of others in the discussion, adjust their contributions to provide opportunities for others to contribute and observe the boundaries set by the moderators (Lander, 2015).

Course evaluation

As many authors have noted (Pretz, 2014; Soffer & Cohen, 2019), one of the main problems with online learning is the low completion rate of online courses. The average completion rate is between 5–15% (Bui, 2022). Similarly, for the academic writing course, there were 30 applicants in January 2021 and 44 applicants in November 2021, altogether 74. More students would apply,

showing strong interest in the course topic, but the number was limited to maintain the quality of feedback given to the students. The first course was successfully completed by 17 students (15 from the University of Ljubljana and 2 from the University of Prague). The second course was completed by 19 students (8 from the University of Ljubljana, 1 from the University of Prague and 10 from the University of Utrecht). Of the 36 students who attended the two implementations of the online course on academic writing, 24 submitted the final course evaluation after finishing the course. They evaluated different areas of the course, specifically its content, the learning materials and activities, e-moderation, the learning environment, the study load, and the course in general.

Evaluation instruments

Two different questionnaires were designed for the purpose of course evaluation. One was used at the end of each unit, and the final evaluation of the course was done after the participants had completed all four units. The end-of-the-course questionnaire contained different categories related to 1) content, 2) e-moderation, 3) learning environment, 4) study load, 5) general. In the first content category, the participants gave an overall mark for the course content on a scale of 1 to 10 and provided suggestions regarding the content of the course and the accompanying learning activities and materials. In the second e-moderation evaluation, the participants rated on a scale from 1 (very bad) to 5 (very good) the quality of the e-moderators' messages, the e-moderators' encouragement, the quality of help and the speed of the response. Again, they provided suggestions regarding the e-moderation in an open-ended question. As regards the third learning environment category, the participants gave an overall mark for the learning environment on a scale of 1 to 10 and made suggestions for improving the e-learning environment. Within the fourth study load category, the participants evaluated the amount of the study load (too little - just enough - too heavy) and indicated the number of hours they spent on the entire course. In the last category, the participants were asked about their course expectations before the start and to what extent the course met their expectations (yes - no - partially). They had to justify the last answer in an open-ended form.

Participation in the end-of-the-course survey was voluntary and anonymous. The questionnaires were part of the online course (both for each unit and for the whole course); however, the moderators could only see the responses without the participants' names. The unit evaluation questionnaires were administered at the end of each unit (each week), and the end-of-the-course evaluation was administered at the end of the course (Week 4).

Content validity was established by a panel of four international experts, who contributed valuable feedback on the questionnaires and the scope of the questions. Consultation was also provided by the instructional designers from the Elevate Online Academy, with extensive professional experience in course design and evaluation. The open-ended questions were analysed using content analysis, and a quantitative approach was used to analyse the closed questions. The results of the evaluation are mainly presented in the form of tables with frequencies, mean values, and ranking.

Evaluation

First, students had to give an overall mark for the course on a scale from 1 to 10.

Table 3

Overall assessment of the course

Mark	f	f%
6	1	4%
7	3	13%
8	5	21%
9	8	33%
10	7	29%
Total	24	100%

As shown in Table 3, the majority of the students assessed the course with a mark of 9 (8 participants), followed by a mark of 10 (7 participants) and a mark of 8 (5 participants). Thus, the average mark of the course was 8.7.

When asked for suggestions regarding the content of the course, most of the participants had none and were satisfied with the course content as it was designed; some of them wished for more activities within the course and the extension of the content. One student wrote down: 'I'd like it even more if I had more chances to collaborate and work with other students. I really liked the idea in the last part, where we had to write a summary together. It is always a challenge to work with people you hadn't worked with before, and it is a great opportunity to develop certain competences as well.'

When asked for suggestions regarding the learning materials and activities, most students did not provide any or wrote they were satisfied with them and found them useful, interesting, and varied, which they found motivating.

They said the materials and activities were appropriate to their level of knowledge and well structured.

As regards the e-moderation, the participants had to rate the quality of the messages, the encouragement, the quality of the help, and the speed of the response of the e-moderator on a scale of 1 to 5 (1 – very bad, 2 – bad, 3 – neutral, 4 – good, 5 – very good).

Table 4

Evaluation of the e-moderation of the course

Statements	1	2	3	4	5	Average
The quality of the messages of the e-moderator.	1		1	9	13	4.4
The encouragement of the e-moderator.	1		2	7	14	4.4
The quality of the help of the e-moderator.	1		4	5	14	4.3
The speed of the response of the e-moderator.	1	1	3	5	14	4.25

Table 4 shows that most of the moderation areas received an average rating of 4.4 or 4.3. Most participants rated e-moderation with the highest grade (i.e., 5). The student who selected the lowest grade for the e-moderation explained in his/her response that he/she missed more specific comments in one task, and the two lowest grades for the speed of the response were related to late feedback that students received due to a technical issue in the course. When asked for specific recommendations for the e-moderator, most participants did not offer any suggestions, or they wrote that all moderators were 'encouraging, clear and helpful' and that the moderators' feedback was 'positive'. One student wrote: 'I really liked it when we received an email when a new week started. I also liked it very much that there were some motivational words - that always lifts me up and encourages me to do the work I have to do.' This last feedback demonstrates the importance of regular feedback and reminders given to students related to their coursework. Croxton (2014) proposes a framework for online course interactivity that incorporates elements of social cognitive theory, interaction equivalency theorem, and social integration theory to facilitate meaningful learning and encourage students to persist in the course. She adds that student-instructor interaction is a key variable in online student satisfaction and persistence (Croxton, 2014).

The participants also marked the learning environment on a scale from 1 to 10.

Table 5
Evaluation of the learning environment

Mark	f	f%
7	1	4%
8	3	12%
9	10	42%
10	10	42%
Total	24	100%

Most students rated the learning environment with the two highest scores, 9 or 10 (84% overall). One student rated it 7, and three students rated it 8. When asked for suggestions for the e-learning environment, again, most students had no suggestions; some wrote that it was 'very comprehensive', 'not hard to use and attractive at sight', and 'well structured'. One student wrote, 'At first, I was quite confused with this environment because I've never used Elevate before. But over time, I got used to it'. Two students also wrote that they liked 'the chance to interact with other participants of the course' and that they were able to 'do assignments whenever [they] could in those seven days'. As other authors have pointed out (Lander, 2015; Xi & Li, 2020), one of the main advantages of asynchronous online learning is that students can work at their own pace at any time and from any location.

The participants assessed whether the study load was 'too little - just enough - too heavy'. Twenty-one students (87.5%) described the study load as 'just enough'. None of the participants assessed it as 'too little' and three (12.5%) evaluated the study load as 'too heavy'. When designing the course, it is difficult to predict how extensive some assignments will be; moreover, students work at different paces; for example, someone may complete the same task in half the time it takes another. Nevertheless, the study load seemed reasonable for most students. The students also needed to indicate how many hours they spent on the course. The number of hours varied widely (see Table 6).

Table 6

The number of hours the students spent on the course on academic writing

Study load – hours	f	f%
5	1	4.2%
6	1	4.2%
8	2	8.2%
9	2	8.2%
10	2	8.2%
11	1	4.2%
12	4	17%
14	2	8.2%
15	5	21%
17	1	4.2%
18	1	4.2%
30	2	8.2%
Total	24	100%

The course was designed for a study load of 2.5 hours per unit/week; in total, we anticipated that students would need approximately 10 hours to complete the course. As shown in Table 6, a few students managed to complete the course in less than 10 hours (6 students or 25% of them). The majority of students required between 10 and 15 hours (58.6%), with most of them selecting either 15 or 12 hours. A few students needed more than 15 hours, and two students chose 30 hours, which is three times more than planned during the design process. On average, the students spent 13.4 hours on the course, or 3.4 hours more than planned. As Kember (2004) discussed in his study, the perception of workload can be very personal and is not always synonymous with the amount of time spent working. It is influenced by the content, level of difficulty, type of assessment and relationships with other students and the teacher (Kember, 2004).

In the last set of questions, the students were asked about their expectations prior to the course and to what extent those expectations were met. Most students listed the development of their (academic) writing skills as the most important expectation. They wrote that their 'expectations were to get to know more about academic writing and to get more comfortable in writing in English in general', to learn more about 'citing and writing academic papers', to

learn 'how to structure academic writings and how to do proper referencing'. Someone also wrote, 'I didn't have any expectations. I just wanted to practise my English.'

When asked whether the course met their expectations, 16 students (67%) answered 'yes', and 8 students (33%) answered 'partially'. No one selected the answer 'no' from the three options given. The students gave different reasons for their answers: Most wrote that they feel more confident in their writing, for example, 'The course met my expectations because we learned a little about writing texts, but also how important it is that we know how to cite and quote, in order to avoid plagiarism. I am pleased that this course has managed to exceed my expectations'. A few of them also reported that the knowledge they gained in the course will be useful to them in their future studies and in writing their final thesis. Some students commented on the variety of the assignments that they had to complete, for example, 'I liked completing all the tasks and reading texts. Those were way more interesting than I expected ….'. Another added, 'I think it's really important that we had to do some assignments by ourselves, not only read or do tests.'. Two students also mentioned the benefits of learning English through the course, 'I was connected to the language. And what I appreciated the most was that we collaborated with other students. I was pushed to English :)'. A few students concluded in their final remarks that they had gained some knowledge but needed more practice in this area.

Conclusion and recommendations

The purpose of this paper was to present the process of designing, implementing, and evaluating an online academic writing course. The course was aligned with the learning outcomes for research integrity defined in the *Competency Profile for Teaching and Learning Research Integrity* (Selan et al., 2021). Designing and implementing an online course is a complex process that requires expertise from multiple domains (i.e., content, pedagogy, and technology). In our case, the content involved research integrity and academic writing; the pedagogy included selecting appropriate materials, creating engaging tasks, designing suitable assessment techniques, and moderating the course. Technology primarily consisted of online communication skills and technological literacy.

The overall results of the course evaluation indicate that students were very satisfied with the course, giving it an average grade of 8.7. They praised the variety and engagement of the activities, especially those that required them to collaborate. Several researchers reported that interaction has a significant

impact on student satisfaction, learning and retention in online learning (Kim & Kim, 2021). The participants were satisfied with the moderation of the course and the positive attitude of the moderators. Positive feedback increases participants' confidence to successfully develop and refine their knowledge, and it also increases their goal commitment. Furthermore, supportive feedback enables them to internalise the goal and stay motivated to pursue it (Camacho et al., 2019). The students were also satisfied with the learning environment, which they felt was very comprehensive, not difficult to use, attractive, and well structured. A learning environment that is not user-friendly may hinder the learning process and discourage students from persisting in the course. Even though the study load was perceived to be higher than planned (3.4 hours on average), most students indicated that it met their expectations, and they increased their knowledge of academic writing. They also pointed out that they would like more practice in this area. We recommend that a similar course be incorporated into their degree programme as an elective. All students, regardless of their study programmes, are required to write texts that are clear, well-structured, objective, and critical. In addition, they must properly cite and reference other sources. Learning these skills should be an integral part of all degree programmes. Not only will this provide students with academic success, but it will also be of great benefit in their future careers.

There are two major limitations to this paper that should be addressed in future research. First, the small sample size may influence the results of the course evaluation. We recommend implementing the course in a variety of study programmes; however, we strongly recommend maintaining small group sizes as feedback and interaction are of much better quality when there are not too many students in a group. Second, a different methodology (e.g., interviews) would provide more in-depth students' views of the course, its merits, and shortcomings. Based on students' constructive feedback, the course could be improved and repeated. Nevertheless, we believe that the processes of course design, implementation and evaluation presented in this paper can be beneficial to course designers and moderators. Its strength lies in its overview of careful planning, the importance of regular and positive feedback, and the inclusion of engaging and collaborative assignments in online courses.

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Opinions of Montenegrin University Students and Teachers about Plagiarism and its Prevention

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This research paper aims to identify the opinions of university students and teachers about plagiarism and how to prevent it. We employed qualitative techniques, providing three case studies to participants and asking open-ended questions based on these cases. One hundred and forty-five people participated in this study, including bachelor, master, and doctoral students and university teachers. We performed a thematic analysis of the text received from the participants' responses. The results show that the participants were serious about plagiarism if academic stakeholders commit it; however, they expressed a lenient attitude toward ghostwriters. They also felt there was a need to provide training in academic writing for them to feel confident about their writing and not copy from others. Some awareness sessions on academic integrity should also be conducted.

Keywords: plagiarism detection, plagiarism punishment, student, university teacher

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Mnenja študentov in univerzitetnih učiteljev Univerze v Črni gori o plagiatorstvu in njegovem preprečevanju

Dijana Vučković, Sanja Peković, Rajka Đoković, Marijana Blečić in Jovana Janinović

Namen tega članka je ugotoviti mnenja univerzitetnih študentov in učiteljev o plagiatorstvu in njegovem preprečevanju. Uporabili smo kvalitativne tehnike, tako da smo udeležencem ponudili tri študije primerov in na njihovi podlagi postavili vprašanja odprtega tipa. V raziskavi je sodelovalo sto petinštirideset oseb, med njimi dodiplomski, magistrski in doktorski študentje ter univerzitetni učitelji. Izvedli smo tematsko analizo besedil, ki smo jih prejeli iz odgovorov udeležencev. Rezultati kažejo, da so udeleženci resno obravnavali plagiatorstvo, če so ga zagrešili akademski deležniki, vendar so izrazili prizanesljiv odnos do t. i. ghostwriterjev oziroma piscev, ki pišejo v imenu drugih. Menili so tudi, da je treba zagotoviti usposabljanje na področju akademskega pisanja, da bi se počutili samozavestno pri pisanju in da ne bi prepisovali od drugih. Izvesti bi bilo treba tudi nekaj srečanj za ozaveščanje o akademski integriteti.

Ključne besede: odkrivanje plagiatorstva, kaznovanje plagiatorstva, študent, univerzitetni učitelj

Introduction

Plagiarism has become one of the most dangerous threats to the quality of research and education across different regions and cultures (Glendinning, 2016b; Thomas, 2017; Vučković et al., 2020). In this paper, plagiarism is understood to be 'presenting work/ideas taken from other sources without proper acknowledgment' (Tauginienė et al., 2018, p. 35) or 'presenting someone else's words and/or ideas as your own without appropriate attribution' (Ellis et al., 2018, p. 1). The description of Fishman (2009) is more accurate:

> "Plagiarism occurs when someone uses words, ideas, or work products attributable to another identifiable person or source without attributing the work to the source from which it was obtained in a situation in which there is a legitimate expectation of original authorship in order to obtain some benefit, credit, or gain which need not be monetary." (p. 5).

Therefore, plagiarism is breaking an academic community's ethical rules that relate to authorship. It is a type of cheating because ideas, research results or other authors' papers are presented as one's own. Furthermore, Fishman's (2009) definition includes a key motive for plagiarism, which is perceived as the intention that the one who plagiarises wants to obtain some benefit that might not necessarily be commercial.

Many individuals, groups, and even institutions are breaking academic rules, with modern technology, the internet, and social media 'helping' them to plagiarise and to create new forms of cheating (Lancaster, 2019; Tauginiene et al., 2018). Plagiarism has become one of the most serious moral problems in (higher) education and research. It has a very strong negative influence on the reputation of higher education institutions and on 'the ethics that the student will bring into the business or medical or home improvement fields we depend on' (Aaron & Roche, 2013, p. 162). Moreover, plagiarism is a moral issue and 'therefore a highly emotional issue' (McLeod, 1992, p. 7). Plagiarism is recognised by that wider public audience as a university's inability to produce quality knowledge, both in education and research.

The objective of this article is to describe Montenegrin university students' and teachers' opinions on three cases of plagiarism given through case studies. We decided to use qualitative methodology to find out our respondents' opinions about these situations. Our respondents (110 students and 35 university teachers) completed written questionnaires with long-form answers on the issues described in three case studies.

Theoretical Background

Identifying the Type of Plagiarism

Aiming at having international cooperation and easier and trustful mobility across universities, academics should agree upon the meaning of plagiarism, its' types, measures of acceptable text overlapping, and similar issues. In today's world of science, plagiarism is considered unethical behaviour, and it should be prevented and/or punished. In order to achieve this, it is important to recognise various forms where plagiarism occurs. Thus, various classifications or typologies of plagiarism exist.

Among taxonomies of cheating behaviour, Tauginienė et al. (2019) have identified 17 forms of plagiarism: find-replace plagiarism, image plagiarism, invalid source, patchwriting, self-plagiarism, slicing, translation plagiarism, verbatim plagiarism, clone plagiarism, citation amnesia, meat extenders, multimedia plagiarism, multiple submission, simultaneous submission, boilerplate plagiarism, code, and idea plagiarism. In addition, the authors state three outputs which represent the types of plagiarism, such as augmented publication, covert duplication, and redundant publication.

The names of certain forms clearly suggest the way in which plagiarism occurs. For instance, *slicing plagiarism* implies taking parts of other authors' texts and their 'distribution' throughout one's own paper. The term *meat extenders* relates to taking key parts of another author's text and their 'covering' or extending by means of one's own statements.

Essential differences among the mentioned forms of plagiarism exist. Some occur as a consequence of an unacceptable manner of academic writing (most of them are mentioned in the first group), while some appear to be a consequence of a bad intention to publish papers as soon as possible or to publish as many papers as possible (multiple and simultaneous submissions, as well as the three forms of outputs). Multiple form combinations appear frequently as well (Tauginienė et al., 2019), which makes it difficult to recognise plagiarism to a great extent. Some variants of plagiarism are visible without any deeper analysis (e.g., verbatim plagiarism), while some other types are not so obvious (e.g., patchwriting or mosaic plagiarism) (Tauginienė et al., 2019).

Belter and du Pre (2009) found that several forms are the most frequent plagiarism types (e.g., verbatim plagiarism and/or improper paraphrasing). Furthermore, they found forms that are questionable from the point of authorship, such as the submission of other authors' papers as original pieces of writing or different forms of unethical collaboration in paper writing (Belter & du Pre, 2009).

Plagiarism types were precisely described by those academics particularly oriented towards plagiarism and academic integrity research. However, there is no common understanding of plagiarism among European academic representatives, even those working in the same institution (Glendinning, 2016b). Moreover, there is no clear measure of the percentage of overlap text according to which we may evaluate the originality of a piece of text. In the existing literature, researchers found considerable differences in acceptable text matching (Ison, 2015) and types of plagiarism (Calvert Evering & Moorman, 2012).

One should bear in mind that plagiarism is not just students' unethical behaviour. There is a large amount of data that shows university teachers' and researchers' ethical misconduct in research publishing (Calvert Evering & Moorman, 2012). Furthermore, it is not uncommon for university teachers to publish their students' work as their own (Bartlett & Smallwood, 2004). From the point of view of some researchers (Calvert Evering & Moorman, 2012), that situation is more problematic because university teachers are role models for their students. If they behave unethically, it is a very clear sign to students of what they should do to become 'successful' during their university studies and beyond, that is, in their professional practice.

Often connected with plagiarism, the second severe form of academic fraud is contract cheating or ghostwriting (Sivasubramaniam et al., 2016). Glendinning (2016b) found that there was significant concern about ghost authorship in the United Kingdom and the Republic of Ireland among her respondents in research encompassing universities from all the then-member countries of the European Union. The research showed very functional practices of ghost authors, who successfully use different channels, especially social networking, to find clients (Sivasubramaniam et al., 2016). The ghost authors confirmed that they work very fast; sometimes, they may finish a master's thesis in a single day (Shahghasemi & Akhavan, 2015).

Socio-cultural and historical context in plagiarism understanding

Plagiarism is socially and culturally constructed; therefore, it is difficult to develop a universal understanding of it even today (Calvert Evering & Moorman, 2012). It is well known that cultures shape individuals' behaviour, and some authors made a distinction between those cultures that are stricter in plagiarism punishment and the others that do not consider plagiarism as 'a big deal' (Brodowsky et al., 2019; Thomas, 2017).

Today, plagiarism is mostly considered unethical behaviour, but we should bear in mind that this was not always the case. It is precisely that fact

that may, at least in part, explain today's insufficiently harmonised opinions on plagiarism. Namely, throughout history, plagiarism was a sort of *mimesis* or imitation (Buerger, 2002; McLeod, 1992; Thurmond, 2010). Concepts of authorship appeared approximately at the same time when two other concepts appeared, that is, 'the romantic notion of the single, original author expressing his innermost feelings through art, and the capitalist notion of private property' (McLeod, 2010, p. 12). The first perception of plagiarism as unethical happened at the beginning of the 18th century when the first copyright law was adopted in England (Thurmond, 2010). This does not mean that plagiarism was widely accepted as unethical at that time, and writers continued to imitate others throughout the 18th century and beyond (Thurmond, 2010). The most important change happened when 'writing began its transformation from primarily a search for truth and beauty to an economic pursuit […] the writer became the owner of the thing he created' (Thurmond, 2010, p. 12).

Even today, there is no common understanding of plagiarism and its nature. The idea of owning words and ideas is a Western idea and '[s]tudents from certain Middle Eastern, Asian, and African cultures are baffled by the notion that one can "own" ideas since their cultures regard words and ideas as the property of all rather than as individual property' (McLeod, 1992, p. 12). Western cultures are oriented towards individuals and their private ownership, while Eastern cultures are more collectivistic (Brodowsky et al., 2019). According to some authors, in post-communist countries, 'plagiarism is implicitly or even explicitly tolerated' (Bilic-Zulle et al., 2008, p. 140). One of the explanations obviously is a treatment of ownership; in post-communist societies, a vivid idea of collective property remains.

In contrast, we should bear in mind that strong acceptance of cultural causes as prerequisites for plagiarism occurrence could be seen as a stereotype towards the researchers from these societies, as Brodowsky et al. (2019) pointed out. It is clear that culture influences individuals, but it is also important to underline that there is no such culture in which all individuals are the same. The research community has found many plagiarism cases both in the West and in the East, and there is no clear evidence that some regions and cultures are more or less prone to plagiarism occurrence (Martin, 2011). Nevertheless, transition societies, such as Montenegro, are certainly more exposed to challenges and dilemmas related to this issue.

The Most Frequent Plagiarism Causes

There are many causes of plagiarism, and this type of misconduct 'arises from ignorance, opportunity, technology, ethical values, competition, and lack of clear rules and consequences' (Bilic-Zulle et al., 2008, p. 140). Modern technology is frequently 'accused' of fostering plagiarism, but some researchers claim that there is no significant difference in the occurrence of plagiarism before and after the introduction of the Internet (Ison, 2015). Nevertheless, the availability of other people's papers, which is made possible by the Internet, is a certain challenge for individuals and should be taken into account as a factor that can influence the appearance of plagiarism. This is especially important when facing the opportunities provided by artificial intelligence, which could fundamentally change learning at all levels, including universities (Kodelja, 2019).

Carnero et al. (2017) found several factors causing plagiarism, such as 1) lack of teaching/learning on research ethics and lack of writing skills, and consequently poor awareness of the plagiarism problem, and 2) tolerance towards plagiarism and lack of institutional policies, which could be attributed to corruption and specific cultural values. Indeed, students rarely have courses on academic writing and research ethics, which poses a serious problem for many, and they often use that fact to justify their cheating (Vučković et al., 2020). Furthermore, tolerating plagiarism during written assignments, for instance, conveys the message that copying is acceptable.

Comas-Forgas and Sureda-Negre (2010) suggested that there are three main domains that may explain plagiarism: 1) factors connected with students (e.g., poor time management or bad learning strategies, etc.), 2) factors derived from modern technologies (e.g., easy way to find sources and copy-paste text), and 3) factors connected with the university teacher and/or course (e.g. some teachers do not show too much interest in students' writing assignments, or their assignments are not relevant, e.g., too much high theory). Comas-Forgas and Sureda-Negre (2010) found that many factors concerning university teachers' roles enable plagiarism, for example, lack of teachers' coordination and giving too many and/or too complicated assignments, lack of skills in assignment creation, or lack of digital skills, among others. These factors could also be understood as determinants that should be addressed via appropriate university courses.

In one fictional case study, Calabrese and Roberts (2004) vividly explained how sometimes hard pressure by academic culture, with the primary motto of 'publish or perish', could negatively impact lecturers and researchers. In addition, researchers are not the only university members under pressure because students also frequently find themselves in this situation (East, 2010). Therefore,

'even good people will make bad decisions when under stress or pressure, when they are tired, or when it benefits them just a little bit' (Bertram Gallant, 2016, p. 24). For Bertram Gallant (2016), the necessity is to create an ethical culture, which could be achieved if we teach each academic member moral reasoning.

Plagiarism Prevention and Punishment

From university teachers' point of view, it is better to prevent some ethical misconduct than to deal with them *post-festum*. Plagiarism prevention could be treated from the perspective of teaching that will encourage students' academic writing skills (e.g., proper citation) and their ethical reasoning. Furthermore, plagiarism detection and punishment is quite a disturbing task for many university teachers. Davis (2011) stated that '[m]anaging student plagiarism can cause instructors to feel as if they are serving educational institutions in the role of investigator rather than educator' (p. 160). The same opinion was voiced by Brabazon (2015), insisting that 'we should prioritize prevention above all' (p. 15). However, quite the opposite attitudes towards plagiarism detection also exist, and some researchers claim that it is a part of teachers' regular job to check students' papers for plagiarism (Rosenberg, 2011). In addition, both local and global social changes make teachers' tasks more and more complicated (Gaber & Tašner, 2021), so continuing training is necessary.

Students plagiarise intentionally or unintentionally (Belter & du Pre, 2009; Uzun & Kilis, 2020). In some studies, it was found that unintentional plagiarism is more frequent (Glendinning, 2016b). Unintentional plagiarism is a result of the lack of knowledge and skills in academic writing, for example, a lack of skills to paraphrase and, in a broader sense, to use sources and literature. This type of plagiarism could be resolved relatively easily: universities should develop appropriate courses for students. There are many good practice examples of university courses given online in the form of academic writing practicums or in a broader content area, such as academic integrity courses (Belter & du Pre, 2009).

Many higher education institutions have developed standard roles and procedures connected to plagiarism prevention and appropriate sanctions for those who break the rules. They have developed honour codes, ethical codes, and other rules; many of them also use text-matching software (ETINED, 2018; Glendinning, 2016a, 2016b; Peković et al., 2021; Vučković et al., 2020). Plagiarism detection software is often very expensive, and, more importantly, it has not yet been adapted to be used for different languages and their scripts (Bilic-Zulle et al., 2008). Bilic-Zulle et al. (2008) questioned software matching tools

(plagiarism software) as a part of the control procedure in some elements; for example, the software is unable to recognise the matching of non-continuous text parts (e.g., tables, figures); these parts are often very important in presenting research results in many scientific fields. Furthermore, 'Web-based services, such as Turnitin or EVE, would be inappropriate for checking essays written in a language other than English, especially those written in "small" languages, such as Croatian, due to the limited amount of source texts' (Bilic-Zulle et al., 2008, p. 145). Moreover, some languages, such as Serbian or Montenegrin (which are also 'small' languages), use two alphabets (Cyrillic and Latin) that are considered equal in public use. These alphabets are convertible, and each text could be written in both of them with simple conversion letter by letter; this fact additionally complicates software checking. Writing in 'small' languages is further disturbed by translation possibilities: the software is unable to recognise translated pieces of text.

The above-mentioned interventions are important, but their influence is insufficient. A large amount of evidence indicates that these procedures do not function well in practice due to different contextual factors (ETINED, 2018; Glendinning, 2016a, 2016b).

Research Context

Montenegro is a country with one public and three private universities, with a total student population of approximately 23,000. More than 80% of this population is enrolled at the public university without scholarship fees for the bachelor's and master's levels. Problems of academic integrity came into focus through the joint project of the European Commission and the Council of Europe *Strengthening Academic Integrity and Combat Corruption in Higher Education* (Peković et al., 2021). Even before that, universities had ethical codes, and there were cases of their violation. However, academic integrity was not treated holistically as a topic for teaching, research and policy until the joint project (Peković et al., 2021). In 2018, The Council of Europe Platform ETINED published a report in which it was said that respondents from Montenegro did not consider academic integrity to be significantly threatened. The same report provides values for the dimensions of academic integrity (policies, sanctions, software, prevention, communication, knowledge, training, research, transparency) by country. On a scale of 0–4, no value for Montenegro reached a value of 2 (ETINED, 2018, p. 75).

One of the outputs of the mentioned joint project was the national Law on Academic Integrity, which was adopted in March 2019. Additionally,

a text-matching software, iThenticate, became a regular tool, and procedures were developed for checking masters' and doctoral theses and other publications that are part of the regular university publishing. Online courses were designed in 2019 for students, and these courses are obligatory for each student starting with the 2019/2020 enrolment year (Univerzitet Crne Gore, 2019b). These are the two courses, one of which deals with academic writing, while the other relates to terms which belong to academic integrity (What is academic integrity? What are the basic ethical principles in teaching and education? etc.). The effect of all these measures has not been entirely evaluated, given the relatively short period of time that has passed since the systematic activities in this field started. However, some development has been achieved in relation to the ETINED report (2018) because the University of Montenegro was certified for academic integrity by the *Institute of Research and Action on Fraud and Plagiarism in Academia* (IRAFPA), which means that the issue must be present in teaching, research, and university policies (Peković et al., 2021).

One of the first steps in improving academic integrity was made through the national research project entitled 'Strengthening Academic Integrity – An Interdisciplinary Research Approach to Ethical Behaviour in Higher Education' (SAI). The starting research point for empowerment was ETINED's report on academic integrity from 2018. The SAI project has several published research papers (Peković et al., 2021; Vučković et al., 2020) which described different issues on academic integrity in Montenegro and showed that, among others, training on academic integrity issues is necessary.

Method

Our aim in this research was to identify students' and teachers' opinions about plagiarism made by several actors (student, teacher, student + ghostwriter) with the purpose of creating (part of) a strategy to prevent plagiarism. The main research question was: Which measures do our respondents propose for plagiarism prevention and/or punishment? We opted for a qualitative methodology based on three case studies (Yin, 1994).

The Participants

The participants of the research were the students of bachelor, master's, and doctoral studies (N=110: 84 BA, 22 MA and 4 PhD) and university teachers (N=35). The greatest number of students are from the Faculty of Philosophy (56 BA, 12 MA and 2 PhD), then from the Faculty of Philology (23 BA, 5 MA,

2 PhD), from the Faculty of Science and Mathematics (17 BA, 2 MA) and from the Faculty of Electrical Engineering (15 BA, 3 MA). Eighteen university teachers are from the Faculty of Philosophy (2 full professors, 5 associate professors, 5 assistant professors, and 6 teaching assistants), 10 teachers from the Faculty of Philology (2 associate professors, 4 assistant professors, and 4 teaching assistants), 5 teachers from the Faculty of Science and Mathematics (2 associate professors, 1 assistant professor, 2 teaching assistants) and 2 teachers from the Faculty of Electrical Engineering (2 full professors). These are students and university teachers from different study programmes at the same university.

Research Design

An electronic questionnaire was sent to the participants' e-mail addresses, and only those respondents who wanted to participate in the research responded. The questionnaire was sent to the addresses of student representatives, who distributed it to student groups. It is not possible to determine the percentage of responses received in relation to the number of addresses to which the questionnaire was sent. After the respondents completed the questionnaires, we made a thematic content analysis of their long-form answers (Braun & Clarke, 2006). The posted questions were: What were the main reasons for unethical behaviour? Who is the most responsible for academic misconduct in this case? How to protect academia from plagiarism (Punishment and prevention measures)?

Instrument

The questionnaire consisted of three case studies and three questions about them. Case studies were written by the authors of this paper as complete cases, not just segments, and included in the questionnaire with three identical questions for each. Below, we describe the case studies to which the questionnaire was attached.

The first case study was developed around the following actions: 1) a very good student forgot the deadline for submission of his written assignment; 2) he asked his teacher for a deadline extension, but his teacher was not interested in listening; 3) the student decided to write his assignment using many internet sources (i.e., mosaic plagiarism); 4) the teacher gave the highest grade for this work because he did not check sources.

The second case study described the university teacher's ethical misconduct. The teacher published a monograph that was a compound of his students'

final written papers without proper acknowledgement. Several students found out about this, and they were strongly affected and disappointed. In the case study, they started to discuss the ways to regain their authorial rights.

In the third case study, the student cheated regarding her final thesis. She employed a ghost author and submitted the thesis to her supervisor. The teacher immediately recognised that the paper was plagiarised, but she did not know anything about ghostwriters. She decided not to do anything against this obvious plagiarism because the student told her she would get a job as soon as she finished her studies.

Data Processing

Braun and Clark (2006, p. 87) proposed six steps in thematic content analysis: 1) familiarising oneself with the data, 2) transcribing data, 3) reading the data, initial coding, searching for categories and themes, 4) reviewing themes, 5) defining themes, and 6) writing the report. Becoming familiar with the data was initially carried out and consisted of reviewing all questionnaires and recording their completion. Since we used questionnaires in the research and the respondents wrote their long-form answers, the transcription stage was omitted. After it was determined that all questionnaires were completed (respondents wrote longer answers to all questions), the researchers moved on to the third phase: reading the data, initial coding, and searching for categories and themes, which continued through new assessments (4^{th} phase), until the final definition of topics (5^{th} stage) (Braun & Clark, 2006). The final report (6^{th} stage) was written as the final stage.

Coding involved identifying meaning units in written answers, and categorisation concerned linking codes into semantically close groups. Both processes included answers to the first and second questions (explanation of the reasons for plagiarism and, in this sense, determination of responsibility). The answers to the third question (prevention and punishment measures) were also compatible with such an analysis process. Therefore, three questions (which were identical for each case study) were directly related to each other, meaning that the responses to the first and second questions directly pointed to the response to the third question. This means that it was sufficient to determine the codes, categories, and topics according to the first two questions and then associate responses to the third question with them.

We found a total of 14 categories based on 84 codes. For example, codes such as *he didn't review the work*, *he shouldn't have communicated that way*, *he doesn't know the students*, *he doesn't care about the student's work*, etc., are

classified into the category of the teacher's lack of pedagogical competence. The categories are grouped into three topics.

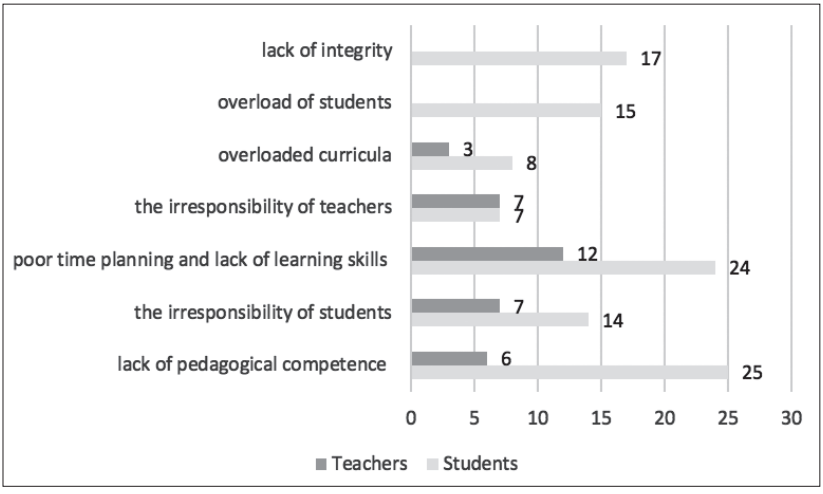
Coding was done by one researcher (without using specific software because all the material obtained from the respondents was in the local language), after which another researcher applied the coding grid to the raw written material. After that, the kappa (AG k) coefficient was calculated, which is 0.83, which means that the reliability is satisfied (Krippendorff, 2004). The high value of the reliability coefficient was obtained thanks to the fact that the researchers participated evenly in all phases of the research.

Results

Reasons for plagiarism according to case studies

The reasons for plagiarism in the first case study, in which a student plagiarised a seminar paper, have been categorised and presented in Figure 1. The frequencies of answers of students and teachers are in the same figure.

Figure 1
Student's plagiarism

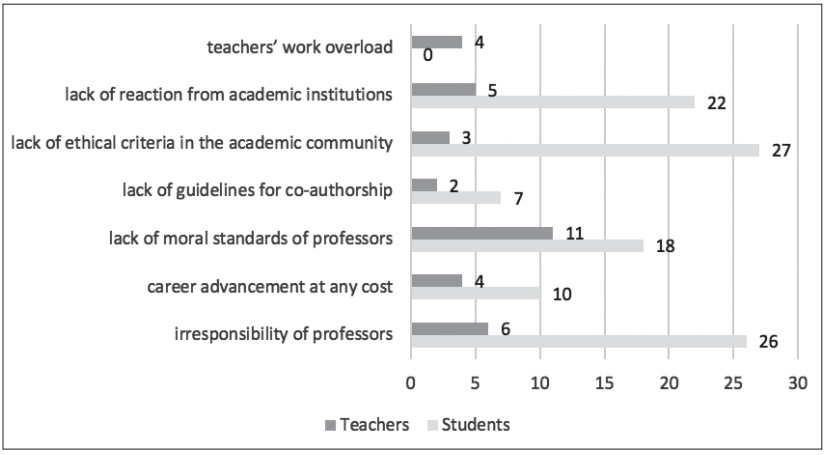


The results indicate that the students' answers are more diverse (a total of seven categories were found), while the teachers' answers are more homogeneous and are classified into five categories. The majority of students believe that the main reason for plagiarism in the first case study is the teacher's lack of pedagogical

competence, and the majority of teachers point to the students' poor planning of study time and lack of learning skills. The same category of poor time planning and insufficiently developed learning skills was recognised by a large number of students as important. The problem of lack of pedagogical competence of teachers was also observed by a sub-sample of teachers. In addition to those two leading categories, the respondents drew attention to several other important factors.

The reasons for plagiarism in the second case study are shown in Figure 2.

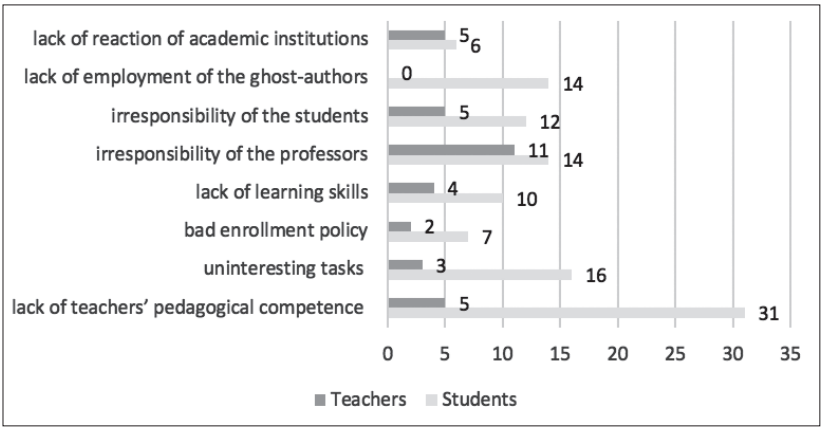
Figure 2
Teacher's plagiarism



In the second case study, students and teachers marked the causes of plagiarism in similar categories, with one more category that we identified in the university teachers' answers (teachers' work overload). The ranking of the categories by frequency in the subsamples is not the same. In the student subsample, the order of reasons by frequency is lack of ethical criteria in the academic community, irresponsibility of university teachers, lack of reaction from academic institutions, and lack of moral standards of university teachers. The order of categories in the subsample of teachers is lack of moral standards of university teachers, followed by irresponsibility, lack of institutional reaction, and teachers' work overload.

The third study included contract cheating, and in the very case of plagiarism, combined with the misdemeanour of purchasing work, including the roles of the student and ghost author, as well as the teacher, indirectly. The reasons for such a phenomenon are shown in Figure 3.

Figure 3
Student's and ghost author's plagiarism



The third case study resulted in the answers classified in the following order: the lack of teachers' pedagogical competence, uninteresting tasks, irresponsibility of the teachers, the lack of employment of ghost authors, and the lack of study skills. Though classification relies on the opinion of the students' respondents, the teachers shared rather the same opinion. However, the teachers did not identify any category by which the ghost author 'is justified' by the lack of employment.

Responsibilities of actors involved in the problem of plagiarism

In the previously offered description, it is evident that some reasons appeared to be related to each case study. Each of the stated reasons, as well as the explanation of the respondents, can almost unambiguously be recognised as part of the responsibility of:

1. university teachers and the academic community,
2. students or
3. wider social context.

Having this in mind, the researchers classified the respondents' answers according to three identified topics: the responsibilities of university teachers and the academic community, the responsibilities of students, and the responsibilities of society. These results are somewhat compatible with those from the research of Comas-Forgas and Sureda-Negre (2010) but exclude the factor of

modern technology, which our respondents did not mark as 'responsible' for plagiarism in any of the cases. This corresponds to the research carried out by Ison (2015).

Teachers' and Universities' Responsibilities

Lack of Pedagogical Competencies

Our respondents assign part of the responsibility to university teachers, and this applies not only to the situation in the second case study in which the teacher published students' works without proper acknowledgement but also to each of the described situations. However, the university teacher's behaviour in the first case study (student plagiarism) has been illustrated by the comments:

> The teacher did not act adequately and wasn't, as a pedagogue, at all aware of the qualities of the students standing in front of him; he was rigid in his reactions to someone who, after all, needed to learn more about academic behaviour from him. (UT)[5]
>
> It is particularly troubling that he (the teacher) did not carefully review the work and thereby reacted to the student's non-academic action. He could also use anti-plagiarism software. All participants should be punished. (UT)

There are clear suggestions about the lack of pedagogical competencies and demonstrated irresponsibility of university teachers, as confirmed by some other comments (Figure 1). These results agree with those obtained by the previous research (ETINED, 2018; Vučković et al., 2020). The quote, as well as other comments from this category, precisely describe the situation that occurred as a result of the university teacher's inappropriate pedagogical reaction (codes such as: *does not know the students*, *does not react flexibly*, *does not provide adequate evaluation*).

Uninteresting Tasks and Overly Demanding Curriculum

Setting tasks for students could be done more skilfully (the following comment refers to case study 3):

> The assignments we do are sometimes uninteresting – the topics are often similar. (S)

Uninteresting tasks, meaning tasks that do not motivate students to be more active, are a particular difficulty. Since setting tasks is part of the teacher's

5 University teacher-respondent – sign UT, student-respondent – sign S.

pedagogical skill, strengthening this skill would prevent problems resulting from poorly chosen assignments, which is also the finding of other researchers (Comas-Forgas & Sureda-Negre, 2010). Some students' comments point to the overload of students:

> I don't see what bothered him to postpone the deadline for handing in the work. Sometimes, we are absolutely overloaded, and no one wants to postpone a deadline. (S)

The comment also raises the issue of student overload and the curriculum being too demanding, which was identified in other research (East, 2010).

Overloading University Teachers

Respondents from both sub-samples especially point out that sometimes it happens that one of the teachers does not read the students' works, which is also part of the teacher's professional responsibility:

> Some teachers don't care what we do at all. If they cared, they would give us good instructions. Maybe they are overloaded, too. (S)
>
> If the teacher sometimes does not read the assignment in detail, I cannot deprive him of responsibility. However, I can say that university teachers are also overburdened with administration, but also with the large amount of papers they review. In addition, they all engage in scientific research. (UT)

With the introduction of the Bologna Declaration in Montenegro, the practice of written assignments increased significantly, so practically all subjects have two colloquiums in written form, and a significant number of them include a written final exam. In addition, the significant number of subjects involve the preparation of seminar papers, essays, and other written works, leaving university teachers in a situation in which they review large amounts of students' written assignments.

Lack of Ethical Criteria, Inconsistency of Response in the Academic Community

For the case study in which the university teacher accepted the candidate's plagiarised work (Case Study 3), respondents expressed negative judgements:

> The teacher perceives the thesis too frivolously and turns a blind eye to the unfortunately frequent practice of buying papers. (UT)

In addition to the fact that they believe that such cases often happen in reality, students point to another phenomenon, which is the uneven attitude of university teachers towards student cheating.

> With some university teachers, everyone copies, but some don't allow it and nobody thinks to copy. You never know what you will come across, or what is right. (S)

The lack of clear ethical criteria in the academic community and/or their absence or inconsistent application can be an indicator of an inconsistent system of values. This might as well be a signal of a missing ethical culture (Bertram Gallant, 2016). Such a problem affects individuals, be they teachers or students, and puts them in a position of uncertainty that can often lead to assessments that are not ethically acceptable. The personal integrity and possession of moral norms of an individual can be seriously threatened if the community does not have a coherent system of values, which initiates the need for academic discussions on various issues of ethical reasoning.

Lack of Guidelines on Co-authorship and Lack of Academic Integrity

The teacher who usurped students' original works (case study 2) caused negative reactions in both subsamples:

> It is unbelievable – receiving titles and recognitions gained by one's work and effort. Unfortunately, it is not a rare occurrence. I'm in favour of punishment. (S)
>
> Or: I know this happens, and it's terrible; I believe that earlier, before the modern possibilities for checking plagiarism, there were more events like this, although, of course, everything always depends on the person, and a teacher is only a person, a bad person = a bad teacher. This is where I see a problem – in institutions, in universities that do not take punitive measures against such persons. An additional problem is that we do not have clear rules on co-authorship, so it is possible to come across various 'combinations'. (UT)

Both comments point to the lack of moral integrity of the individual, while the second one points out the lack of reaction of the system. Universities should also have clear rules on co-authorship and apply them consistently, along with the mandatory use of anti-plagiarism software.

Two doctoral students were more moderate in their assessment of the case study because, in their opinion, the mentor is also the co-author of the paper. Admittedly, they also point out that the works should have been published

in co-authorship, and not as independent works:

> I have two papers with my mentor; I am the first author. The mentor didn't write parts of the paper, but he gave me suggestions, remarks, and literature...and I think it's okay for him to be a co-author. (S)

Bad Selection of Candidates During Enrolment

Some respondents point to a poor selection of candidates during enrolment (case study 3):

> Today, everyone is a student. Some have never studied but enrol in colleges and graduate. (S)

This is a common opinion among the Montenegrin public. Specifically, it is a fact that the number of students has increased since the beginning of this century, and universities generally do not have entrance exams, but enrolment is done by ranking according to high school performance.

Students' Responsibilities

The Lack of Learning and Time Management Skills

Some students' comments describe a perspective from which it is noticeable that there is a need for better organisation of learning. In addition to being burdened with numerous obligations, a possible lack of academic writing skills, as well as learning skills, appears as an additional problem:

> Nobody taught me how to write academic texts. We need academic writing training. (S)
>
> I admit that I have a problem with planning my studies. Sometimes, I leave everything for the last minute, and some tasks are unclear to me. (S)

Several students observed poor time management as the cause of unethical students' behaviour and proposed some kind of training to prevent cheating:

> We haven't had good work habits since high school. A lot is learned in the campaign. (S)

The Lack of Students' Responsibility

According to our respondents, students also often exhibit irresponsible behaviour:

> They have no responsibility towards the task and obligation. They did not develop responsibility when needed in primary and secondary school. (UT)

Similar attitudes were found in the students' comments:

> And students often make mistakes – they think that university teachers will not review the work, and they wait from five to twelve to finish something. (S)

Like some other skills or habits that students should acquire before coming to university, the lack of responsibility is a problem that must be addressed at the level of the educational vertical.

Responsibilities of Persons outside the Academic Community

For the third case study, the respondents say that it sounds familiar to them, i.e., that at least once they were in a situation where one of their colleagues 'finished something' (exam, evaluation) quickly because 'something is waiting for him/her'. Tolerance for this phenomenon varies among the respondents:

> Cheating is bad, but I think things like this happen. I am for punishment; there is no one else. (UT)

Or:

> Of course, this happens, and of course, I am in favour of punishment or prevention. I think some people wait for a job for years, while those who don't have an *appropriate connection* have to wait for a job for years. (S)

The respondents are aware that plagiarism is not fair and that it implies benefits at the expense of the work of others. They indicate the wider social context in which plagiarism is acceptable:

> The value system in society is being completely disrupted. Buying works is no longer a shame. (S)

The societies in transition inevitably go through fluctuations and instabilities in the value system (Bilić Zulle et al., 2008), so reforms that imply changes at all levels are necessary, and education must play a leading role in this.

It is interesting that the role of a ghostwriter is not much commented on in a negative light. The respondents did not seem to clearly identify their responsibility, mainly due to the fact that they are not seen as part of the academic community that should take responsibility. The respondent points out:

> You can find them around every corner. The procedure looks like this: first, they take the money and then copy it from the Internet. That's how business is done today. They freely advertise their service, or they have been recommended by those who have already paid for some papers.

> These advertisements have been available even to university teachers, and they do nothing about it. (S)

Several student respondents believe that the buying and selling of final works occur as a result of lack of employment – people become ghost authors because they cannot find a job (Figure no. 3).

Punishment Measures

Somewhat similar to respondents in the previous research (Vučković et al., 2020), those who participated in this study offered relatively compatible methodologies for solving the challenge called *plagiarism*, as all their answers could be classified into a total of four categories. The student respondents were rather lenient in the measures that should be taken against the student who plagiarised, so they suggest the following solutions: a new topic for the paper (41), cancellation of points (35), lowering the grade (30), and only four comments which highlight the ideas of being banned from taking exams in a defined exam period. However, university teachers' ideas could be classified into two categories: punishment (29) and improvement of the teacher's communication competencies (6). The punishments proposed by university teachers also vary in degree and intensity, from a repetition of the work to banning the exam and public reprimands. Those that could be characterised as stricter (in 19 comments) predominate, as they imply longer-term sanctions for the student. Interestingly, university teachers pointed out the importance of improving the communication skills of teachers, apparently sticking consistently to the reason for the lack of pedagogical competence of teachers. This was previously mentioned as important in understanding the plagiarism that occurred in both samples.

The second case study has shown a high homogeneity of comments and answers. The answers of students and university teachers could be classified into only two categories. In addition, punishments dominate in both subsamples (96 students and 31 teachers), followed by the category of strict control (14 students and 4 teachers). In contrast to the somewhat lenient attitude towards a student who plagiarised a seminar paper, both groups of respondents propose much harsher punishments in the case of the university teacher who plagiarised, up to the revocation of an academic title. The strict control of works with anti-plagiarism software is recommended as an obligation of the university.

The third case study was particularly complex, as it included three people who were involved in the case of plagiarism of the final thesis. The participants in the third case study also deserved punishment (student and mentor),

according to the majority of our student respondents (94). Other students believe that the paper should be written again with another mentor (16). It is indicative that the student respondents do not propose punishment by the academic community for the ghost author, but they blame him/her for a 'bad job' and call for responsibility towards the student who ordered the work (25 comments include ideas about the relationship between the student and the ghost author of the paper). These comments indicate that ghost authorship is not a priori treated as an unacceptable phenomenon, as it should be in accordance with the rules of academic integrity. The teacher-respondents would also punish the mentor and the student (29), and several of them would demand the same attitude toward the ghost author (6).

Discussion

The answers and comments of our respondents were clear and quite simple to code, categorise and thematise, which implies that they understand well and clearly describe the issue in question. University teachers and students from our research sample further provided fairly homogeneous responses (categories are similar) to the questions asked, which is encouraging, as it indicates their similar perception of plagiarism and its consequences. Both groups of respondents have a solid understanding of the causes and responsibilities of individuals in given cases of plagiarism. Such data agree with the previous research on academic integrity in the same social context (Vučković et al., 2020). This is a sign that the members of the academic community in Montenegro interpret the mentioned problems in a similar way and perceive the problem of plagiarism as unethical behaviour. It confirms the progress in treating the problem of academic integrity to a certain extent, compared to the period covered by the ETINED report (2018).

The reasons or causes of a phenomenon represent the foremost factor that should be acted upon in order to prevent it. Working on the causes that lead to plagiarism implies the introduction of preventive measures and appropriate procedures. The central question of our interest concerned the measures that should be taken in relation to the committed academic offence. Considering that the case studies involved different members of the academic community as violators of academic integrity, preventive measures imply activities towards different target groups. The main identified causes of plagiarism for which persons within the academic community are responsible are lack of pedagogical competence and responsibility, overly demanding curriculum and uninteresting tasks, overload of university teachers, lack of community and individual

ethical criteria, inconsistency of response in the academic community, lack of guidelines on co-authorship and lack of academic integrity, poor selection of candidates during enrolment, lack of learning skills and time management and irresponsibility of students. We classified all the mentioned factors into three groups of measures:

1) Improvement of teacher competences – improvement of pedagogical skills (in particular: work on design of tasks, responsibility for feedback, development of a curriculum that would more evenly and moderately burden students), improvement of responsibility and academic integrity of teachers. Activities focused on teacher competencies were also considered in the research carried out by Comas-Forgas and Sureda-Negre (2010), ETINED (2018), and Glendinning (2016a), among others. This problem clearly seems to correspond to the context of Montenegrin higher education, because the majority of teachers, excluding those who acquired teaching skills after their initial education, do not go through systematic training for the implementation of teaching (Vučković et al., 2023). In addition, the focus of the activities of university teachers in Montenegro has significantly shifted from teaching and working with students to research, as evidenced by *The criteria for academic and scientific promotion* (Univerzitet Crne Gore, 2019a). These criteria exclusively place the results of research work as the utmost condition for advancement to a higher academic position. Therefore, teaching is rather marginalised in the *Criteria* and apparently in practice as well.
2) Improvement of students' competencies – improvement of learning skills and time management, work on strengthening students' responsibility and their academic integrity, learning about moral reasoning and academic writing. Among other things, the studies by Belter, and du Pre (2009), Brabazon (2015), Comas-Forgas and Sureda-Negre (2010), Glendinning (2016a, 2016b) emphasise the improvement of students' skills. Our respondents from both groups recognised a significant portion of the causes for plagiarism, which has been strongly supported but the recent results of the matriculation exam where several hundred graduates were found to have cheated (https://www.vijesti.me/vijesti/drustvo/660245).
3) Strengthening of the attitude of the academic community towards plagiarism – improvement of ethical regulations and their consistent application (reaction in appropriate situations, adoption and observance of rules on co-authorship, application of anti-plagiarism software), more optimal workload of teachers and students (curriculum redesign),

improvement of enrolment policy. Essentially, all factors concerning the attitude of the academic community towards AI issues could be covered by the term *academic culture*, which is particularly directly discussed by the research of Bertram Gallant (2016), and which is indirectly supported by other studies, such as Bilic-Zulle et al. (2008).

Several causes for plagiarism which have been mentioned (lack of responsibility, lack of community and individual ethical criteria, inconsistency of response in the academic community) are directly related to the obviously inappropriate attitudes of the academic community. Such shortcomings must be systematically treated, and the beginning of training should also include pre-university levels. Namely, the issues of responsibility, ethical criteria and consistency in response have not been adequately resolved in the Montenegrin education system, which is further evidenced by the recent result of the matriculation exam.

Two categories of reasons for the appearance of plagiarism (potential lack of work for ghost authors and lack of a coherent system of values in society) remain outside the scope of universities and are a task that should be dealt with by the whole society.

Conclusions

The respondents, judging by the comments, understand the harmfulness of plagiarism and associate the offence with the ethos of the academic community. As expected, both groups of respondents attribute the greatest responsibility for cases of plagiarism to university teachers and universities. Then, the responsibility falls upon students, while the factors affecting the wider community come into third place in importance.

Respondents indicated the need to strengthen academic integrity through preventive measures, which comprise training for students and teachers, as well as the consistent and clear application of rules by the university. These aspects can be recognised as a part of the academic culture (Bertram Gallant, 2016). The topic of academic integrity and especially the prevention of plagiarism encouraged the respondents to announce proposals that predominantly focus on improving the teaching and learning process.

Specifically, the occasional lack of pedagogical competence of teachers, along with insufficient responsibility, as well as the lack of learning skills, academic writing, and irresponsibility of students, are said to be the important reasons that influence ethical misconduct in the academic community. This has

also been confirmed by the results of previous research (Glendinning, 2016b). Moreover, the respondents highlighted the need to redesign the curriculum, which often sets too high demands and can negatively affect the unnecessary increase in the workload of all participants in university teaching. If, in addition to these shortcomings, universities do not protect the academic space with rules that are consistently applied (use of software and application of ethical codes), then various cases of plagiarism may become a common occurrence.

Respondents wrote in more detail about preventive measures than about punishment, but the fact that their answers to the question about punishments include appropriate suggestions cannot be neglected. The most severe punishments were intended by both groups for university teachers first. Some more lenient measures were intended for students, and then the most lenient ones for the people outside the academic community. These measures vary in type and intensity, and respondents agree that they must be applied in order to protect academic integrity. Taking this into consideration, comments about prevention are more dominant than those about punishment in terms of content richness and volume. Thus, it could be said that our respondents prefer preventive measures over punitive ones.

The basic limitations of this research stem from the application of the qualitative methodology, so it is recommended that the next research task in the field of this topic be elaborated precisely by introducing a quantitative way of researching the problem. The main reason for using quantitative methodology lies in the fact that appropriate, representative samples and the use of inferential statistics offer the possibility of generalising the results. The generalised results can certainly have a stronger influence on the academic community to approach the improvement of academic integrity more diligently and with more activities, thereby directly improving the results of teaching and research.

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Plagiarism in the Research Reports of Indian Doctoral Students: Causes and a Remedial Action Plan

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Many reputable academic journals have retracted research papers from Indian researchers because of plagiarism. The University Grant Commission, a representative organisation of the Indian government, is diligently endeavouring to ensure academic integrity by applying stringent guidelines. The present study aims to find the potential causes of the plagiarism found in the research reports of Indian doctoral students and to formulate a remedial action plan. A literature review was undertaken to identify incidences of plagiarism at educational institutions. Based on the review's insights, a survey was conducted to investigate doctoral students' awareness of plagiarism, including causes and remedial action plans. In addition, 21 interviews were conducted with senior academics and professionals from various academic disciplines to gain an understanding of their viewpoints. An analysis was then undertaken of the responses received through the questionnaires and interviews. The results suggested the widespread incidence of plagiarism and shed light on its causes. A remedial action plan emerged from the study, which included 1) establishing a research ethics committee at all academic or research institutions, 2) fostering a correct understanding of plagiarism and its implications by conducting training, workshops and awareness campaigns at an early stage of doctoral students' lives, 3) ensuring clarity of research purpose among doctoral students and emphasising the quality of research work, 4) developing academic writing skills, and 5) making anti-plagiarism software available free of charge to all students and faculty members. Indian students perceive the University Grant Commission's stringent guidelines as a good initiative. However, these guidelines cannot be implemented fruitfully without addressing the underlying causes of plagiarism.

Keywords: academic integrity, higher education, India, plagiarism, research ethics

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Plagiatorstvo v raziskovalnih poročilih indijskih doktorskih študentov: vzroki in akcijski načrt za izboljšavo problematike

Tapan Kumar Pradhan in Ajit Kumar

Številne ugledne akademske revije so umaknile raziskovalna dela indijskih raziskovalcev zaradi plagiatorstva. University Grant Commission (t. i. Univerzitetna komisija za štipendije), reprezentativna organizacija indijske vlade, si močno prizadeva zagotoviti akademsko integriteto z uporabo strogih smernic. Namen te študije je poiskati morebitne vzroke in oblikovati akcijske načrte za izboljšavo problematike kot odziv na plagiatorstvo v raziskovalnih poročilih indijskih doktorskih študentov. Opravili smo pregled literature, da bi našli primere plagiatorstva v izobraževalnih ustanovah. Na podlagi spoznanj iz pregleda smo izvedli anketo, da bi opredelili, kako ozaveščeni so o plagiatorstvu doktorski študentje, ter vključili tudi vzroke in akcijske načrte za izboljšavo problematike. Poleg tega smo opravili 21 intervjujev z vodilnimi akademiki in s strokovnjaki iz različnih akademskih disciplin, da bi razumeli njihova stališča. Analizirali smo odgovore, ki smo jih prejeli z vprašalniki in intervjuji. Rezultati so pokazali, da je plagiatorstvo zelo razširjeno, in osvetlili vzroke zanj. Poleg tega je iz študije izšel akcijski načrt za izboljšavo problematike, ki je vključeval: 1) ustanovitev komisije za raziskovalno etiko na vseh akademskih ali raziskovalnih ustanovah; 2) spodbujanje pravilnega razumevanja plagiatorstva in njegovih posledic z izvajanjem usposabljanj, delavnic in kampanj ozaveščanja v zgodnji fazi statusa doktorskih študentov; 3) zagotavljanje jasnosti raziskovalnega namena pri doktorskih študentih in poudarek na kakovosti raziskovalnega dela; 4) razvoj veščin akademskega pisanja; 5) omogočanje brezplačne uporabe programske opreme proti plagiatorstvu za vse študente in člane fakultete. Indijski študentje so stroge smernice University Grant Commission (Univerzitetne komisije za štipendije) za univerzitetne štipendije razumeli kot dobro pobudo, vendar pa jih ni mogoče uspešno izvajati, če se ne odpravijo temeljni vzroki za plagiatorstvo.

Ključne besede: akademska integriteta, visokošolsko izobraževanje, Indija, plagiatorstvo, raziskovalna etika

Introduction

Many reputable academic journals have retracted research papers authored by Indian researchers because of plagiarism. Plagiarised articles, even reputed research journals, have been hit hard, resulting in large-scale retractions. Retracting papers worldwide has increased sevenfold from 2004 to 2009 (Steen, 2011). From 2011 to 2019, over 980 articles were withdrawn from India alone: 330 were reported for text plagiarism and 127 for image duplication (Prasad, 2019). Many researchers have found that the types of plagiarism commonly found in articles published in health journals include phrases copied from Wikipedia and tables or images reproduced from websites without attribution (Kumari et al., 2018; Mukherjee et al., 2018; Sharma & Singh, 2011). A significant factor contributing to plagiarism is the proliferation of predatory journals that charge fees from contributors without diligent peer review (Frandsen, 2019; Thomas, 2020). Around 20,000 research journals are published in India (Priyadarshini, 2018), but fewer than 500 of them are indexed by citation databases such as SCOPUS and Web of Science, implying that the rest are sub-standard (Mills & Inouye, 2021; Priyadarshini, 2018). The proliferation of predatory journals is a crucial reason behind the changes made by the University Grants Commission of India (UGC), a statutory organisation of the Indian Government responsible for coordinating, determining and supporting education, examinations and research in university education (Patwardhan, 2019b). In 2010, the UGC began evaluating current and potential university faculty members by their publications. Later, in 2013, it mandated that graduate students must publish two research articles to receive a doctoral degree (Hegde & Patil, 2021). Although well intended, this regulation encouraged corruption. It resulted in thousands of students being desperate for publication, which, in conjunction with ineffective monitoring, led to the mushrooming of predatory publishing (Patwardhan, 2019a). The predatory journal publishes articles in return for a fee without going through the rigour of peer review (Hegde & Patil, 2021).

In 2016, in order to curb this unwanted trend, the UGC prescribed stricter eligibility criteria and screening tests for doctoral admission aimed at filtering out candidates who lack research reasoning (Patwardhan, 2019a, 2019b). The UGC mandated submission and unrestricted access to all theses or dissertations through the Information and Library Network (INFLIBNET) to facilitate the detection of plagiarism. Furthermore, in 2018, the UGC announced the establishment of a dedicated Consortium for Academic and Research Ethics (CARE) (Patwardhan, 2019a, 2019b; Patwardhan & Nagarkar, 2021; Patwardhan & Thakur, 2019). The UGC-CARE is responsible for identifying, continuously monitoring

and maintaining a referral list of quality journals across disciplines. Only research articles published in the CARE Reference List of Quality Journals (CARE List) are considered for all academic purposes (Garanayak & Ramaiah, 2019; Patwardhan & Nagarkar, 2021; Patwardhan & Thakur, 2019). The UGC further mandated Indian universities to screen all theses, dissertations, term papers and publications through plagiarism detection services, and the maximum penalty was prescribed in cases of plagiarism detected in core work, such as abstracts, summaries, results and conclusions (Lahiry & Sinha, 2019). In non-core areas, plagiarism was quantified into four categories according to the content copied: below 10% (can be overlooked), Level 1 (10–40%), Level 2 (40–60%) and Level 3 (above 60%) (Lahiry & Sinha, 2019). For a Level 3 offence, students can lose their registration, while faculty members can be barred from further publications or even lose salary increments (Lahiry & Sinha, 2019).

Several researchers have pointed out shortcomings in the radical initiatives by the UGC. For instance, an article containing 10% text copied from core areas can be labelled plagiarised, while another article copying 25% from non-core areas may not (Kadam, 2018; Pandita & Singh, 2019). Furthermore, two articles may appear similar without actually being plagiarised, in which case universities may require expert human intervention to assess the articles' originality instead of mechanical word-matching software tools. Such human intervention can become subjective and hence potentially discriminatory for individual researchers. In view of all of this unintended chaos, in 2022, the UGC proposed doing away with the mandatory requirement of publishing research papers in peer-reviewed journals for doctoral thesis submission (Iftikhar, 2022), instead allowing higher education institutions to formulate rules and regulations. It looks like the UGC plans to return to the era before 2013 (Iftikhar, 2022). However, the question remains: Why did linking faculty performance and doctoral students' mandatory requirements with paper publications have undesired consequences in India, such as predatory journals full of plagiarised articles, but not in developed nations like Taiwan, Hong Kong, Singapore, USA, Canada, Australia and Japan (Sureda-Negre et al., 2022)? In order to understand plagiarism better, we reviewed the Indian literature to reveal the underlying potential causes. A study was then conducted to obtain further insight into the causes of plagiarism and to determine a remedial action plan.

Literature Review

The literature review we conducted revealed several causes of plagiarism. The first factor that drives Indian students to plagiarise is a fundamental

misunderstanding about plagiarism. Students must understand plagiarism as research misconduct (Thakur & Lahiry, 2019). A study was conducted by Kumari and Lakshmi (2015) on the awareness of plagiarism among doctoral students at the Sri Venkateswara University in Tirupati, Andhra Pradesh. An analysis of the 123 responses indicated that 100% of the respondents knew about the punishment for plagiarism, 98% knew about various anti-plagiarism tools, and 93% thought that plagiarism concerned paraphrasing a paragraph. However, 26% of the respondents felt that composing a paragraph by taking short phrases from works by other authors and joining them with their own words was acceptable. More than 50% of the respondents reported difficulty with academic writing skills and 26% reported poor writing skills. Likewise, Varghese and Jacob (2015) conducted a study using a quiz and a questionnaire on 423 medical students at Vellore in Tamil Nadu, India. The quiz was conducted to assess the students' knowledge of plagiarism. A self-administered questionnaire was used to determine their attitude towards plagiarism. The results showed a negative correlation between plagiarism awareness scores and a permissive attitude toward plagiarism (Sorgo et al., 2015). Men were found to have a more permissive attitude towards plagiarism than women, but the students' age and educational background did not correlate with their knowledge of or attitude towards plagiarism. The researchers found that the medical students' knowledge of plagiarism was relatively low.

The second cause of plagiarism is a negative perception of the research ethics committee that supervises research from its start until completion. Gopinath et al. (2014) studied the research ethics committee awareness of 96 faculty members of a dental college in India. About 30% believed the research ethics committee would cause delays or make the research more challenging.

The third reason for plagiarism could be rooted in Indian education and job culture. For a long time, the Indian education system could not understand the declining quality of research (Pushkar, 2018). For years, plagiarism was not considered something that needed to be addressed (Pushkar, 2015) and it is only recently that it has attracted more attention. Moreover, India has not inculcated an awareness of plagiarism in children from their school days. At an early age, Indian children are not allowed to think independently. Parents decide everything for them, such as which school they will go to, which field they will study and whom they will marry. Schools even provide students with notes and answers: students are expected to write the same response during examinations. Most teachers do not like it if the students deviate from the notes provided and write answers in their own words, often deducting marks for doing so. Students are therefore taught to follow the trodden path and are not encouraged to think

independently from a young age (Handa & Power, 2005). This type of education often kills children's creative abilities (Gradišek, 2012). Somewhere along the way, they stop thinking and blindly follow what they are told or expected to do (Đurišić & Bunijevac, 2017). These schools encouraged pupils to replicate their teachers' ideations (Ma et al., 2008). Thus, creativity was suffocated and copying text became an everyday task (Ma et al., 2008). In such a culture, the concept of self-plagiarism is beyond the students' imagination (Kanchan et al., 2010). When they apply for a job, they find it challenging to think innovatively. As per UGC guidelines, those involved in teaching and research receive promotions and progress in their careers depending on the number of papers published (Padmanabhan, 2017; Šorgo & Heric, 2020). Universities maintain constant pressure to publish in order to obtain better rankings, such as from the National Assessment and Accreditation Council, the National Institute Ranking Framework and QS World University Ranking. Creative work takes time, and people often struggle to be creative under pressure (Pradhan & Pradhan, 2017). Therefore, teachers and researchers are, to a degree, forced to copy and edit someone else's work. Another problem in the workplace is work credit to the deserving. Often, the person who actually does the job receives limited credit for his or her work. The lack of work credit makes the person unwilling to work in a fully committed way, so papers are prepared half-heartedly and derived from plagiarising the work of others. Moreover, many Indians believe in helping friends and classmates, and their help is glorified and talked about (Parikh, 2021).

The fourth factor is that cultural and language barriers prevent open discussion about plagiarism between students and teachers, as rote learning is often taught. Researchers from non-English-speaking localities are obviously disadvantaged (Chaddah, 2014), with the lack of original thinking skills in English forcing many students to copy text from others, despite English being a second or third language.

Fifthly, Information and Communication Technologies (ICT) have made the plagiarist's job much easier by providing instant internet access to the work of others, with the ability to copy-paste with the mere click of a mouse. On the other hand, ICT has helped curb plagiarism by developing anti-plagiarism software and online tools for detecting plagiarism. Pathak and Malakar (2016) conducted a telephone survey of 150 students pursuing higher studies at Gauhati University regarding anti-plagiarism software usage. Of the 100 respondents, 85% indicated that they were aware of such software and 84% said it benefited them. Ten percent of the respondents reported that their papers had exceeded the 20% similarity limit prescribed by their university. Another 24% reported

that the similarity level ranged from 11% to 20%. The authors also compared seven North-East States universities that used different plagiarism detection software, such as Turnitin and Urkund. Badrinath and Prakash (2016) conducted a case study on the incidence of plagiarism at the Alliance University, City Campus, Bengaluru, by analysing various reports submitted by students during the years 2014 (325 reports) and 2015 (220 reports). Their analysis revealed that the percentage of reports showing a similarity score above 75% had decreased from 12% in 2014 to 8.2% in 2015. Similarly, the percentage of reports showing similarity scores in the range 50–74% dropped sharply to 30.4–16.2% over the same year. The authors attribute this significant improvement to the introduction of Turnitin software on the campus in 2014 and the subsequent training and awareness campaign aimed at faculty members. However, various plagiarism detection programmes, such as Turnitin, come with challenges: they are too costly for individual students and advisors, while some freely available software is unreliable and requires interpretation by trained persons (Misra et al., 2017).

Search engines like Google provide free look-up options, effectively detecting simple copy-paste type plagiarism and poor paraphrasing, but failing to pick up complex mosaic-type plagiarism (Mondal & Mondal, 2018). According to most researchers, paraphrasing constitutes plagiarism, as it involves stealing ideas (Dhammi & Ul Haq, 2016). Paraphrasing software, such as Article Rewriter, makes it challenging to identify subtle plagiarism. Most anti-plagiarism software can only detect word-to-word copying, while detecting data manipulation and the adoption of others' ideas is difficult to spot (Rao, 2008). People with sophisticated linguistic abilities can paraphrase and go unnoticed by anti-plagiarism software. Using a structured questionnaire, Kumar and Mohindra (2019) studied plagiarism among Panjab University students. An analysis of the 152 responses showed that simple copy-paste was the most popular method of plagiarism and that collusion between students made it exceedingly difficult to identify the real culprits.

Research problem

Apart from the five reasons mentioned above, other factors that contribute to plagiarism include ghost writers who write papers for others for payment, a nexus among researchers who have each other's names as authors of articles, the publication of sub-standard conference proceedings as research work, and vanity production of edited books that include chapters by unrecognised authors (Pandita & Singh, 2019). In summary, plagiarism is a problem

in India that is not easy to address. Doctoral students and advisors are two key stakeholders in this issue. Although a few studies have been conducted to understand the plagiarism problem, most of them have focused on the perspective of doctoral students, while the side of the advisor has been relatively neglected. Other studies have highlighted the problem of plagiarism but failed to suggest a potential remedial action plan to address the issue. There is a need for comprehensive research.

Therefore, we conducted a study to understand the causes of plagiarism and formulate a potential remedial action plan from the perspectives of key stakeholders: doctoral students and advisors.

Method

As mentioned in the Introduction and the Literature Review, doctoral students and advisors are two key stakeholders in this research and paper publication ecosystem. In order to understand doctoral students' perspectives, we conducted a survey.

Participants

Table 1 presents respondents' demographic and academic profiles (Questions 1–10). We can see that the respondents are doctoral students with a diverse mix of gender, age, educational qualification, employment status, research experience, research publication, publication in a peer-reviewed journal, attendance of a research ethics course before doctoral registration, presence of a research ethics committee at the institution of the respondents, and educational level to which research ethics needs to be taught. A total of 36% of the students surveyed had not taken or were not aware of any research ethics course, while 41% were unaware of the presence of a research ethics committee at their institutions. Ideally, a research ethics course should be the first course students take on entering a doctoral programme. Moreover, almost 95% of the doctoral students surveyed agreed that research ethics courses should be taught at high school, intermediate, graduate or postgraduate levels.

Table 1

Demographic and academic profile of respondents (N = 105)

PART 1			
Descriptive Questions	**Options**	**Frequency**	**Percentage (%)**
1. Gender	Male	73	69.5
	Female	32	30.5
2. Age	Up to 25	5	4.8
	26–30	41	39.0
	31–35	25	23.8
	36–40	13	12.4
	Above 40	21	20.0
3. Educational qualification	MA	19	18.1
	MSc	24	22.9
	MCom	4	3.8
	MBA	11	10.5
	MTech	27	25.7
	MPhil	11	10.5
	PhD	9	8.6
	Other	0	0
4. Employment status	Employed	49	46.7
	Unemployed	56	53.3
5. Research experience	< 1 year	21	20.0
	1–2 years	22	21.0
	3–4 years	20	19.0
	5–6 years	12	11.4
	> 6 years	26	24.8
	NA	4	3.8
6. Research publication	NIL	26	24.8
	1–2 papers	18	17.1
	3–5 papers	21	20.0
	6–10 papers	19	18.1
	11–20 papers	11	10.5
	> 20 papers	10	9.5
7. Publication in a peer-reviewed journal	Yes	75	71.4
	No	30	28.6
8. Research ethics course before doctoral registration	Yes	67	63.8
	No	32	30.5
	Not Sure	6	5.7
9. Presence of a research ethics committee at the institution of the respondents	Yes	62	59.0
	No	19	18.1
	Not Sure	24	22.9
Prescriptive Question			
10. Educational level to which research ethics needs to be taught	High School	15	14.3
	Intermediate	6	5.7
	Undergraduate	53	50.5
	Postgraduate	23	21.9
	MPhil	3	2.9
	PhD	5	4.8

Instruments

The study used a questionnaire with three parts (see Appendix 1). In the first part (Questions 1–10), we gathered the demographic and academic profiles of the doctoral students, the completion of a research ethics course before or after doctoral registration, the presence of a research ethics committee at the institution, and opinions about the educational level to which research ethics needs to be taught. We did not collect any identifying details of the respondents. The second part used the Harris scale (Question 11), with 12 statements to be rated on a Likert-type scale: (1) strongly agree, (2) agree, (3) neutral, (4) disagree, and (5) strongly disagree (Harris, 2001). The Harris scale has been used and cited by several other researchers whose results have been published in peer-reviewed papers (Ehrich et al., 2016; Javaid et al., 2021; Khairnar et al., 2019). Moreover, after discussion and mutual consensus with one research ethics professor, PhD students and one linguistics expert, we agreed that the Harris scale was simple to understand, easy to use and suitable for Indian doctoral students compared to some other scales, such as those by Mavrinac et al. (2010), Farooq and Sultana (2022), and others. The third part of the survey (Question 12) involved an open-ended question (Question 12: Please offer your suggestions for improving research ethics, including curbing plagiarism in your field of study) requiring a descriptive answer.

In order to understand the doctoral advisor perspective, interviews were conducted with 21 advisors of doctoral students who supervised doctoral students, engaged in research projects and had significant peer-reviewed publications. The interviews were semi-structured and open-ended, centred around the following open-ended questions: 1) What is the extent of plagiarism in your area of research and within your own institution, and how would you describe the trend of the incidence of plagiarism? 2) In your opinion, what makes researchers adopt such unfair practices? (3) What, in your opinion, are the effective methods of curbing plagiarism? (4) How effective is anti-plagiarism software? (5) If you have used such software, what are the advantages and disadvantages? (6) Have you gone through the latest UGC guidelines on plagiarism? If so, how do you think the UGC guidelines will help curb plagiarism?

Research design

The questionnaire was circulated to almost 950 doctoral students at various universities, colleges and research institutions in India, with the responses being collected using Google Forms. A total of 105 valid responses

were received, three of which were removed because the respondents were not involved in any doctoral programme. The responses were analysed up to the second and third parts of the questionnaire, as summarised below in Tables 2–4 in the Results section. Table 2 summarises the responses to Question 11, which used the Likert scale. The text responses to Question 12 were collated in a file (word count: 2,322) and uploaded to the online tool Free WordCloud (https://monkeylearn.com/word-cloud/), which generated 50 words, their frequencies and relevance, as summarised in Table 3. These words, as well as combined words with similar meanings, were analysed manually. The analysis involved selecting interesting comments and putting them into containers called codes, as shown in the last column of Table 3. While deriving the codes and categories, the text responses were cross-referenced to avoid missing essential points. Two independent researchers (one applied linguistics expert and a doctoral advisor) were asked to check the codes. Based on their advice, a few minor changes were made to the codes and categories. Finally, we arrived at 21 codes and three categories, as shown in the last columns of Tables 3 and 4 in the Results section.

The interviews were conducted over the phone, with key points being noted in a Word document. The duration of each interview varied from 15 to 30 minutes. After conducting 21 interviews, we had complied a Word document with 7,243 words. The document was uploaded to the online software tool Free WordCloud (https://monkeylearn.com/word-cloud/), which generated 50 words, their frequencies and relevance, as summarised in Table 5. Table 5 was created in the same way as Table 3. Finally, we arrived at 21 codes and three categories, as shown in the last columns of Tables 5 and 6 in the Results section.

Results

Table 2 summarises the doctoral students' attitudes toward plagiarism, as determined in the second part of the questionnaire (Question 11). The values in the last column are a weighted mean, calculated based on the sum of the frequencies of Likert scale options multiplied by the weight assigned to each choice and then divided by the number of study respondents. The options were Strongly Disagree (SD), Disagree (DA), Not Sure (NS), Agree (AG) and Strongly Agree (SA), having weights 1, 2, 3, 4 and 5, respectively.

Table 2

Attitude towards plagiarism (N = 105)

PART 2						
	Frequency					
11. Statements	Strongly Disagree (SD)	Disagree (DA)	Not Sure (NS)	Agree (AG)	Strongly Agree (SA)	*Weighted Mean
i. Sometimes I feel tempted to plagiarise because so many other students are doing it.	60 (57%)	28 (27%)	7 (7%)	6 (6%)	4 (4%)	1.7
ii. I believe I know accurately what constitutes plagiarism and what does not.	2 (2%)	3 (3%)	16 (15%)	30 (29%)	54 (51%)	4.2
iii. Plagiarism is as bad as stealing the final exam ahead of time and memorising the answers.	5 (5%)	3 (3%)	11 (10%)	31 (30%)	55 (52%)	4.2
iv. If my roommate gives me permission to use his or her paper for one of my classes, I do not think there is anything wrong with doing that.	34 (32%)	23 (22%)	20 (19%)	18 (17%)	10 (10%)	***2.5***
v. Plagiarism is justified if the professor assigns too much work to the course.	61 (58%)	25 (24%)	9 (9%)	8 (8%)	2 (2%)	1.7
vi. Punishment for plagiarism in college should be light because students are young people just learning the ropes.	17 (16%)	32 (30%)	28 (27%)	21 (20%)	7 (7%)	***2.7***
vii. If a student buys or downloads a free whole research paper and turns it in unchanged with his or her name as the author, the student should be expelled from the university.	3 (3%)	19 (18%)	19 (18%)	22 (21%)	42 (40%)	3.8
viii. Plagiarism is against my ethical values.	2 (2%)	5 (5%)	4 (4%)	12 (11%)	82 (78%)	4.6
ix. Because plagiarism involves taking another person's words and not his or her material goods, plagiarism is no big deal.	41 (39%)	28 (27%)	18 (17%)	14 (13%)	4 (4%)	***2.2***
x. It is okay to use something you have written in the past to fulfil a new assignment because you cannot plagiarise yourself.	21 (20%)	19 (18%)	26 (25%)	27 (26%)	12 (11%)	***2.9***
xii. If I lend a paper to another student to look at, and then that student turns it in as his or her own and is caught, I should not be punished also.	19 (18%)	11 (10%)	22 (21%)	30 (29%)	23 (22%)	***3.3***
xii. If students caught plagiarising received a special grade for cheating (such as XF) on their permanent transcript, that policy would deter many from plagiarising.	9 (9%)	9 (9%)	30 (29%)	29 (28%)	28 (27%)	3.6
*Weighted Mean =(SD*1+DA*2+NS*3+AG*4+SA*5)/105						

Tables 3 and 4 summarise the textual feedback provided by 105 doctoral students for improving research ethics and curbing plagiarism. It has twelve codes and five categories. The codes and categories are further discussed below in the Discussion section.

Table 3

Summary of suggestions provided by doctoral students for improving research ethics and curbing plagiarism (N = 105, total word count = 2,322)

Word	Count	Relevance	Codes
research ethics	20	0.997	research ethics committee (1)
plagiarism	53	0.781	plagiarism (2)
students	49	0.378	doctoral students (3)
research work	5	0.262	research work (4)
early stage	4	0.21	education at an early stage (5)
importance of research	2	0.157	clarity in research purpose (6)
researchers	10	0.128	doctoral students (3)
plagiarism policy	2	0.105	plagiarism case handling policy (7)
awareness	11	0.09	awareness through various courses (8)
quality of research	1	0.079	emphasis on the quality of research (9)
problem of life	1	0.079	clarity in research purpose (6)
academic writing methods	1	0.079	academic writing skill development (10)
institutional policy implementation	1	0.079	plagiarism case handling policy (7)
proper learning session	1	0.079	education at an early stage (5)
goal of research	1	0.079	clarity in research purpose (6)
spirit of research	1	0.079	clarity in research purpose (6)
short terms course	1	0.079	awareness through various courses (8)
show ethics rules	1	0.079	plagiarism case handling policy (7)
concept of plagiarism	1	0.079	awareness through various courses (8)
effects of plagiarism	1	0.079	consequences of plagiarism (11)
blind peer review	1	0.079	research ethics committee (1)
monitoring system in place	1	0.079	research ethics committee (1)
ability of scholars	1	0.079	awareness through various courses (8)
set of guidelines	1	0.079	plagiarism case handling policy (7)
strong quality control	1	0.079	emphasis on the quality of research (9)
regular awareness programme	1	0.079	awareness through various courses (8)
fear of consequences	1	0.079	consequences of plagiarism (11)
knowledge research writing	1	0.079	academic writing skill development (10)
field of research	1	0.079	clarity in research purpose (6)
PhD course work	1	0.079	awareness through various courses (8)
field of study	1	0.079	clarity in research purpose (6)
a sense of purpose	1	0.079	clarity in research purpose (6)
sake of research	1	0.079	clarity in research purpose (6)
lower class everybody	1	0.079	clarity in research purpose (6)
plagiarism detection tools	1	0.079	plagiarism detection tools (12)

Word	Count	Relevance	Codes
honest academic work	1	0.079	research ethics committee (1)
case of plagiarism	1	0.079	plagiarism case handling policy (7)
undergraduate level students	1	0.079	education at an early stage (5)
stage of education	1	0.079	education at an early stage (5)
issues of research	1	0.079	clarity in research purpose (6)
lack of patience	1	0.079	consequences of plagiarism (11)
previous year questions	1	0.079	research work (4)
discussion of effects	1	0.079	consequences of plagiarism (11)
beginning of course	1	0.079	education at an early stage (5)
questions lack clarity	1	0.079	clarity in research purpose (6)
quality assurance committee	1	0.079	research ethics committee (1)
strict disciplinary action	1	0.079	plagiarism case handling policy (7)
special awareness programme	1	0.079	awareness through various courses (8)
new synonymous word	1	0.079	plagiarism case handling policy (7)
research ethics certificate	1	0.079	research ethics committee (1)

Table 4

Categories derived by combining twelve codes obtained from the text analysis of doctoral students' responses

Codes (1–12)	Categories
research ethics committee (1) plagiarism case handling policy (7) consequences of plagiarism (11)	research ethics committee, plagiarism case handling policy, and consequences of plagiarism
plagiarism (2) awareness through various courses (8) education at an early stage (5)	plagiarism awareness and education, and consequences at an early stage
clarity in research purpose (6) doctoral students (3) emphasis on the quality of research (9) research work (4)	clarity in research purpose among doctoral students, and emphasis on the quality of research work
academic writing skill development (10)	academic writing skill development
plagiarism detection tools (12)	plagiarism detection tools

Tables 5 and 6 summarise the research advisors' suggestions for improving research ethics and preventing plagiarism. It has 21 codes and three categories. The categories and codes are further examined below in the Discussion section.

Table 5

Summary of suggestions provided by research advisors for improving research ethics and curbing plagiarism (N = 21)

Word	Count	Relevance	Codes (1–21)
plagiarism	104	0.66	Loopholes in plagiarism detection software (1)
software	28	0.176	Free availability of anti-plagiarism software (2)
paper	21	0.248	Plagiarised works already in mass circulation (3)
research guide	14	0.996	Tacit collusion among research guides (4)
UGC guidelines	13	0.92	Research qualifications de-linked from job appointments and promotions (7)
suggestions	12	0.26	Research qualifications de-linked from job appointments and promotions (7)
research area	11	0.843	An independent research committee decides the area of research (8)
publications	11	0.164	Plagiarised works already in mass circulation (3)
plagiarism software	10	0.766	Loopholes in plagiarism detection software (1)
plagiarism incidence	6	0.46	Plagiarised works already in mass circulation (3)
incidence of plagiarism	5	0.575	Plagiarised works already in mass circulation (3)
sensitisation	5	0.184	Sensitisation and accountability of research guides and supervisors (6)
form of plagiarism	4	0.46	Plagiarised works already in mass circulation (3)
area of research	4	0.46	An independent research committee decides the area of research (8)
external expert	4	0.307	Comprehensive online tests conducted by external experts (9)
proper implementation	4	0.307	Rules about plagiarism documented in clear and straightforward language (10)
old dissertation	4	0.307	Old dissertations re-submitted (11)
research scholars	4	0.23	Students' freedom to frame their research objectives and hypotheses (12)
implementation of plagiarism	3	0.345	Rules about plagiarism documented in clear and straightforward language (10)
independent research committee	3	0.345	An independent research committee decides the area of research (8)
accountability of research	3	0.345	Sensitisation and accountability of research guides and supervisors (6)
art of plagiarism	3	0.345	Research guides help teach the art of plagiarism (5)
plagiarism detection software	3	0.345	Loopholes in plagiarism detection software (1)
selection of examiner	3	0.345	Unfair selection of examiners for dissertations (13)
research qualifications	3	0.345	Research qualifications de-linked from job appointments and promotions (7)
comprehensive online test	3	0.345	Comprehensive online tests conducted by external experts (9)

Word	Count	Relevance	Codes (1–21)
specialised research writing	3	0.345	Social strictures, moral suasion, awareness, and training programme, specialised research writing workshops (14)
oriented curriculum	3	0.23	Practical-oriented curriculum emphasising creativity (15)
free availability	3	0.23	Free availability of anti-plagiarism software (2)
moral suasion	3	0.23	Social strictures, moral suasion, awareness, and training programme, specialised research writing workshops (14)
worldwide database	3	0.23	A worldwide database of all papers with keywords in English and primary languages (16)
social stricture	3	0.23	Social strictures, moral suasion, awareness, and training programme, specialised research writing workshops (14)
straightforward language	3	0.23	Rules about plagiarism documented in clear and straightforward language (10)
uniform standard	3	0.23	Lack of uniform standards in identifying plagiarism (17)
strict regulations	3	0.23	Strict regulations and penalties (18)
tacit collusion	3	0.23	Tacit collusion among research guides (4)
jobs appointment	3	0.23	Research qualifications de-linked from job appointments and promotions (7)
training programme	3	0.23	Social strictures, moral suasion, awareness, and training programme, specialised research writing workshops (14)
primary language	3	0.23	A worldwide database of all papers with keywords in English and primary languages (16)
academic integrity	3	0.23	Plagiarised works already in mass circulation (3)
unfair selection	3	0.23	Unfair selection of examiners for dissertations (13)
plagiarism regulations	3	0.23	Non-proper implementation of plagiarism regulations (20)
research objectives	3	0.23	Students' freedom to frame their research objectives and hypotheses (12)
widespread corruption	3	0.23	Widespread corruption in the country (21)
extent of plagiarism	2	0.23	Plagiarised works already in mass circulation (3)
Sahitya Akademi Award	2	0.23	Research qualifications de-linked from job appointments and promotions (7)
Bank of India	2	0.23	Research qualifications de-linked from job appointments and promotions (7)
incident of plagiarism	2	0.23	Plagiarised works already in mass circulation (3)
topic of research	2	0.23	An Independent research committee decides the area of research (8)
list of examiners	2	0.23	Research guides are not allowed to submit examiners' lists to evaluate the thesis (19)

Table 6

Categories derived by combining the 21 codes obtained from the transcript of the 21 interviews of research advisors

Codes (1– 21)	Categories
Old dissertations re-submitted (11)	The extent of plagiarism in the interviewee's research field
Tacit collusion among research guides (4)	
Research guides help teach the art of plagiarism (5)	
Students' freedom to frame their research objectives and hypotheses (12)	
Unfair selection of examiners for dissertations (13)	
Lack of uniform standards in identifying plagiarism (17)	Reasons that encourage researchers to adopt unfair practices
Non-proper implementation of plagiarism regulations (20)	
Loopholes in plagiarism detection software (1)	
Plagiarised works already in mass circulation (3)	
Widespread corruption in the country (21)	
An independent research committee decides the area of research (8)	Potential Methods to curb plagiarism
Comprehensive online tests conducted by external experts (9)	
Research guides are not allowed to give examiners' lists to evaluate the thesis (19)	
Research qualifications de-linked from job appointments and promotions (7)	
Free availability of anti-plagiarism software (2)	
A worldwide database of all papers with keywords in English and primary languages (16)	
Practical-oriented curriculum emphasising creativity (15)	
Social strictures, moral suasion, awareness, and training programme, specialised research writing workshops (14)	
Rules about plagiarism documented in clear and straightforward language (10)	
Strict regulations and penalties (18)	
Sensitisation and accountability of research guides and supervisors (6)	

Discussion

This section discusses the study findings from two perspectives: that of the doctoral students and that of the advisors.

Findings from the doctoral students' perspective

The key findings of this study from the doctoral students' perspective are presented in Tables 2– 4. Question 11 (12 statements) found that plagiarism awareness is not encouraging among students pursuing doctoral studies in India. The responses to Statements 1, 2, 3, 5, 7, 8 and 12 in Table 2 are on the expected line. However, the respondents' confidence in plagiarism awareness seemed feeble in Statements 4, 6, 9, 10 and 11, as reflected in Table 2 of the Results. For instance, there is a low score for Statement 4: "If my roommate gives me permission

to use his or her paper for one of my classes, I do not think there is anything wrong with doing that". Other statements with low scores, as shown in Table 2, are Statement 6: "Punishment for plagiarism in college should be light because students are young people just learning the ropes", Statement 10: "It is okay to use something you have written in the past to fulfil a new assignment because you cannot plagiarise yourself", Statement 9: "Because plagiarism involves taking another person's words and not his or her materials goods, plagiarism is no big deal", Statement 11: "If I lend a paper to another student to look at, and then that student turns it in as his or her own and is caught, I should not be punished too" (Ehrich et al., 2016). The reason for these low scores could be rooted in Indian education, employment and culture. For the students, how could something be called cheating when there was proper permission to use it? Students are taught to help each other from childhood onwards and cannot imagine that they are not supposed to share assignments. Moreover, it is inconceivable to Indian students that they cannot freely reuse self-created artefacts. In the past, many researchers have been caught cheating red-handed, yet they continue to work as though nothing had happened. Indian IP and copyright laws are not strict enough to punish cheaters effectively in academia, while institute policies are too lenient, with many institutes being unaware of the existence of a research ethics committee. In India, any wrongdoing is not considered a crime until money is involved. In recent years, however, the Indian government has been taking initiatives to curb unethical practices in various ways. Restoring ethics in education will take time, as it involves a change in mindset and culture. Good values, discipline and habits as well as ethical ways of living become part of one's life if they are taught in primary school (Pallela & Talari, 2016).

Another important finding is the twelve codes (Table 3) and five categories (Table 4) from the text response to Question 12 of the survey questionnaire. The categories and codes are discussed below:

- *Research ethics committee, plagiarism case handling policy and consequences of plagiarism.* As identifying plagiarism is a specialised task, Chaddah (2014) suggests that all research institutions should establish a University Plagiarism Cell or Research Ethics Committee to assist manuscript submission or investigate plagiarism complaints. Research Ethics Committees should have a fair representation of faculty members, domain experts, external legal professionals and student representatives, and could be assisted by specially created Plagiarism Cells, as recommended by Chaddah (2014). These cells would be composed of specialist committees and each submitted manuscript and complaint received would be referred to the relevant committee. Research on

anti-plagiarism policy by the Higher Education Regulatory body found a lack of uniformity in the adopted anti-plagiarism policy before the UGC guidelines of 2018. As universities are now empowered to impose a penalty for plagiarism, an appellate authority should be in place to deal with complaints of unfair treatment of students.

- *Plagiarism awareness and education, and consequences at an early stage*. Research ethics and plagiarism awareness should be included in undergraduate and postgraduate programmes, and should be mandatory at the doctoral level. Gopinath et al. (2014) found a positive correlation between prior research experience and familiarity with research ethics principles. Over 93% of respondents supported teaching research ethics at the postgraduate level.
- *Clarity in research purpose among doctoral students and emphasis on quality of research work.* Many doctoral students are unclear about what they are doing and how quality research is conducted. Although a research methodology course is taught in almost all doctoral programmes, it is clear from the respondents' comments that these courses are not taught in effective ways. Students will resort to existing material when the research purpose is unclear and plagiarised.
- *Academic writing skill development.* Academic writing differs from other forms of writing, such as business, general and technical writing. It has a rigid structure and requires learning. Therefore, a writing course might help students. Some doctoral students perform quality research, but do not know how to express this research, and so resort to plagiarising.
- *Plagiarism detection tools***.** Anti-plagiarism software should be accessible to all students and faculty members. The government could develop specialised software for Indian students, as the commercially available software is rather costly. Paraphrasing detection tools can be expanded to identify copying from others' work ideas. There is a great deal of published research literature, mainly in the discipline of computer science, that can be used to identify translation plagiarism or paraphrasing (Kent & Salim, 2010; Mustofa & Sir, 2013; Naik et al., 2015; Tlitova et al., 2020).

Findings from the advisors' perspective

The findings from the advisors' perspective are expressed in 21 codes (Table 5) and three categories (Table 6) derived from transcripts of interviews conducted with 21 research advisors. The categories and codes are discussed below:

- *The extent of plagiarism in the interviewee research field.* Most of the interviewees accepted that plagiarism is widely present in their area. 1)

Dissertations written before the stringent UGC guidelines came into force are re-submitted by other students after changing the title and making other cosmetic changes. 2) There is tacit collusion among research guides to get each other's students to qualify through various tests. 3) Research guides often teach their students the creative art of plagiarism, including how to use earlier dissertations with minor modifications. 4) Research guides avoid the burden of designing the methodology and research framework: students can frame their research objectives and hypotheses by copying earlier works in the field. 5) The research subject matter is deliberately chosen from areas where similar studies have been conducted. When selecting examiners for dissertations, the guide and the evaluation committee deliberately avoided people who had done work in the field: examiners are chosen from a known circle with a mutual understanding that they will help each other. 6) Books translated from other languages are awarded as original works by bypassing the scrutiny of subject experts.

- *Reasons that encourage researchers to adopt unfair practices*. Excellent insights were gained into why researchers adopt unfair practices. 1) Most of the interviewees reported that a lack of uniform standards in identifying plagiarism helps clever people escape unpunished. 2) The interviewees were concerned about how plagiarism regulations might be implemented when copyrights and patents are protected due to legal loopholes. Given the country's legal loopholes, the impartial implementation of the UGC guidelines is doubtful; thereby, innocent people can be selectively targeted. 3) Ghost writers are being paid to write papers and theses. 4) Anti-plagiarism software can check content similarity, but not idea similarity and smart paraphrasing. Plagiarism detection software provides users with clues on how to bypass it, and people using such software 10–12 times can learn to circumvent it. 5) Thousands of plagiarised works have already entered mass circulation, and there is a lack of a clear plan to remove them from the public domain. 6) Plagiarism reflects widespread corruption in the country. Most people are afraid to point out instances of plagiarism due to fear of retribution from influential people and a lack of faith in the system.
- *Potential methods to curb plagiarism*. The interviewees also suggested improving academic integrity in higher education research. 1) Research subject areas should be determined by an independent expert committee, which could be done by considering various national and international priorities. Prospective researchers could then choose their topics from the

list created. 2) The viva-voce test for defending one's thesis should be replaced with a comprehensive online test conducted by external experts. 3) Neither the research guides nor the university's examination committee should provide the examiners' list to evaluate the thesis. A discipline-wise database of examiners should be built through inter-university consortiums, and examiners could be selected at random from this database. 4) Job appointments and promotions should be executed through proper policy and should be de-linked from overemphasising research achievements. 5) Plagiarism detection software should be fine-tuned to detect paraphrasing and translation from other languages. The free availability of anti-plagiarism software can curb plagiarism. 6) A worldwide database of all papers with keywords in English and primary languages should be built. 7) There should be a practical-oriented curriculum that emphasises creativity by replacing theory-based rote learning. 8) Social strictures, moral suasion, awareness and training programmes should be in place, as well as specialised research writing workshops. 9) Rules about plagiarism should be documented in clear and straightforward language. 10) Strict regulations and penalties are very much needed. 11) Research guides and advisors need to be sensitised and held accountable.

Limitations and future scope of the study

Firstly, the study used the Harris scale, which was developed and tested in the US environment. The scientific rigour and contribution of studies of this kind could be more robust if a new scale were developed and tested for the Indian environment. The newly developed scale would help to advance the knowledge of research literacy and academic integrity in higher education. Secondly, the study's sample size was 105, which is just enough to conduct an analysis (95% confidence level with a margin of error of 10%). The authors feel there is a need to conduct a further study with a bigger sample size. In future studies, we therefore plan to have a bigger sample size (more than 384 participants), which would yield more robust study results (95% confidence level and a margin of error of 5%). Thirdly, the survey questionnaire was sent to almost 950 doctoral students via email in Google Forms, but only 105 responses (response rate: 11%) were received. There could be many reasons for the relatively low response rate. For instance, the email addresses were collected from the university website and it was not known whether they were still valid or active. Almost 200 emails were received regarding 'message delivery failure' or 'message block notification.' It is therefore possible that email servers identified our message as spam. Therefore, better ways to contact doctoral students need to be explored.

Conclusions

Plagiarism is widespread in India. Although some stringent guidelines issued by the University Grant Commission Government of India are in place to minimise the incidence of plagiarism, awareness of plagiarism among doctoral students in India is not encouraging. Moreover, there is a need to address the underlying causes of plagiarism before implementing the guidelines issued by the University Grant Commission Government of India. In order to address the underlying causes of plagiarism, the present study suggests an action plan including: 1) establishing a research ethics committee at all academic or research institutions, 2) conducting training, workshops and awareness campaigns in the early stage of doctoral students' studies to ensure that they understand plagiarism and its implications correctly; 3) ensuring clarity of research purpose among doctoral students and emphasising the quality of research work in the initial training days, 4) developing academic writing skills, and 5) providing anti-plagiarism software free of cost to all students and faculty members.

The findings and the suggested action plan of this study would be helpful to doctoral students, guides and policymakers involved in addressing the plagiarism issue. The present study has limitations concerning the sample size and the scale used to measure plagiarism. Future studies can be conducted by developing a plagiarism scale for the Indian environment, testing with a bigger sample size, and comparing results with other studies in India or abroad. In future research, we would like to explore these research possibilities.

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APPENDIX-1

PART 1	
Descriptive Questions	**Options**
1. Gender	Male Female
2. Age	Up to 25 26–30 31–35 36–40 Above 40
3. Educational Qualification	MA MSc MCom MBA MTech MPhil PhD Other
4. Employment status	Employed Unemployed
5. Research experience	< 1 year 1–2 years 3–4 years 5–6 years > 6 years NA
6. Research publication	NIL 1–2 papers 3–5 papers 6–10 papers 11–20 papers > 20 papers
7. Publication in the peer-reviewed journal	Yes No
8. Research ethics course before doctoral registration	Yes No Not Sure
9. Presence of a research ethics committee at the institution of the respondents	Yes No Not Sure
Prescriptive Question	
10. Educational level to which research ethics need to be taught	High School Intermediate Undergraduate Postgraduate MPhil PhD

PART 2					
11. Statements	**Strongly Disagree (SD)**	**Disagree (DA)**	**Not Sure (NS)**	**Agree (AG)**	**Strongly Agree (SA)**
i. Sometimes I feel tempted to plagiarise because so many other students are doing it.	○	○	○	○	○
ii. I believe I know accurately what constitutes plagiarism and what does not.	○	○	○	○	○
iii. Plagiarism is as bad as stealing the final exam ahead of time and memorizing the answers.	○	○	○	○	○
iv. If my roommate gives me permission to use his or her paper for one of my classes, I do not think there is anything wrong with doing that.	○	○	○	○	○
v. Plagiarism is justified if the professor assigns too much work to the course.	○	○	○	○	○
vi. Punishment for plagiarism in college should be light because students are young people just learning the ropes.	○	○	○	○	○
vii. If a student buys or downloads a free whole research paper and turns it in unchanged with his or her name as the author, the student should be expelled from the university.	○	○	○	○	○
viii. Plagiarism is against my ethical values.	○	○	○	○	○
ix. Because plagiarism involves taking another person's words and not his or her material goods, plagiarism is no big deal.	○	○	○	○	○
x. It is okay to use something you have written in the past to fulfil a new assignment because you cannot plagiarize yourself.	○	○	○	○	○
xi. If I lend a paper to another student to look at, and then that student turns it in as his or her own and is caught, I should not be punished also.	○	○	○	○	○
xii. If students caught plagiarizing received a special grade for cheating (such as XF) on their permanent transcript, that policy would deter many from plagiarizing.	○	○	○	○	○

PART 3

Question 12: Please offer your suggestions for improving research ethics, including curbing plagiarism in your field of study.

Biographical note

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People with Special Needs and Career Development Based on Strength

Janez Drobnič[1]

The present work deals with career counselling for people with special needs based on the paradigm of positive psychology, which is becoming increasingly relevant in counselling and therapeutic processes. It is an approach to counselling and working with clients based on the strengths of the individual and represents a paradigm shift – a departure from the approach based on deficits and weaknesses. The empirical study established the prevalence of this approach in Slovenian elementary and secondary school counsellors. The results show that this way of counselling is a new strategy for mobilising various internal sources of strength and a supportive environment, which improves the individual's ability to achieve the best possible self-sufficient education and integration into professional and social life. However, in the case of counselling for persons with special needs, a balance needs to be achieved between a strength approach and others that focus on personal problems and weaknesses.

Keywords: positive psychology, career counselling, people with special needs, strengths

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Osebe s posebnimi potrebami in karierni razvoj na podlagi močnih področij

Janez Drobnič

Prispevek se ukvarja z vprašanjem poklicnega/kariernega svetovanja oseb s posebnimi potrebami, ki temelji na paradigmi pozitivne psihologije; ta v svetovalnih in terapevtskih pristopih postaja vse aktualnejša. Gre za pristop k svetovanju in delu s strankami, ki se opira predvsem na močna področja posameznika in predstavlja premik paradigme – odmik od pristopa, ki temelji na pomanjkljivostih in nezmožnosti. Z empirično študijo smo ugotavljali uporabnost tega pristopa pri slovenskih osnovnošolskih in srednješolskih svetovalnih delavcih v poklicnem svetovanju. Rezultati kažejo, da bi bil tovrstni način svetovanja nova strategija mobilizacije različnih notranjih virov moči in podpornega okolja, ki izboljšuje sposobnosti posameznika za čim boljšo samozadostno izobraževanje in vključevanje v poklicno in družbeno življenje. Ob svetovanju za kariero pri osebah s posebnimi potrebami je treba doseči ravnovesje med pristopom, ki temelji na njihovih prednostih, ter pristopom, ki se osredinja na njihove težave in slabosti.

Ključne besede: pozitivna psihologija, karierno svetovanje, osebe s posebnimi potrebami, močna področja

Introduction

One of the key dilemmas in counselling approaches is whether to focus on the disorder, problems, or defects of the individual or to direct the counselling process to the strengths of the individual and his abilities and (in this way) more easily to achieve counselling results and goals (Kosine et al., 2008). Anderson and Schreiner (2004) state that counselling based on the strengths of individual clients is one of the best ways to influence them to develop their abilities and a good way to use their potential to succeed and achieve goals. Focusing on areas where clients have problems or dealing with 'risk factors' could make it harder for them to succeed.

A foundation can be found in positive psychology for the 'strengths' approach. Csikszentmihalyi (2000) argues that positive psychology should be understood as a movement to change the nature of psychology and not as its subdiscipline or specialisation. It aims to rebalance classical psychological discipline by preventing over-orientation to the pathology and dysfunction of the individual and neglecting his strengths and abilities. Positive psychology builds on the pursuit of healthy functioning, positive experiences, and well-being; Linley et al. (2010) call for a move away from the deficit and dysfunction approach to problem-solving in a way that emphasises human potential. Seligman (2019, p. 1) asserts, 'Psychology is not just a study of weakness, illness and injury, but a study of strength and virtue. Healing is not just correcting the broken, it is also nurturing the best in ourselves to solve problems and issues'.

Peterson (2009) says that positive psychology complements traditional areas of psychology without wanting to replace or ignore them. By focusing on the positive aspects of human development, this approach helps to balance other approaches that focus on individual disorders, which can be an obstacle to a holistic understanding of the client. Positive psychology also deals with the issue of positive self-esteem. Mruk (2008) points out that positive psychology has placed great emphasis on promoting positive self-esteem, which is built primarily on what a person knows best, can do, and accomplish. He then sceptically adds that psychologists with less humanistic orientations are less likely to focus on such aspects in their counselling or therapeutic approach.

Some, such as McCash (2006), however, argue that a positive approach has its dominance, particularly in social work as a practical approach based on the use of internal power, so it could be called 'work practice theory' or a model that builds on autonomy and self-determination and relies primarily on individual strength. Such an orientation could also be found in the word of Whemeyer et al. (2017), who emphasises the importance of individual

autonomy, power, and self-determination when working with people with special needs or disabilities.

An increase in interest in the use of positive psychology can be seen at the end of the last century if we focus on the dynamics of bibliographic editions and studies on this topic, which have increased significantly during this time. Peng (2015) states that the increase in interest in positive psychology has grown mainly because this domain of psychology became a central theme of the American Psychological Association in 1998, which popularised a new approach. However, we can assume that this is a response or shift to past problematic practices that have focused exclusively on disease or disorder and highlighted maladaptive behaviour and negative thinking in problem-solving and counselling. The basis for focusing on the abilities and positive qualities of the individual would also be found in other scientific and professional fields and disciplines that put humanism and positive evaluation of the human personality at the forefront.

Positive psychological orientations in counselling were also followed by studies on human well-being and optimal functioning (Littman-Ovadia et al., 2021). Peterson and Seligman (2004) often emerge as authors who have laid some sort of foundation for research on the question of what is and what enables and promotes the character of power and well-being of the individual. The strong influence of positive psychology has quickly spread to various practices and research areas, namely work and organisation (Althouse et al., 2017; Miglianico et al., 2020), employee power profiles (Gander et al., 2012) and career counselling based on benefits (Drobnič, 2018; Littman-Ovadia et al., 2014; Malouff, 2019; Peng, 2015; Sanderson, 2017; Shutte & Whemeyer et al. 2017). In positive clinical psychology, scientists have also revised and reshaped psychopathology and clinical symptoms (Freidlin et al., 2017; McGrath, 2019). Significant shifts have also occurred in school counselling, where the counsellor's focus has become on strengths (Musek, 2021; Norwich, 2013; Soria & Stubblefield, 2014). Similar shifts are also found in counselling and therapeutic interventions for children and adolescents (Quinlan et al., 2012). The field where various forms of research and practices based on positive psychology appear is becoming increasingly more widespread (Littman Ovadia et al., 2021). The narrative is also changing in some areas, such as in inclusive pedagogy, where people with disabilities are people with special needs, and the disabled become disadvantaged people in the labour market.

Theoretical background

Counselling on the principle of power – the impact of positive psychology

Counselling based on strengths offers counselling psychologists new professional opportunities that are often unrecognised and unnamed in therapeutic settings (Smith, 2006). We are certainly talking about an approach to counselling and working with clients based on the strengths of the individual, which represents a paradigm shift – a shift from focus to deficit, known as what is 'wrong' with individual learning, development, career, or other elements.

From the summaries of researchers (Dobrow, 2013; Peterson & Seligman, 2004), it could be stated that benefits are what a person is capable of being. Benefits can be defined as 'positive qualities or skills that promote optimal performance' (Owens et al., 2019, p. 266). To identify the strengths of the individual, various instruments for measuring individual capabilities have been developed for this purpose. Mention is made here of two tests: the VIA-Inventory of Strengths and the Values in Action Inventory of Strengths (VIA-IS), developed by Peterson & Seligman (2004), which are the most frequently cited tools for identifying strengths and virtues and measuring tools (Ghielen, 2019). They identified and classified the positive psychological characteristics of people, providing a theoretical framework to help understand the strengths and virtues and to develop practical applications for positive psychology. They identified six classes of virtues (i.e., 'core virtues') that underlie 24 measurable character traits (Peterson & Seligman (2004). This model divides character traits into six main groups: wisdom and knowledge; courage; humanity; justice; moderation; and transcendence. Each of these is further divided into three to five character traits. For example, it divides justice into equal treatment, leadership, and teamwork.

However, some researchers are critical of their classifications of strengths and virtues. Consequently, they have been revised or new classification variants have appeared or given other additional categories of advantages, such as spirituality by Schuurmans-Stekhoven, (2011) or Peng (2015).

We must certainly add that there are also sceptics about these new shifts and paradigms in counselling and therapies, as well as opinions that only partially support this new orientation. Some authors (Seligman et al., 2006; Seligman, 2019) state that the effectiveness of such interventions remains to be studied, despite the increase in their use in therapies and counselling. Obviously, merely classifying and defining what is a strength in order to design new ways of counselling and therapy is not enough. Therefore, Linley (2008) sought to

develop and empirically test one method: Social and Behavior Change Communication (SBCC). Based on the questionnaires, several methods of counselling and psychotherapeutic interventions were developed. Advantage-based counselling (SBCC) for adolescents is an example of an approach based on the inclusion of constructs, including building a therapeutic alliance, strengthening resilience to achieve goals, assessing progress, empowerment, solutions through strategies, and other constructs.

In addition to the above, the importance of the individual's inner psychic energy and strength is also highlighted (Peng, 2015). Seligman and Csikszentmihalyi (2014) emphasise that positive psychology wants to help an individual find his inner psychological energy to serve as a safeguard to combat failures and disasters, as well as to prevent hardships and problems in life so that the individual does not fall victim to depressed mood when facing problems. Not only a positive attitude and technology but also a spiritual dimension is becoming an element in positive counselling approaches. Counsellors are supposed to understand that a person's spiritual dimension can play a role in their life and health.

As part of a positive approach in power-based counselling, other external factors and elements should be highlighted in addition to internal ones, especially the individual's narrower and wider environment (McCash, 2006). The power-based approach should also identify limitations and barriers that could inhibit individual growth and be located in the environment, which is a central starting point of the social model in education and counselling for people with disabilities (Norwich, 2013). These barriers should also be eliminated with the help of counsellors and other support mechanisms and ensure better social integration into the environment (Drobnič, 2018).

We presented the positive effects of the approach in counselling, which is based on the client's strengths. However, criticisms of approaches based on positive psychology should also be mentioned. The first set of critiques focuses on abandoning people's negative experiences and avoiding the problems people face in life (Held, 2004; Power, 2016) and concentrates only on client strengths and positivity or inadequately considering characteristics or constructs of morality and moral behaviour (Fowers, 2008). In their defence, counsellors based on positive psychology state that they do not shy away from real problems and clients' problems and not only explain positive qualities and experiences but are mainly interested in how to use these internal factors of power to solve problems. This provides a better alternative to the model of focusing on human functioning diseases that has recently prevailed in the broader field of psychology (Seligman, 2019; Seligman & Csikszentmihalyi, 2014).

Therefore Lopez et al. (2003) suggest that a balance needs to be struck between a strength-and-power-based approach and another that focuses on human problems and weaknesses. They point out that both strengths and weaknesses are real, although the former received less attention until recently. However, counselling and therapy are supposed to be dominated by strengths, which thus become a support and a means by which the individual, with the help of a counsellor, comes to a cure or solution to the problem. Therefore, the sources of power in the individual should be given priority and should be used more frequently in counselling and rehabilitation psychology. Lopez et al. (2003), however, go a step further in emphasising the benefits of power and advantage, arguing that the act of naming and labelling a positive trait and then measuring it, in itself, sends a strong message to the service user that focusing on strengths and benefits is important to him and is a powerful tool for positive assessment, which raises the motivation of the individual to take active action.

Strength and positivity in career counselling

Recognising personal strengths in counselling clients in career planning/career management has long been at the heart of career counselling. Robitschek and Woodson (2006) point out that career counselling could be more developed and implemented knowledge and tools in the field of positive psychology rather than limited to assessing interests, work values and skills as such.

Career counselling is largely based on psychology (Savickas, 2017), although the influence of other disciplines is present, especially sociology and economics, in the history of career counselling and theories (Drobnič, 2018). Littman et al. (2021) state that this paradigm of power or strengths of the individual is drawn from psychology itself, specifically positive psychology, for the purpose of optimal human functioning in the whole set of life areas through the daily use of character traits. Burck et al. (2014) believe that the career counsellor and school counsellor in career counselling rely more on the concept of strengths than in the field of therapeutic work, in particular mental health, which depends more on a medical model focusing on individual illness and deficiency. Similarly, Seligman (2019) states that in managing a career, we need to identify the strengths of the individual, as opposed to the practice of a physician diagnosing a client to determine what is wrong.

Of course, questions arise as to which personal characteristics, strengths, and resources can be used in the context of career counselling, meaning what can help an individual in his/her career decision and further his/her career management. Here we have different approaches and useful models based on positive psychology. We can mention the general models of Peterson and Seligman

(2004) and Holland (1985) and his six-type model of career decision-making, for which the Self-directed search (SDS) test is used or 'Strengths Quest' (Lopez et al., 2009), which focuses on identifying and upgrading students' talents and abilities.

In school career counselling, there is no greater focus on the model of strengths, at least not in the practical field, although specific counselling models such as the American School Counselor Association (ASCA) Mindsets & Behaviors for Student Success (2014) have been developed, especially in American schools to promote the growth and development of each student. Although some argue that there is extensive literature to apply these approaches in terms of individual development in the career field (Burck et al., 2014), there are criticisms that these models lack practical methods for implementation in counselling practice (Aulthouse et al., 2017; Mellin et al., 2011). School counsellors point out that psychology and social work are more focused on pathology and the medical model (Mellin et al., 2011) rather than on the power and benefits model (Symeonidis, 2018). The shift in thinking towards strengths, at least on a theoretical level in student counselling, is the emphasis of the Positive Psychology Movement on Strengths and Advantages model, which enables good practice (Seligman & Csikszentmihalyi, 2014). Kosine et al. (2008) argue that a purpose-oriented approach to career development is highly consistent with the US National Model ASCA (2014) emphasis on identity development, self-research, effectiveness, and support for student pursuit of personal and vocational development.

Dick et al. (2014) believe that school counsellors could make more use of the foundations of positive psychology in counselling. Positive psychology encompasses relatively extensive literature on which school counsellors could rely in designing career-oriented interventions (Carey et al., 2008). However, they acknowledge that the theoretical basis does not find a place in the practice of consultants because more direct practical guidance on the use of these methods is lacking. Despite empirical studies of considerable empirical basis, the impact of positive psychology methods and positive psychotherapeutic interventions on the school counselling profession has been relatively small (Bolier et al., 2013). Reiner et al. (2013) propose to develop a specific professional identity of a school career counsellor that would be different from the vocation of a psychologist. Several studies are available on the effectiveness of a positive approach in career counselling. One of these is the Littman-Ovadia et al. (2014) study, which demonstrated the success of integrating strengths into career counselling, by which participants, with the help of counsellors, were able to identify and use their strengths to achieve career goals.

Since 2020, the constructivist counselling approach has been gaining ground in career counselling. This approach does not highlight, at least in the narrative sense, the individual's strengths but other aspects of counselling, such as how the client and counsellor work together. This should be primarily partner, unconditional, positive, understanding, with empathy (Amundson, 2009), which does not highlight the authority of the counsellor, his decisive power and directive action but, in contrast, the client becomes the author of his own future story (McIlveen, 2016), from his own experience and relies on his own strengths. Therefore, it is primarily the client who is the decision-maker and constructor of future career episodes, which a counsellor helps him build with a non-directive approach and strengthens the client's autonomy (Savickas, 2017). Undoubtedly, the integration of several branches of psychology could be recognised in these new approaches, specifically the findings of differential psychology in terms of exposing personality traits set by classics of career development theories such as Parsons, Brown, and others, developmental psychology in terms of career stages and role self-concept, according to Super,[2] and finally also cognitive psychology in the careers of the authors Peterson, Lent, and Savickas (Drobnič, 2018, p. 52).

People with special needs/disabilities – their career on the strength's principle

Current approaches to career counselling for people with disabilities based on inability and disorder have proved to be less appropriate, as they do not provide good answers for lifelong careers to successfully meet the challenges of everyday change and integrate them into normal life and work (Drobnič, 2018). The predominant counselling is usually provided as a one-time preparation of a person with special needs for inclusion in working life (Power, 2006) based on the medical paradigm of treatment, which means that vocational decisions revolve around disability. Therefore, we ask ourselves whether we would shift the focus of counselling from the medical paradigm to another related to positive psychology, which would be based on the strengths of this category of persons.

In the education of people with special needs, the focus is no longer on disability or handicap but on positive attitudes and decision-making (Wehmeyer, 2017), as it provides better learning and social integration effects. In

2 According to Super (1992), self-image is the culmination of the interaction between the person and the environment. It is a process of the concept of oneself, which is formed through the processes of a) exploration, in which the individual examines himself as such, b) differentiation, in which he recognises the differences between himself and others, and c) identification, which means identification with others, who play the role of a model or an ideal.

the vocational decisions and careers of people with special needs, the medical approach based on vocational rehabilitation is still predominant, which is problematic because:

> He no longer sees man as a whole but above all his disability. This is confirmed by the naming of persons after these defects, such as: paraplegics, dystrophic, mentally ill, which may also be the reason for labelling in a derogatory sense. In the end, the mental pattern of thinking based on what an individual is "unable to do" is adopted by the persons themselves who, in a situation of helplessness and non-competition with the "healthy", identify with this label, adopt it and live with it (ibid., page 180).

A strength-based approach to career decision-making and counselling yields much better results than those based on the medical paradigm of disability and engaging in the context of vocational rehabilitation as a prerequisite for employment (Murugami & Nel, 2012). We have developed a theoretical model for vocational decision-making, career management, and the employment of people with special needs on the principle of strength and advantage (Drobnič, 2014).

If we build a person's profile on strengths rather than on illness or disorder, there will be a shift in focus from weaknesses to strengths, which is associated with optimism that becomes a mobiliser for solutions. (Elder et al., 2018). Therefore, insisting on the medical paradigm and classical approaches in vocational rehabilitation is counterproductive (Novak, 2015), as individuals maintain a negative self-concept, which cripples them and undermines their self-esteem (Drobnič, 2018). People who present themselves as ill, incapacitated, and disabled are also accepted by the environment in the same or similar way (Brejc, 1987). Therefore, it is better to help the individual shift the focus to what he or she can do (Novak, 2015), what he or she is good at or at which he or she excels.

In addition, people with disabilities even show certain advantages (Armstrong, 2012). Thus, individuals with autism have performed better on tests that require focusing on small details within more complex patterns (Huygelier et al., 2018). This means they are better systematisers than empathisers: they are enthusiastic about logical structures and better at sophisticated computer language. Interestingly, students with autism also score statistically significantly better than others on an intelligence test in which subjects use analytical skills to complete a visual pattern, detect visual structures, and mentally manipulate complex three-dimensional shapes (Mottron, 2011).

In another study, people with dyslexia showed the ability to recognise complex three-dimensional objects faster and with greater efficiency than a group of individuals in the normal population (Von Karolyi et al., 2003). Students with learning difficulties also often show higher entrepreneurial skills than average. For example, a survey of American entrepreneurs found that one-third of entrepreneurs reported dyslexia, compared with only one per cent of middle managers in large corporations belonging to the 'average' population (Warren, 2008).

Other categories of disability also show some advantages. Many children with attention deficit hyperactivity disorder (ADHD) have above-average abilities to search for novelty, which is an important prerequisite for creative behaviour (Boot et al., 2017). Children with bipolar disorder scored higher than other children on a popular test of creative thinking (Simeonova et al. 2005). People with Williams Syndrome often show well-developed musical abilities and interests; children with intellectual disabilities often have emotional and personality-related benefits. Down Syndrome, for example, has been described as 'Prince Charming Syndrome' because of the friendly attitude and smiles of these individuals, with this genetic difference that completely 'disarms' many (Dykens, 2006).

Student autonomy is an important factor in the context of learning (Mohammadi & Mahdivand, 2019)). According to Wehemeyer (2017), raising the individual's own power, strengthening autonomy, and the ability for greater self-determination are important for the successful education, independent living, and employment of people with special needs. He describes empowerment as a psychological increase in the power of an individual or group, which often involves developing self-confidence in one's own sources of power. Empowerment in the field of the raising and education of people with special needs is when a person acquires a feeling that he is increasingly able to make decisions about his life and put these decisions into practice.

Given the above findings on the use of positive psychology in counselling and therapy, which means a departure from the prevailing medical paradigm of impotence to the power and strength of the individual, we were interested in whether career counselling practice for people with special needs in Slovenian primary and secondary schools' principles of strength, advantage and ability, or a rehabilitation medical approach that focuses on disability and incapacity prevails.

The purpose of this study is to determine whether experts in career decision-making of children and adolescents with special needs in Slovenia base vocational and career decisions on the strength of the individual or are more

focused on their problems that could hinder their vocational and career development. Given that career decisions based on strengths correlate with better self-concept, successful career development and less stigmatisation (Drobnič, 2018), it is important to know how these changes are in Slovenia in order to improve the practice of personal and career counselling.

Method

We used a quantitative research approach in the study. The research is based on a descriptive and causal-non-experimental empirical method of pedagogical research.

The research aims to determine whether counsellors in primary and secondary schools base career decisions on people with special needs on their own strengths. For analysis, we have prepared one research question: 'On what should the vocational decision of people with special needs be based?'

For the purpose of the research, we used raw data from a questionnaire developed for the study 'Analysis of vocational orientation and accompanying factors for people with special needs in the Slovenian education system' by the Ministry of Education and Sport and the Pedagogical Institute in Ljubljana. The questionnaire consists of four sets: (i) demographic issues, (ii) education of students with special needs, (iii) vocational education and vocational guidance, and (iv) vocational rehabilitation and employment of people with special needs and disabilities. For this study, we used data from the third set of questions.

We checked the following measurement characteristics of the instrument: substantive and constructive validity, reliability, and objectivity. The measurement characteristics of the instrument (substantive and constructive validity) were verified with the Kaiser-Myer-Olkin (KMO) test and Bartlett's test of sphericity. Reliability was checked using the internal consistency method (Cronbach's coefficient α) and by factor analysis.

Based on a random selection, 60 primary schools were invited to the survey, representing 13.4% of all primary schools in Slovenia, 50 secondary schools (25.6%) and 34 schools with special programmes (100%). The questionnaire was addressed to the counselling service at schools, namely to those workers who are in charge of career guidance. The questions were answered by 42 primary schools or their counselling services, 30 schools with a special programme, and 29 secondary schools.

For further analyses, we used inferential and bivariate statistical methods to test hypotheses to study the relationship and differences between variables: $\chi 2$ - test to test the relationship between variables, such as career decision

factors by type of school, environment and additional education of counsellors, variance homogeneity tests, and t-tests.

Results

We examined the key factors of vocational decision-making, both internal and external (Drobnič, 2018), which, in the opinion of consultants, are important in the vocational/career decision-making of people with special needs. The key question was 'On what should the vocational decision of the PSN be based?' Counsellors had the opportunity to rank the following factors/elements[3] of vocational decision in order of importance:

- disorders/disabilities
- strengths
- what is he/she interested in doing
- abilities
- learning success/knowledge
- where person will find a job.

The above-mentioned factors are most often mentioned in the history of vocational guidance (Drobnič, 2018), with specific factors at the forefront in a certain period.

Table 1

Which factor of vocational decision-making is more important for people with special needs – positions of vocational decision-making counsellors in Slovenian schools

Vocational decisions should be based on:	N	Ar. mean	St. dev.	95% confidence interval for the ar. mean		Rang
				Lower limit	Upper limit	
Disorders/disabilities	100	3.14	1.518	2.84	3.44	3
Strengths	100	1.76	1.138	1.53	1.99	1
What is he/she interested in doing	100	3.19	1.361	2.92	3.46	4
Abilities and skills	100	2.98	1.223	2.74	3.22	2
Learning success/knowledge	100	5.00	1.073	4.79	5.21	6
Where a person will find a job	100	4.78	1.440	4.49	5.07	5

3 We have classified factors into external, i.e., those that operate from the environment and are, for example, school, parents, employment, or internal, such as interests, motives, abilities, knowledge, and personality traits.

Counselling services put 'strengths of the individual' in the first place (M = 1.76), 'abilities and skills' in the second place (M = 2.98), and 'person's disorders and disabilities' (M = 3.14) in the third place. Interestingly, the factor 'where a person will find a job' was placed only in fifth place (M = 4.78); in the last sixth place, they put 'learning success/knowledge' (M = 5.00).

We also determined whether there are differences between counsellors depending on which schools they come from (urban or village schools). To determine statistically significant differences between groups in attitudes, we first performed Levene's test to analyse variance, in order to further determine the statistical significance of differences between groups based on a comparison of arithmetic means. With the test of arithmetic means, we checked statistically significant differences in the attitudes of a group of village and city schools regarding decision-making factors in the vocational decisions of people with special needs.

Table 2

Test for identifying statistically significant differences in the attitudes of counsellors towards career guidance factors according to the type of school they come from (urban/rural)

Vocational decision should be based on:		Sum of squares	df	Ar. mean of squares	F	Sig.
Disorders/disabilities	Between groups	9.327	1	9.327	4.179	.044
	Within groups	218.713	98	2.232		
	Total	228.040	99			
Strengths	Between groups	1.201	1	1.201	.927	.338
	Within groups	127.039	98	1.296		
	Total	128.240	99			
What is he/she interested in doing	Between groups	.005	1	.005	.003	.958
	Within groups	183.385	98	1.871		
	Total	183.390	99			
Abilities	Between groups	.337	1	.337	.223	.637
	Within groups	147.623	98	1.506		
	Total	147.960	99			
Learning success/knowledge	Between groups	.162	1	.162	.140	.709
	Within groups	113.838	98	1.162		
	Total	114.000	99			
Where will the person find a job	Between groups	12.686	1	12.686	6.459	.013
	Within groups	192.474	98	1.964		
	Total	205.160	99			

Statistically significant differences in attitudes were found in the statement 'where will the person find a job' and in 'person's disorders'. The factor of vocational decision 'where will the person will find a job' is more important for village school counsellors than for city school counsellors and also the factor 'disorders/disabilities' is more important for village school counsellors (M = 2.80) than for counsellors from urban schools because they rank them higher in importance.

We also checked whether additional training of counsellors influences their positions in determining the importance of individual factors of vocational decision-making, but we did not find statistically significant differences between the group of counsellors who did additional training and those who did not.

We checked whether there are differences between the groups of counsellors depending on what type of school they are from, which can be a primary school, a school for persons with special needs, or a secondary school. We found that there are statistically significant differences between counsellors regarding the statement of the importance of 'disorders/disabilities' for a vocational decision. These differences were between all three groups of counsellors, with primary school counsellors assessing the importance of this factor with a level (M = 3.49), meaning between 3rd and 4th place, a secondary school with M = 2.90, the highest place was found by counsellors from schools for persons with special needs (M = 2.37). Statistically significant differences between groups were determined using the arithmetic mean test.

In claiming that the fact 'where a person will find a job' is important for a professional decision, we also found statistically significant differences, but only between the group of counsellors from secondary schools (M = 4.45) and schools with a special programme (M = 5.27).

Discussion and conclusion

Disability and handicaps are no longer a factor that should be taken into account primarily in the vocational and career decision-making of people with special needs. Nor is the possibility of employment, which can be explained by the fact that the labour market has become very changeable and dynamic. In addition, the current generation of children and young people considers the period from the first career decision at the end of primary school to entering the labour market to be longer and lasting, on average, seven years, during which time major market changes can occur (Pust, 2020). Learning success as a former predictor and key career decision-making factor is no longer as important.

This, of course, does not in itself reduce the weight of the decision for young people, especially people with special needs.

The principle of vocational decision-making on 'weaknesses' recedes into the background in counselling in Slovenian schools, and the strengths/abilities of individuals come to the fore, which are key principles of positive psychology. This provides people with special needs better self-esteem and autonomy, as well as better career opportunities (Drobnič, 2018, p. 210). Therefore, we can say that the practice of career counselling for people with special needs has moved away from the rehabilitation (medical) paradigm, which emphasises the orientation to individual problems and disabilities, into a new paradigm of ability and strengths, which has its origins in positive psychology and, as we see, is spreading to other areas, including the careers of people with special needs, Learning success and finding an appropriate job later as predictors and key decision-making factors are no longer predominant. This, of course, does not in itself reduce the difficulty of the decision for young people, especially people with special needs.

Based on the empirical results of this study, it can be concluded that career guidance and counselling for people with disabilities should be designed to enable individuals to maximise impact by mobilising different internal sources of power, a supportive environment, and developing strategies to help build an individual's ability to be as self-sufficient as possible and to have a professional and integrated life. With this concept, we are close to the approaches recommended by Lopez et al. (2003) that a balance needs to be found between a strength-and-power approach and another that focuses on human problems and weaknesses. They point out that both strengths and weaknesses are real, although until recently the former received less attention.

The growth in the number of vocations opens up new opportunities for people with disabilities and the declining demands on physical strength in most vocations, puts some categories of people in a better career position, specifically those with locomotor problems, but poorer opportunities are for people with intellectual disabilities and the visually impaired and hard of hearing (Drobnič, 2018). Therefore, career support measures for individual groups of people with special needs should be more selective and targeted, and career counselling should not be based just on vocational rehabilitation.

According to the aforementioned findings from the research, in the career guidance and education of children with special needs in Slovenia, individual strengths and not weaknesses should be emphasised. In this way, we would achieve better learning effects in education and better vocational decisions, including the career development of this population.

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Development and Validation of the 'Mentoring for Effective Teaching Practicum Instrument'

Mateja Ploj Virtič*[1], Andre Du Plessis[2] and Andrej Šorgo[3]

In the context of improving the quality of teacher education, the focus of the present work was to adapt the Mentoring for Effective Primary Science Teaching instrument to become more universal and have the potential to be used beyond the elementary science mentoring context. The adapted instrument was renamed the Mentoring for Effective Teaching Practicum Instrument. The new, validated instrument enables the assessment of trainee teachers' perceived experiences with their mentors during their two-week annual teaching practicum at elementary and high schools. In the first phase, the original 34-item Mentoring for Effective Primary Science Teaching instrument was expanded to 62 items with the addition of new items and items from the previous works. All items were rephrased to refer to contexts beyond primary science teaching. Based on responses on an expanded instrument received from 105 pre-service teachers, of whom 94 were females in their fourth year of study (approx. age 22–23 years), the instrument was reviewed and shortened to 36 items classified into six dimensions: personal attributes, system requirements, pedagogical knowledge, modelling, feedback, and Information and Communication Technology due to outcomes of Principal Component and Confirmatory Factor analyses. All six dimensions of the revised instrument are unidimensional, with Cronbach alphas above 0.8 and factor loadings of items above 0.6. Such an instrument could be used in follow-up studies and to improve learning outcomes of teaching practice. As such, specific and general recommendations for the mentee, mentors, university lecturers, and other stakeholders could be derived from the findings to encourage reflection and offer suggestions for the future.

Keywords: Mentoring, Teacher Education, Teaching practicum, Instrument

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Razvoj in validacija Instrumenta za merjenje učinkovitosti mentorstva na pedagoški praksi

Mateja Ploj Virtič, Andre Du Plessis in Andrej Šorgo

Prispevek predstavlja razvoj in prilagoditve instrumenta Mentorstvo za učinkovito poučevanje naravoslovja na razredni stopnji izobraževanja (orig. Mentoring for Effective Primary Science Teaching – MEPST). Cilj razvojnega dela je bil razviti univerzalni instrument, ki bi bil uporaben za spremljavo mentorstva študentom na pedagoški praksi z namenom izboljšanja kakovosti izobraževanja učiteljev. Revidirani instrument smo poimenovali »Mentoring for effective teaching practicum instrument – METPI«, kar bi lahko v slovenskem jeziku prosto poimenovali kot Instrument za merjenje učinkovitosti mentorstva na pedagoški praksi (IZMUMpp). Nov revidiran in validiran instrument omogoča ocenjevanje zaznanih izkušenj študentov z njihovimi mentorji na strnjeni pedagoški praksi na osnovnih in srednjih šolah. V prvi fazi razvoja je bil originalni Hudsonov instrument MEPST razširjen s 34 na 62 trditev, z dodajanjem lastnih trditev in trditev iz predhodnih Hudsonovih instrumentov. Vse trditve so bile preoblikovane iz konteksta poučevanja primarnega naravoslovja na način, da zajamejo širše področje izobraževanja. Na podlagi odgovorov 105 študentov (94 jih je bilo ženskega spola) četrtega letnika pedagoškega študija (pribl. starosti 22–23 let) ter analize glavnih komponent (angl. Principal component analysis – PCA) in potrditvene faktorske analize (angl. Confirmation factor analysis – CFA) je bil instrument skrajšan na 36 trditev, razvrščenih v šest dimenzij (komponent). Te komponente so bile: osebnostne lastnosti, sistemske zahteve, pedagoško znanje, modeliranje, povratne informacije ter informacijska in komunikacijska tehnologija (IKT). Vseh šest dimenzij novega instrumenta je enodimenzionalnih, s Cronbachovimi alfami nad 0,8 in faktorskimi obremenitvami nad 0,6. Instrument je uporaben za izboljšanje učnih rezultatov pedagoške prakse in nadaljnje študije. Na osnovi z instrumentom zbranih ugotovitev bi lahko izpeljali posebna in splošna priporočila za študente, mentorje, univerzitetne predavatelje in za druge deležnike, spodbudili refleksijo lastnih praks in ponudili predloge za prihodnost.

Ključne besede: instrument, izobraževanje učiteljev, mentorstvo, pedagoška praksa

Introduction

The practices and curricula of pre-service teacher education in the global context differ in almost all practical aspects, from the length of study, admission criteria, the ratio between subject content knowledge and pedagogy, time spent in practicum, and other factors. However, almost all curricula have similar basic blocks of subjects in common. The first block consists of subjects covering the content knowledge of a subject or subjects to be taught in the future professional career. The second block includes pedagogical subjects and professional courses accompanied by faculty-based exercises and practical work under the guidance of teachers and teaching assistants. The faculty-based subjects are sometimes accompanied by short visits to schools and educational institutions to observe a variety of teaching practices and to conduct initial teaching experiments under the supervision of teacher educators. In the third block, long-term visits to schools are led by institutional mentors and supervised by faculty members (Kundu & Basu, 2022; Nikocevig-Kurti & Saqipi, 2022; Ploj Virtič et al., 2021a).

To become a primary or secondary school teacher in Slovenia (Dolenc et al., 2021), a master's degree is required. A constituent part of educational programmes is delegated to pedagogical subjects and teaching practice in the quantity of at least 60 ECTS credits (European Credit Transfer and Accumulation System). A teaching practicum accompanied by institutional mentors is compulsory, usually lasting four weeks during the course of study. After working in schools for about a year, prospective teachers can take a state exam that grants them a lifetime teaching licence.

The primary intention of the paper was to find a way to assess complex school-based teaching practices. An authentic school-based learning experience that involves 'learning by doing' with support from institutional mentors enables pre-service teachers not only to gain authentic classroom experience but also to test how the theory and practices they have learned about on the faculties relate to actual practice. While cooperating with experienced teachers in and out of the classroom, they can learn in a variety of ways in an authentic school environment and improve their pedagogical (technological) content knowledge (Ambrosetti & Dekkers, 2010; Hobson, 2016; Mishra & Koehler, 2006; Shulman, 1987) and identity (Izadinia, 2016).

Mentees, by working in a school, have the opportunity to: a) participate in school life outside the classroom in the school they visit; b) observe the work of mentors at all stages, from preparing a lecture or lab, to teaching in a classroom, to assessment and grading; and c) review their own instructions

observed by mentors who can provide feedback and advice on a lesson or similar activity. In this process, it is important to establish a trusted relationship with a mentor based on 'encouragement and support, an open line of communication, and feedback as the most significant elements' (Izadinia, 2016, p. 387), who can help them by providing feedback in various ways (Hobson, 2016). Simultaneously, they can experience or recognise in a classroom (1) critical incidents or warning signs regarding what skills and attributes seem useful and what they should be wary of when alone in their classroom; (2) a sense of their abilities, including self-efficacy; (3) recognition of their current limitations in a mentoring context, as they receive feedback on what went well and what areas need attention; (4) first-hand experience of classroom management in all its diversity; (5) insight into the school as a professional community, a hidden aspect to which they were not exposed as learners; and (6) working with a diversity of students with their own interests and abilities (Jobling & Moni, 2004). Therefore, the benefits of regular mandatory institution-based practice mark such school-based learning engagements as a mandatory essential part of teacher education programmes worldwide (Shanks et al., 2020; Zuljan Valenčič & Marentič Požarnik, 2014).

Mentoring and the mentor-mentee relationship should not be left to chance but should be carefully planned by faculty because 'a positive mentor-mentee relationship is essential for the mentee's development of teaching practices' (Hudson, 2016, p. 30) and to prevent harmful practices (Hudson, 2016). Part of this experience is honest and trusted feedback in both directions, from mentor to mentee and from mentee to mentor, as well as self-evaluation (Ferk Savec & Wissiak Grm, 2017; Hobson, 2016; Van Ginkel et al., 2018; Stîngu et al., 2016; Vršnik Perše et al., 2015). Since good mentors are not only in the interest of the mentees but also of the faculty, feedback from both the mentors and the mentees to the faculty educators is necessary. In a wider perspective and in order to provide feedback that allows for comparison between different practices and experiences not only horizontally but also longitudinally and even internationally and across disciplines, one needs reliable and validated instruments that enable qualitative and summative assessment of practice. Such instruments can not only identify the strengths and weaknesses of an individual mentorship that enable interventions to improve practice but also overcome the deep-rooted problem of reproducibility and replicability of studies in the social sciences (e.g., Baker, 2016; Laraway et al., 2019; LeBeau et al., 2021).

Mentoring is an undoubtedly important but not necessarily adequately addressed issue. For example, Chen et al. (2016, citing Crisp & Cruz, 2010; Jacobi, 1991) note that there does not seem to be a theoretical framework for

mentoring, including different contexts, such as mentoring teachers, student teachers, and postgraduates. These authors also point out the need to develop tools to assess and evaluate mentoring in educational contexts. In line with their conclusions, Da Rocha (2014) highlighted that concepts like mentoring must also be considered on a regional or even local level, in contrast to the wider perspective. She states, 'It is necessary to keep an eye on cultural contexts and fitting when transferring one model to another European nation' (Da Rocha, 2014, p. 115).

Kram (1983, 1985) developed a mentoring theory that provides the conceptual framework for Hudson's work and assumes that mentors perform career (professional) and psychosocial functions. Career functions mean becoming familiar with certain behaviours within an organisation, such as 'coaching protégés, promoting their advancement, increasing their positive attention and visibility, and providing protection and challenging tasks', while psychosocial functions mean 'providing acceptance and affirmation and offering guidance, friendship, and role modelling' (Ragins & Kram, 2007, p. 5). She further divides mentoring into four phases: the initiation phase, the cultivation phase, the separation phase, and the redefinition phase (Ploj Virtič et al., 2021a). It is argued that Hudson's (2004a, 2004b, 2005) and Hudson et al.'s (2005) Mentoring for Effective Primary Science Teaching (MEPST) model for mentoring can be integrated as follows, albeit with differences within the mentor-mentee in the school context: the student teacher as a mentee is in an initiation phase when interacting with the mentor, but the mentee is also exposed to cultivation within the classroom and school system through interaction with the mentor. In addition, there are periods of separation; as the mentee builds their skills, the mentor takes more of a back seat. The redefinition aspect in our context could mean that the mentee reconsiders his or her position vis-à-vis the mentor, meaning whether or not he or she wants to continue to be in contact with the mentor and vice versa. Given the findings from international studies (e.g., Abed & Abd-El-Khalick, 2015; Hudson et al., 2009; Tarekegn et al., 2020), MEPST can be used by prospective teachers in different cultural contexts and disciplines, addressing five major factors essential to pre-service teachers: personal attributes (PA), system requirements (SR), pedagogical knowledge (PK), modelling (MOD), and feedback (FB). The personal attributes in the MEPST (Hudson 2004a, 2004b, 2005; Hudson et al., 2005) framework refer to professional relationships and include aspects such as supporting the mentee and building trust. System requirements, for example, refer to curriculum-related requirements and school policies. Pedagogical knowledge refers to aspects such as planning, scheduling, teaching strategies, classroom management, and knowledge about

teaching. Modelling refers to pedagogical knowledge and relates to authentic experiences observed by the mentee. Feedback, in contrast, refers to constructive feedback from the mentor to the mentee regarding the mentee's practice, both verbally and written.

To reflect the complex interplay of content, pedagogy, and technology in education, Mishra and Koehler (2006) extended Shulman's (1987) model of pedagogical content knowledge to the technological pedagogical content knowledge (TPACK) framework, which reflects the importance of technology, more specifically digital technology in education. In the MEPST, technology is not considered to be a dimension. The authors added an Information and Communication Technology (ICT) dimension to Hudson's model (Ploj Virtič et al., 2021b), based on empirical evidence that digital technologies have become a ubiquitous part of almost every type of school work (Van't Hooft & Swan, 2007).

Hudson's framework includes five dimensions included in the MEPST instrument. The sixth ICT dimension (included in METPI) was added by the authors. In his works, Hudson uses the word 'factor'; however, we renamed this to 'dimension' to prevent confusion over usage in reports of exploratory factor analysis.

Personal Attributes (PA)

Mentors must possess several personal attributes in order to promote their mentees' progress in acquiring the skills necessary for teaching and classroom management. The mentoring process can be strengthened by recognising that learning takes place in a social context, and a mentor's personal attributes facilitate this learning. According to Hudson et al. (2005), mentors must be (1) supportive, (2) attentive, and (3) willing to discuss specific teaching practices and should (4) provide their mentees with a positive attitude toward teaching key learning areas, (5) provide their mentees confidence in teaching, and (6) support the mentee in thinking constructively about improving instructional practices.

System Requirements (SR)

The work of each school and all stakeholders within a school system is influenced by a network of interconnected levers from the macro-level (e.g., legislation, curriculum) to the micro-level (e.g., teacher accessibility to parents) that form school policies that balance normative measures with teacher autonomy. Knowledge and understanding of system requirements (Hudson et al., 2005) can be identified as an important part of the mentee's career development in their generic and subject (specialist) track. University teachers do not

necessarily have all the most recent information from the field, so providing information about system requirements by teaching mentors is a must.

Pedagogical Knowledge (PK)

Pedagogical knowledge developed at university and tested and developed in the school environment is essential to support effective teaching. Mentors must have pedagogical knowledge to guide their mentees in a range of generic and specific instructional practices. Eleven mentoring attributes and practices can be associated with Pedagogical Knowledge to develop specific instructional practices (Hudson et al., 2005): (1) planning for teaching, (2) timetabling, (3) preparation, (4) teaching strategies, (5) classroom management, (6) questioning skills (7), assisting with problem-solving (8), content knowledge, (9) implementation, (10) assessment, and (11) providing viewpoints.

Modelling (MOD)

Mentees' teaching skills are learned more effectively when they observe and try out for themselves the teaching practices and models applied by their mentors. Just as important as observing the art of teaching is observing questionable, outdated, and flawed classroom practices and incidents, which can help student teachers to avoid these in their practice. Eight attributes and practices can be associated with modelling instruction (Hudson et al., 2005): (1) enthusiasm, (2) teaching, (3) effective teaching, (4) rapport with students, (5) hands-on lessons, (6) well-designed lessons, (7) classroom management, and (8) syllabus language.

Feedback (FB)

Mentors who provide honest feedback enable pre-service teachers to reflect on and improve their instructional practices and behaviour. Six characteristics and practices that can be associated with the feedback factor for mentees' instructional development, which requires a mentor, are as follows (Hudson et al., 2005): (1) to set expectations, (2) to review lesson plans, (3) to observe and reflect on practice, (4) to provide verbal feedback, (5) to provide written feedback, and (6) to assist the mentee in evaluating teaching practice.

Information and Communication Technologies ICT (New)

ICT is a new dimension, consisting of seven statements that were not part of the Hudson framework. Four statements related to pedagogical ICT knowledge and three to ICT modelling. The reason for inclusion was the importance of ICT as a ubiquitous tool in education, affecting all aspects of school life.

Aims and scope

It is suggested that more attention should be paid to preparing students and mentors for their role in the practicum (Leshem, 2012), which is the responsibility of faculties/teacher education institutions. To do this, they need feedback from mentors on all issues related to a practicum and feedback from mentees on their experiences visiting schools. Teacher educators can often gain insight into the quality of practice from written reports or interviews. However, it is often beneficial to have a standardised instrument to quickly identify missing and weak parts of the practicum and bring them to the mentors' attention.

Since school-based practice is rapidly evolving and there is no adequate original or translated instrument in the Slovenian language and context to monitor mentoring in an educational setting, we set ourselves the challenge of compiling such an instrument. Such an instrument provides the opportunity to test teaching practicum in an international constructivist mentoring framework (Hudson 2004a, 2004b, 2005; Hudson et al., 2005). However, the associated instrument, called Mentoring for Effective Primary Science Teaching (MEPST), as a foundation that specifically addresses five major factors essential to pre-service teachers, namely personal attributes (PA), system requirements (SR), pedagogical knowledge (PK), modelling (MOD), and feedback (FB), was not adequate for our preservice teacher population. The reasons for the adaptation and validation of the original Hudson's 34-item MEPST instrument (Hudson, 2004a, 2004b; Hudson et al., 2005) can be summarised as follows: (1) Hudson's original instrument aimed to assess various dimensions of mentoring for elementary school science education, and our goal was to extend it so that it could be used to assess secondary and non-science placements; (2) the original instrument does not include ICT, which is ubiquitous in education today; and (3) the existing instrument was validated to test whether it was still valid 15 years after its development.

Following the above-stated reasons, the present work's main goal was to validate the existing MEPST instrument, adapt it, and validate the instrument tentatively named the Mentoring for Effective Teaching Practicum Instrument (METPI). The importance of having such an updated instrument for pre-service teacher educators is twofold. The first is descriptive to allow recognition of actual sources of problems in the mentee-mentor relationship, and the second is prescriptive. Thus, specific and general recommendations for the mentee, mentors, university lecturers, and other stakeholders could be derived from the findings to encourage reflection and suggestions for the future. Additionally, following Lawson et al.'s (2015, p. 392) suggestion and following Lawson et

al.'s (2015, p. 392) suggestion, 'more large-scale studies are needed in the field in order to provide greater insight into teaching practicum.'

Method

To obtain answers to the question of interest, a quantitative, non-experimental methodology based on pre-service teachers' self-reports of their teaching practice was used to validate the instrument. No names or school names were requested to ensure anonymity.

Sample and sampling

The research was conducted among 4th-year pre-service teachers of various subjects at the University of Maribor in Slovenia, who are required to visit primary and secondary schools for two weeks annually. The whole population of such students at the University of Maribor is approximately 250; however, we would like to apply the instrument to the assessment of practicum for future generations. At the schools, they are accompanied by a teacher-mentor from the subject they are studying. We distributed an anonymous paper-and-pencil questionnaire to approximately 200 students, mostly between the ages of 22 and 23, from the three teacher preparation faculties at the University of Maribor after their return from the teaching practicum. The names and syllabi of the teacher preparation courses including mentorship differ between faculties, but their aims are for the greatest part similar. However, not all 200 returned these questionnaires; of those that were returned, only 105 questionnaires (94 females) were completed. Thus, the response rate was 53%, which is well above the acceptable numbers reported in refereed journals (Johnson & Owens, 2003). Nevertheless, self-selection and convenient sampling can be regarded as the biggest weaknesses of the study.

Structure of the questionnaire

The questionnaire as a data collection instrument consisted of three parts: the first part asked for information about the demography, mentor teacher and feedback from the classroom. It has 10 items asking, for example, the subject of mentoring, gender, and similar. The second, 36-item part asks for the student's experience with the mentor. The order of the items covering all six dimensions was random. The second part comes in two copies, allowing each two-stream student to answer about two mentors of different subjects if

applicable. The third section consisted of an item asking respondents to indicate whether they would choose the same mentor again, including an explanation or rationale. Only the second, central part is considered in this paper. All items included in the questionnaire are presented in Tables 2, 3, 4, 5, 6, and 7. Data sets are available online under the CC licence in the ZENODO database (Ploj Virtic et al., 2021b).

Creation of the 62-item initial questionnaire about the students' experiences with the mentors

The framework includes six dimensions, five applied from the MEPST instrument and included in an adapted version in the METPI. The sixth ICT dimension was added by the authors. In his works, Hudson uses the word 'factor'; however, we renamed this to 'dimension' to prevent confusion over usage in reports of exploratory factor analysis.

In the first phase, the original 34-item MEPST instrument by Hudson et al. (2005) was revised and expanded to 62 items. The new items were included after the discussion of the experts, authors of the paper, all employed as university teachers who had previous experience in mentoring for their content evaluation when items were not yet used. The dimensions of the MEPST instrument were used as organising concepts, to be in the first phase expanded and later shortened following the procedures of descriptive, principal component, and confirmatory factor analysis. The adaptation process shown in detail in Appendix A was performed by taking the following steps: (1) Deletion of three items from the 34-item Hudson et al. (2005) instrument, based on the redundancy of items; (2) Addition of twenty-four items from Hudson (2004a) that were not included in Hudson et al. (2005); (3) Addition of 17 new items created by the authors to Hudson's existing five dimensions; (4) Addition of 7 items in a new ICT domain created by the authors; (5) Rephrasing the items by removing the word 'science' from them to make the instrument more universal; and (6) Changing a five-point Likert scale with 'strongly disagree–strongly agree' anchors to a six-point scale reflecting the frequency of an experience. The random order of items was used in all studies considered.

A six-point scale was used with the ranks of no opinion (0), never (1), rarely (2), sometimes (3), often (4), and always (5). The scale differed from the 'strongly disagree–strongly agree' format used by Hudson et al. (2005). The reason for this change was the desire to record not only agreement or disagreement with the statements but also the frequency of occurrence so that possible future interventions could be made to the practicum as needed based on the findings.

Procedure and Data analysis used in transition of MEPST to METPI

The data analysis adhered to the following procedure.

Data collection and clearing of data

Responses collected with a paper-and-pencil 62-item instrument were transferred to a spreadsheet manually. After the initial inspection of the data matrix, all data were analysed to identify respondents with large portions of missing data, outliers, and those who responded automatically by following the same pattern.

Calculation of descriptive statistics

Based on the frequency of the responses, the means (*M*), standard deviations (*SD*), modes (*Mod*), and medians (*Med*) were calculated and are reported in Tables 2, 3, 4, 5, 6, and 7. The calculated measures of central tendencies were interpreted in terms of the main heading, which stated 'How often do you think your mentor...' followed by the responses for each statement. Therefore, interpretations were ranked: (1) below 2.00, as not at all and at a very low level, (2) from 2.00 to 2.59, as rarely or at a low level, (3) from 2.60 to 2.99, as sometimes or at a medium level, (4) 3.00 to 3.74, as often or at a high level, and (5) 3.75 and above, as always or at a very high level.

Validity of the scales, Principal Component Analysis (PCA), Confirmatory Factor Analysis (CFA) and Reliability Analysis

The content validity of the scales was assured by the use of previously tested items and consultations of experts from the field during the formation of the 62-item questionnaire.

PCA, CFA, and Reliability Analysis were used to assess each of the six organising dimensions. All dimensions were assessed dimension by dimension. In the exploratory phase, PCA analysis was used to extract component loadings, and in combination with the procedure, Cronbach's alpha if item deleted, offered by SPSS, used to shorten the questionnaire by the exclusion of the redundant items. After that, CFA follows with procedures to confirm the theoretically predicted dimensions (latent constructs).

The analysis of the collected data followed the traditions of Exploratory Factor Analysis (EFA) (Field, 2013). Each of the six theoretically predicted constructs was explored and tested separately for uni-dimensionality and reliability. Principal Component Analysis was used to test the uni-dimensionality, and Cronbach's alpha was calculated as a measure of reliability.

Correlations between the potentially extracted components from each of the dimensions revealed by PCA were reasonably expected; therefore, Direct Oblimin rotation was chosen. Component loadings below the threshold of .5 and significant loading on two or more components were considered as exclusion criteria for an item to be included in a component. An initial criterion for retaining a component in cases where two or more components were extracted within an explored dimension was an eigenvalue above one. All Eigenvalues were later compared to values generated by the Parallel Analysis Engine, following Patil et al. (2008), as a criterion for retaining a component. Several methods determine how many components to retain after PCA (e.g., eigenvalue > 1, scree plot review). Recently, parallel analysis has been preferred. The computer program creates a random data set with the same number of observations and variables as the original data and calculates the theoretically predicted eigenvalues. If the eigenvalues calculated by a program are larger than the eigenvalues of the PCA, it only means that such components are mainly random noise and should not be retained. The reliability of the components was calculated in terms of Cronbach's alpha (see Table 1).

Confirmatory Factor Analysis (CFA) using AMOS 27 software was chosen to test the fit of the data to the hypothesised dimensions (e.g., personal attributes represented as latent variables). Measurement models for which all items from a questionnaire will be subjects of EFA in search of unidimensional latent constructs or PCA in search of a combination of items explaining maximal variance were not performed. The reasons were twofold. The first was a too small sample (N = 105) to allow conclusions inside reasonable confidence intervals, and the other was that we want to follow Hudson's dimensions as well as established theoretical frameworks.

Table 1

Reliability of constructs and question numbers related to the dimensions for the initial 62-item questionnaire

Dimensions	Question no.	Number of items	Cronbach's Alpha values		
			All items in this research	From Hudson	After PCA
Personal attributes	**1, 9,** ***11,*** **20, 23**, 32, ***34*****, 41,** ***55, 57, 59,*** 61	12	.92	.84	.93
System requirements	2, ***6, 12***, *19*, **35,** ***36***, 38, **43**, 52, 60, 62	11	.86	.67	.81
Pedagogical knowledge	3, 7, ***22, 24, 25, 26***, 27, *28*, **29**, *33*, ***40,*** **42, 44,** *45*, *49*, *51*, *53*, 58	18	.93	.91	.90
Modelling teaching strategies	***4,*** *37*, ***39, 48,*** **54,** ***56***	6	.81	.76	.83
Feedback	*5*, ***8***, *15*, **17**, ***21***, 46, *47*, ***50***	8	.74	.75	.81
ICT	**10, 13,** 14, **16,** 18, 30, **31**	7	.95	-	.87

Note. The original items from Hudson used in our model are in italics; items included in CFA are in bold. All constructs used in the present study proved to be moderate to highly reliable, with Cronbach's alpha > .80.

Results

In the first step, measures of central tendencies were calculated. This was followed by PCA with Direct Oblimin rotation. Means, Standard deviations, Modes, Medians and reported, as well as factor loadings, Eigenvalues, and the percentage of explained variance, are provided in Tables 2, 3, 4, 5, 6, and 7. Descriptive statistics for experiences with mentors on all items are presented in Table 3. Each dimension was initially tested by the inclusion of all items in the PCA. Based on the exclusion of items that did not meet thresholds, we were left with 36 items in six constructs, as presented in Table 3. The order of the constructs based on group means is as follows: Feedback (M = 4.45; SD = .15), Personal attributes (M = 4.34; SD = .22), Modelling (M = 3.88; SD = .45), System requirements (M = 3.76; SD = .29), Pedagogical knowledge (M = 3.72; SD = .26) and ICT (M = 2.73; SD = .11).

Fit indices were calculated both for a sample with random missing data and when all respondents with missing variables were deleted (Kline, 2011). Among the offered Fit Measures and Indices for CFA (Byrne, 2016), our choices were as follows: (1) the likelihood-ratio Chi-square index (basic absolute fit measure), and the Chi-square to degrees of freedom ratio (CMIDF or $\chi 2/df <$ 3); (2) Comparative Fit Index (CFI), with values closer to one indicating a better fitting model; (3) Standardised Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA), with an acceptable range of .08 or less.

For improvement of the unidimensional models, two procedures as proposed by Byrne (2016), were examined: (1) inspection of the standardised residual covariance matrix and (2) application of the modification indices. Based on the examination of values, error terms were connected within some of the constructs.

Feedback

Two components were extracted for feedback (see Table 2). The first comprises statements on immediate feedback and the second on delayed, written feedback. Only the first component was considered for CFA analysis, because two items forming the second component were also cross-loaded on the first component. The outcomes of the one-factor model test of the first component (with excluded FB5) resulted in excellent goodness-of-fit indices ($\chi 2/df$ = 1.419; CFI = .987; RMSEA = .065; SRMR = .032).

Table 2

Measures of central tendencies and factor loadings for Feedback dimension of experiences with mentors (N = 105). Responses to the question: How often did your mentor…?

Feedback (FB-1) – Cronbach Alpha = .81, Variance = 42.77, Eigenvalue = 3.42	**Missing**	***M***	***Med***	***Mod***	***SD***	**PC1**	**Reference**
FB17 ... observe you in class when you were teaching?	1	4.58	5	5	0.69	.82	Hudson et al., 2005
FB50 ... provide you with oral feedback on your teaching technique?	0	4.56	5	5	0.77	.81	Hudson et al., 2005
FB8 ... observe you teach before providing feedback?	3	4.41	5	5	0.85	.82	Hudson et al., 2005
FB21 ... discuss the evaluation (assessment) of your teaching?	0	4.26	5	5	0.92	.77	Hudson et al., 2005
FB5 ... review your lesson plans (before teaching)?	0	4.20	5	5	1.00		Hudson et al., 2005
FB15 ... clearly articulate (indicate) what you need to do to improve your teaching?	1	3.83	4	4	1.00	.63	Hudson et al., 2005
Feedback (FB-2) – Cronbach Alpha = .61, Variance = 17.92, Eigenvalue = 1.43	**Missing**	***M***	***Med***	***Mod***	***SD***	**PC2**	**Reference**
FB47 ... provide you with written feedback on your teaching lessons?	4	3.36	4	5	1.47	.76	Hudson et al., 2005
FB46 ... provide electronic (by means of emailed feedback. etc.) feedback on my teaching?	7	2.37	2	1	1.45	.86	New

Personal attributes

Two principal components were extracted for personal attributes (see Table 3). According to the parallel analysis, ten items form one principal component (positive attitudes), while the second (flexibility) component could not be retained. The outcome of the one-factor model test of the first component resulted in appropriate goodness-of-fit for most indices ($\chi 2/df = 1.936$; CFI = .946; RMSEA = .101; SRMR = .051).

Table 3

Measures of central tendencies and factor loadings for the Personal Attributes dimension of experiences with mentors (N = 105). Responses to the question: How often did your mentor…?

Personal attributes (PA-1) – Cronbach Alpha = .93, Variance = 55.24%, Eigenvalue = 6.63	Missing	*M*	*Med*	*Mod*	*SD*	PC1	Reference
PA 34 … appear to be comfortable discussing teaching?	0	4.69	5	5	0.61	.76	Hudson et al., 2005
PA 11 … instil positive attitudes in you towards teaching your subject(s)?	0	4.50	5	5	0.77	.77	Hudson et al., 2005
PA 41 … make you feel more confident as a teacher?	0	4.48	5	5	0.80	.83	Hudson 2004a
PA57… instil confidence in you to teach?	0	4.44	5	5	0.83	.87	Hudson et al., 2005
PA 20 … show sympathy towards you when your teaching lesson did not play out as planned?	4	4.43	5	5	0.84	.75	New
PA 55 … show support when you were teaching your subject(s)?	0	4.31	5	5	0.86	.78	Hudson et al., 2005
PA 23 … encourage you to teach?	3	4.30	5	5	0.94	.86	Hudson et al., 2005
PA 59 … attentively listen to you on teaching matters?	0	4.22	4	5	0.96	.62	Hudson et al., 2005
PA 9 … inspire you to teach?	2	4.17	4	5	0.99	.85	New
PA 1 … address your teaching anxieties?	5	3.87	4	4	0.96	.70	Hudson 2004a
Personal attributes (PA-1) – Cronbach Alpha = .93, Variance = 55.24%, Eigenvalue = 6.63	Missing	*M*	*Med*	*Mod*	*SD*	PC2	Reference
PA 61 … allow you flexibility in planning for teaching?	0	4.53	5	5	0.75		Hudson et al., 2005
PA 32 … allow you to teach as often as you want to?	0	4.35	5	5	0.82	.92	Hudson et al., 2005

Modelling

The outcome of the one-factor model test of the modelling (see Table 4) component, with exclusion of item MOD37, resulted in excellent goodness-of-fit for most indices ($\chi 2/df = 1.174$; CFI = .995; RMSEA = .043; SRMR = .0315).

Table 4

Measures of central tendencies and factor loadings for the Modelling dimension of experiences with mentors (N= 105). Responses to the question: How often did your mentor…?

Modelling – teaching strategies (MOD) – Cronbach Alpha = .83, Variance = 52.21 Eigenvalue = 3.13	**Missing**	***M***	***Med***	***Mod***	***SD***	**PC1**	**Reference**
MOD39 ... use the professional language of the specific subject?	0	4.26	4	5	0.87	.66	Hudson et al., 2005
MOD37 ... use hands-on teaching materials?	0	4.18	4	4	0.84		Hudson et al., 2005
MOD4 ... model effective classroom management when teaching?	1	4.15	4	5	0.92	.81	Hudson 2004a
MOD48 ... display enthusiasm when teaching the subject?	2	4.10	4	5	0.96	.73	Hudson et al., 2005
MOD56 ... model different teaching strategies for teaching the subject?	1	3.75	4	3	1.07	.85	Hudson et al., 2005
MOD54 ... model (show) how to teach difficult concepts (aspects)?	5	3.15	3	3	1.12	.78	Hudson et al., 2005

System requirements

Regarding system requirements (see Table 5), two components were extracted. According to the parallel analysis, ten items form one principal component, while the second component could not be retained. The outcome of the one-factor model test of the first component, with the exclusion of item SR38, resulted in appropriate goodness-of-fit for most indices ($\chi 2/df = 3.256$; CFI = .922; RMSEA = .151; SRMR = .052).

Table 5

Measures of central tendencies and factor loadings for the System Requirements dimension of experiences with mentors (N = 105). Responses to the question: How often did your mentor…?

System requirements (SR-1) – Cronbach Alpha = .81, Variance = 42.20 Eigenvalue = 4.64	**Missing**	***M***	***Med***	***Mod***	***SD***	**PC1**	**Reference**
SR43 … explain to you how the school deals with barriers to learning among learners?	1	3.97	4	4	0.96	.61	New
SR35 … discuss what is expected (requirements) from you by the university in terms of teaching?	1	3.91	4	5	1.01	.81	New
SR12 … discuss the aims of teaching your subject?	1	3.87	4	4	0.97	.70	Hudson et al., 2005
SR36 … assist you with scheduling your lessons?	3	3.83	4	5	1.09	.83	Hudson et al., 2005
SR38 … explain what the school requires from you as a student teacher?	2	3.35	3	3	1.27		New
SR6 … discuss the school policies used for teaching?	1	3.24	3	3[a]	1.06	.71	Hudson et al., 2005
System requirements (SR-2) – Cronbach Alpha = .77, Variance = 11.41 Eigenvalue = 1.26	**Missing**	***M***	***Med***	***Mod***	***SD***	**PC2**	**Reference**
SR60 … show you an example of an annual teaching plan for the subject?	0	3.91	4	5	1.38	.66	New
SR2 … explain the school policy (code of conduct of teachers) to you?	0	3.72	4	4	1.10		New
SR52 … explain how the school promotes parental involvement in their children's education?	0	3.27	3	4	1.23		New
SR62 … explain the school's Disciplinary Code to you?	1	3.26	3	3[a]	1.40	.95	New
SR19 … explain the curriculum to you?	0	3.08	3	3[a]	1.41	.66	Hudson et al., 2005

Pedagogical knowledge

Three components were extracted related to pedagogical knowledge (see Table 6); however, only the first component could be retained after the parallel analysis. The outcome of the one-factor model test of the first component, with exclusion of items PK28 and PK51, resulted in excellent goodness-of-fit-indices ($\chi 2/df$ = 1.433; CFI = .971; RMSEA = .067; SRMR = .043).

Table 6

Measures of central tendencies and factor loadings for the Pedagogical Knowledge dimension of experiences with mentors (N = 105). Responses to the question: How often did your mentor…?

Pedagogical knowledge (PK-1) – Cronbach Alpha = .90 Variance = 48.50, Eigenvalue = 8.73	**Missing**	***M***	***Med***	***Mod***	***SD***	**PC1**	**Reference**
PK42 ... give you clear guidance for planning to teach your lessons?	2	4.09	4	5	0.95	.72	New
PK26 ... assist you in reflecting on improving your teaching practices?	1	4.07	4	4	0.90	.61	Hudson et al. 2005
PK24 ... discuss with you the (content) knowledge you need for teaching your subject(s)?	2	3.76	4	3	1.07	.68	Hudson et al. 2005
PK40 ... develop your strategies for teaching?	3	3.75	4	4	1.00	.65	Hudson et al. 2005
PK28 ... assist you in developing your teaching strategy?	1	3.70	4	4	0.99		Hudson et al. 2005
PK29 ... give clear expectations regarding the way you should teach your subject(s)	1	3.62	4	4	1.01	.72	New
PK22 ... assist you in implementing different teaching strategies?	0	3.61	4	4	1.18	.57	Hudson et al. 2005
PK51 ... discuss with you questioning skills for effective teaching?	2	3.61	4	4	1.11		Hudson et al. 2005
PK44 ... assist you with preparing your lessons?	2	3.56	4	3	1.17	.84	New
PK53 ... assist you with classroom management strategies for teaching?	1	3.47	3	3	1.06	.81	Hudson et al. 2005
PK58 ... share with you areas which he/she (mentor) finds difficult to teach?	0	3.32	3	5	1.36	.66	New
PK25 ... guide you with your lesson preparation?	0	3.30	3	3	1.24	.78	Hudson et al. 2005
Pedagogical knowledge (PK-2) – Cronbach Alpha = .62, Variance = 6.76, Eigenvalue = 1.22	**Missing**	***M***	***Med***	***Mod***	***SD***	**PC2**	**Reference**
PK27 ... reiterate the need to have well-designed activities for the learners?	0	4.00	4	4	0.87		New
PK45 ... show expertise in effectively teaching his/her subject?	4	3.90	4	4	1.03	.61	Hudson et al., 2005
PK7 ... assist you in finding teaching resources?	2	3.51	4	3	1.15	.83	New

Pedagogical knowledge (PK-3) – Cronbach Alpha = .76, Variance = 6.17, Eigenvalue = 1.11	Missing	*M*	*Med*	*Mod*	*SD*	PC3	Reference
PK33 … provide you with strategies to solve teaching problems that you encountered?	2	4.08	4	4	0.96		Hudson et al., 2005
PK3 … show content expertise?	0	3.98	4	4[a]	0.94	.71	Hudson 2004a
PK49 … show you how to assess the learners' learning effectively?	2	3.94	4	5	1.00		Hudson et al., 2005

ICT

Concerning ICT (see Table 7), only one component was extracted, showing uni-dimensionality and a high proportion of explained variance. The outcome of the one-factor model test resulted in excellent goodness-of-fit indices ($\chi 2/df = 1.513$; CFI = .989; RMSEA = .0205; SRMR = .0216).

Table 7

Measures of central tendencies and factor loadings for the ICT dimension of experiences with mentors (N = 105). Responses to the question: How often did your mentor…?

ICT – Cronbach Alpha = .95, Variance = 75.60, Eigenvalue = 5.29	Missing	*M*	*Med*	*Mod*	*SD*	PC1	Reference
ICT10 … discuss with you how to use ICT for teaching and learning in your lessons?	1	2.88	3	3	1.19	.84	New
ICT30 … display (ICT) expertise to teach the subject?	2	2.75	3	3	1.12	.91	New
ICT13 … assist you with using ICT in non-traditional (innovative) ways for teaching and learning in your lessons?	4	2.75	3	3	1.19	.86	New
ICT31 … develop your strategies for teaching with ICT?	3	2.65	3	2	1.08	.82	New
ICT16 … show you how to use ICT for teaching and learning?	2	2.63	3	3	1.20	.86	New
ICT14 … model how to use ICT for teaching and learning?	5	2.60	3	3	1.13	.89	New
ICT18 … discuss how to use ICT in non-traditional (innovative) ways for teaching and learning your lessons?	4	2.56	2	2	1.14	.90	New

The new questionnaire is presented in Appendix B.

Discussion and conclusions

Following the general aim to construct an instrument allowing assessment of feedback of the teaching practicum regardless of the study stream of the preservice teachers, the work on the task and outcomes are discussed. After reviewing the literature on mentoring in teacher education and preliminary testing of our adapted 62-item questionnaire on the population of pre-service teachers who completed their teaching practicum, it became clear that the instrument needed adaptation. Through the application of PCA, it was found that four theoretically predicted dimensions out of six were not unidimensional, and some of the items did not load exclusively on one component or above the threshold of .6, which had been set as the threshold value. After cleaning up the instrument by deleting redundant items, 36 items remained in six dimensions, five of which were from Hudson's work, and one (ICT) was added. The theoretical background and rationale for including these dimensions in an instrument are provided in the Introduction section. It should be mentioned that we changed the term 'factor' to the term 'dimension' to avoid confusion between the names of the latent variables (constructs) and the results of factorial analyses. Based on the changes to Hudson et al.'s (2005) MEPST instrument and the removal of the word 'science', the revised instrument was renamed the Mentoring for Effective Teaching Practicum Instrument (METPI). With this change, the instrument appears to have the potential to be used beyond the elementary science mentoring context. Therefore, the instrument can be used in evaluating a teaching practicum as part of different teaching programs that differ not only between universities but also among faculties within a single university. Beyond quantitative comparisons, such an instrument can be used to improve practicum at the individual levels, showing satisfactory and unsatisfactory aspects of a practicum as a sharing experience of a student and mentor.

All six constructs have Cronbach's alphas above the value of .80; three of them are equal to or higher than .90. These alphas can be considered good or even very good and show adequate reliability of the revised instrument (Field, 2013). When comparing Cronbach's alphas of the items of the original Hudson instrument, after PCA, the reliability of the newly adapted questionnaire is greater in four of the five constructs, and in one construct, the difference is negligible at the .01 level. According to the findings, Hudson's factors (dimensions in our text) can be recognised as valid organising concepts. As such, items can be adapted to different contexts, for example, asking about experiences in one particular subject or at different school levels. What is noteworthy is that the variation of the items reflects the same core idea of a dimension. Moreover,

because dimensions are entities, it would be possible to ask only for one or another dimension and omit the others.

From the results of the descriptive statistics, the highest positively reported experience is an aspect related to personal attributes, while the lowest is related to ICT. Even if descriptive values do not directly indicate the effects, it can be argued that the personal attributes of a mentor seem to be crucial for a positive experience for the mentee (See Table 3). The results show that mentees' experiences as participants were positive on all five of the six constructs: personal attributes, system requirements, pedagogical knowledge, modelling, and feedback. ICT was the only construct that did not receive the attention it could have. The implications of this finding and because of the ubiquitous use of digital technologies should be the subject of follow-up research. It is suggested that the METPI questionnaire, based on the MEPST model and tested with the EFA and CFA, can be used in follow-up studies. This questionnaire and its quality could be improved with evidence based on real data from international studies and feedback from mentors (Hudson, 2010). The other aspect that should be considered is the possible difference between the establishment of short- and long-term relationships between mentors and mentees (Kram, 1983; Kram, 1988; Lynn & Nguyen, 2020). In the context of the study, only a snapshot of relatively short-term experiences was explored, with the possibility that mentors were providing only a survival course for their mentees.

Two kinds of METPI use can be suggested. The first one is in large-scale studies as an anonymous instrument to explore and find general patterns in mentoring. The second use is as a part of the students' portfolio. In the second case, university tutors could intervene to add missing dimensions to the student's pedagogical content knowledge and identify mentors working in a 'laissez-faire' mode.

The limitations of the study are diverse. The first involves the opinions of the invisible majority, meaning those who did not respond to the questionnaire. The second is a comparative analysis of whether the instrument has adequate qualities for each subject field and the generalisability of the findings in the international arena. At this point, it is important to point out that some potentially important factors were unintentionally not considered in the study (Kline, 2011). The common method bias (Podsakoff et al., 2003; Podsakoff et al., 2012) can hamper the results of this type of study; therefore, all measures were taken to prevent it (Kline, 2011; Wolf et al., 2013). Due to the low number of respondents, some analyses were omitted. For example, PCA and CFA on the whole datasets and search for covariances between dimensions were not performed. An additional drawback of using either type of scale is that it is difficult

to infer the quality of the mentor-mentee relationship from the agreement and frequency of an incident. In both cases, we obtain information about missing parts of the practice. Therefore, we suggest that a follow-up interview be conducted to address issues if they were identified through the initial screening.

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Appendix A

Numbered items as on the questionnaire for reference purposes

Appendix B

The revised 36-statement METP Instrument

Personal attributes (PA) (10 items) Cronbach's Alpha = .93, Variance = 61.94, Eigenvalue = 6.19
PA1 ... address your teaching anxieties?
PA9 ... inspire you to teach?
PA11 ... instil positive attitudes in you towards teaching your subject(s)?
PA20 ... show sympathy towards you when your teaching lesson did not play out as planned?
PA23 ... encourage you to teach?
PA34 ... appear to be comfortable talking to about teaching?
PA41 ... make you feel more confident as a teacher?
PA55 ... show support when you were teaching your subject(s)?
PA57 ... instil confidence in you to teach?
PA59 ... attentively listen to you on teaching matters?
System requirements (SR) (5 items) Cronbach's Alpha = .81, Variance = 56.44, Eigenvalue = 2.82
SR6 ... discuss the school policies used for teaching?
SR12 ... discuss the aims of teaching your subject?
SR35 ... discuss what is expected (requirements) from you by the university in terms of teaching?
SR36 ... assist you with time-tabling your lessons?
SR43 ... explain to you how the school deals with barriers to learning among learners?
Pedagogical knowledge (PK) (8 items) Cronbach's Alpha = .90, Variance = 60.28, Eigenvalue = 4.82
PK22 ... assist you in implementing different teaching strategies?
PK24 ... discuss with you the (content) knowledge you need for teaching your subject(s)?
PK25 ... guide you with your lesson preparation?
PK26 ... assist you in reflecting on improving your teaching practices?
PK28 ... develop your strategies for teaching?
PK29 ... give clear expectations regarding the way you should teach your subject(s)?
PK42 ... give you clear guidance for planning to teach your lessons?
PK44 ... assist you with preparing your lessons?
Modelling – teaching strategies (MOD) (5 items) Cronbach's Alpha = .83, Variance = 60.35, Eigenvalue = 3.02
MOD4 ... model effective classroom management when teaching?
MOD39 ... use the professional language of the specific subject?
MOD48 ... display enthusiasm when teaching the subject?
MOD54 ... model (show) how to teach difficult concepts (aspects)?
MOD56 ... model different teaching strategies for teaching the subject?

Feedback (FB) (4 items) Cronbach's Alpha = .81, Variance = 64.31, Eigenvalue = 2.57
FB8 ... observe you teach before providing feedback?
FB17 ... observed you in class when you were teaching?
FB21 ... discuss the evaluation (assessment) of your teaching?
FB50 ... provide you with oral feedback on your teaching technique?
ICT (ICT) (4 items) Cronbach's Alpha = .87, Variance = 71.74, Eigenvalue = 2.87
ICT10 ... discuss with you how to use ICT for teaching and learning in your lessons?
ICT13 ... assist you with using ICT in non-traditional (innovative) ways for teaching and learning in your lessons?
ICT16 ... show you how to use ICT for teaching and learning?
ICT31 ... develop your strategies for teaching with ICT?

Biographical note

Mateja Ploj Virtič, PhD, is an associate professor in the field of didactics of technics and technology at the Faculty of Natural Science and Mathematics, University of Maribor, Slovenia. She works in the area of Teacher education, specifically in the engineering and technology field, therefore, she prepares preservice teachers of engineering and technology to teach in secondary schools. Her research interests are teaching strategies in science and technology, the role of a teacher in contemporary education, distance education, and mentoring preservice teachers.

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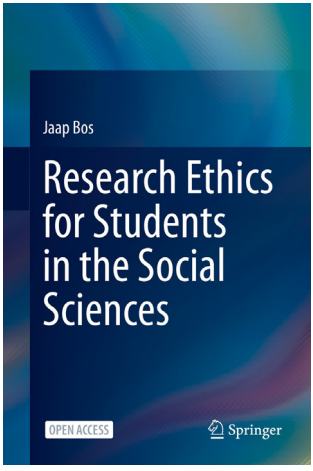
Jaap Bos, with contributions by Ruud Abma, Friso Hoeneveld, Dorota Lepianka, Toon van Meijl, and Naomi van Steenbergen, *Research Ethics for Students in the Social Sciences*, Springer, 2020; XVI, 287 pp.: ISBN: 978-3-030-48415-6. https://doi.org/10.1007/978-3-030-48415-6

Reviewed by Bert Theunissen[1]



This book is the first guide to research ethics for students in the social sciences, and it is laudably published as open access. It aims to provide students with an overview of the basic notions of research ethics and to illustrate these with concrete examples of ethical issues that students may encounter in practice. The ten chapters are structured similarly, first identifying the issue at hand, then outlining different perspectives and approaches to it, and finally offering concrete examples for reflection. Chapters 2 and 3 provide short introductions to the nature of science and research ethics; Chapters 4 to 6 cover the basic 'sins': fabrication, falsification and plagiarism (FFP); Chapters 7 and 8 discuss confidentiality and conflicts of interest; Chapter 9 zooms out to the science system and university politics; and finally Chapter 10 provides a step-by-step guide through the process of ethical research design in light of current codes and regulations. The online version of the book offers additional material in the form of video clips that briefly explain the chapters' contents.

The authors hope their book will empower students to effectively deal with issues of research ethics and integrity in practice. They assert that their approach is not theory-driven but practice-based, meaning that the explanation of each chapter's subject matter is mostly based on concrete examples taken from real cases. Moreover, the authors consistently invite the reader to reflect on these cases by offering questions for discussion. As far as student empowerment entails providing knowledge and raising awareness, the authors definitely

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contribute to it. The book's greatest strength is that it makes clear the indispensability and centrality of ethical reflection in the social sciences. Research ethics is not about ticking boxes on preprinted forms; rather, it is part and parcel of the research process as a whole and defines and determines to a considerable extent what can be researched and how. The authors provide a wealth of real-life cases to illustrate the complexities of research and the dilemmas that confront researchers. They do not shy away from pointing out the manifold ways in which researchers have gone wrong, either in the distant or the recent past. Breaches of integrity, from p-hacking and spurious data handling to unethical experimentation and ghostwriting, are mentioned, but the authors also address the systemic factors at work at the university and government level that create an unhealthy research environment in which researchers' moral standards may be challenged by the pressure exerted by the relentless struggle for life in academia. Students cannot fail to come away with a notion of research ethics as an absolute requirement for trustworthy and ethical social science research.

The authors stop short of declaring their field to be in a 'crisis'. For instance, is there really a replication crisis in the social sciences? Perhaps there is, perhaps there is not, they intimate, adding that getting reliable research outcomes in heavily context-sensitive experimental settings just happens to be extremely difficult. Thus, the authors walk to the edge of the cliff but do not look down into the abyss of questioning the hypothesis testing method in the social sciences *per se*. Here and elsewhere, they have decided against delving into philosophical issues concerning the nature of (social) science and its methods. Their cursory definitions of science (gathering objective knowledge about the world) and of the scientific method (mainly null hypothesis testing) also suggest this. This decision is understandable because this is a book for students that aims to be practical.

I find another aspect of the authors' approach more debatable. Ethics and integrity issues are categorised in their book as either FFP, which amounts to clearcut misconduct, or Questionable Research Practices (QRP), indicating practices that may not be fraudulent but are not quite right and must be avoided. While this division is still common practice, the QRP category has come under considerable scrutiny in recent years. The authors seem to acknowledge this by noting that, in between ethically responsible research and FFP, there is a rather broad grey zone in which it is less clear what is right or wrong. By adopting the acronym QRP, however, they still treat the grey zone as contiguous with the negative pole of FFP and as clearly distinct from the positive pole of ethically responsible research. This ignores the nuances in how issues in the grey zone are increasingly being perceived. The point is that it is simply not clear, in

a great many cases, what the best or the correct way to proceed might be; in the grey zone, the researcher is confronted with veritable dilemmas that cannot be solved by rule-following or adhering to principles. The denotation 'Questionable' misses the point because what is at stake here is not how to avoid breaches of integrity but how to do things right.

This brings me to a point which I think the authors will agree with but which might have been addressed more explicitly in the book. The authors state that their book is just a starting point for those who want to familiarise themselves with research ethics. Furthermore, they emphasise that theirs is not a 'how to' book. I fully agree, but what are students supposed to think about what follows next? The authors remain largely silent on this point. While they do provide questions for reflection about the cases they present, they do not explain how to reflect on ethical issues or how to arrive at acceptable solutions. I take it, however, that they agree with me that research ethics cannot be learned from books. It takes ethics and integrity education to enable students to implement what they have learned from their reading. There are many ways to design such education, but in my view, indispensable elements are discussions with peers and experts (and, ideally, supervisors) and some basic instructions about ethical deliberation. I would add that the focus should not be on avoiding grave misconduct (FFP), which is relatively rare, but on the much more common issues in the grey zone. I would also venture that a positive approach works best, focusing on how to do it right and that virtue ethics may be a helpful starting point for such an approach. Whatever approach is believed to be best, learning to become an ethically responsible researcher is learning by doing, and it requires several practice hours. It would have been helpful if the authors had pointed this out more explicitly, if only to prevent students (and teachers!) from thinking that, after having absorbed this book, they are fully prepared to tackle integrity issues on their own.

I recommend this book as a helpful guide to both learning and teaching the basics of research ethics. Students will experience that research ethics is not only essential but also highly interesting as it is at the heart of their discipline, and teachers will find ample, well-structured information and materials for their classes here. The writing may not be impeccable, but the spirited and engaging style adds much to making the subject interesting. I congratulate the authors for producing a good read on research ethics.

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Nataša Hoić-Božić and Martina Holenko Dlab, *Uvod u e-učenje: obrazovni izazovi digitalnog doba*, Sveučilište u Rijeci, Odjel za informatiku, 2021; 215 pp.: ISBN 978-953-7720-53-7

Reviewed by Alenka Žerovnik[1]

> "If you're successful in delivering e-Learning, the learner won't even be (nor should they feel the need to be) focused on the 'e' part, they'll just be focused on how awesome the 'Learning' part is."
>
> Keith Phillips

The book *Uvod u e-učenje: obrazovni izazovi digitalnog doba* (Introduction to e-Learning: The Pedagogical Challenges of the Digital Age) offers a comprehensive and systematic examination of the topic of e-learning. With a scientific and interdisciplinary approach, the authors provide a comprehensive overview of the various facets of e-learning. The book covers a wide range of topics related to e-learning, including asynchronous and synchronous forms of e-learning, the advantages and obstacles associated with this educational approach, aspects of motivation and engagement, the design and promotion of e-learning activities, the application of instructional design principles to the development of e-courses, collaborative projects, and assessment and evaluation in the context of e-learning. In addition, the authors address new trends and innovative practices in e-learning, such as MOOCs, gamification and virtual reality. The authors use a systematic and practical methodology and support their arguments with numerous case studies, examples and best practices derived from their own experience and that of other experts in the field. A notable strength of the book is its recognition of learner-centred design as a central factor in increasing engagement and motivation in e-learning environments. The authors highlight the importance of collaboration, interaction

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and feedback, while emphasising the need for flexibility and adaptability to meet different learning needs and preferences. The book's interdisciplinary approach is a notable feature, drawing on research and insights from a range of disciplines including education, psychology, technology, computer science and instructional design. The authors skilfully link theoretical foundations with practical applications so that the reader can develop a comprehensive understanding of e-learning and its potential impact on teaching and learning processes. In addition, the book includes an extensive reference list that is a valuable resource for researchers and practitioners in the field of e-learning.

The emergence of e-learning has profoundly transformed the educational landscape in recent times and has generated a great deal of interest in exploring the benefits and challenges of this pedagogical approach. A comprehensive review of the relevant literature highlights the many benefits of e-learning, including its inherent flexibility, facilitation of enhanced communication and collaboration, and use of interactive and multimedia materials. However, it is essential to also address the challenges associated with it. These challenges include maintaining student motivation and engagement, providing effective guidance and support to teachers, and ensuring the quality of e-learning resources. While e-learning as a whole offers a multitude of opportunities for education, it is important to recognise the limitations that exist and the potential drawbacks that need to be addressed. As educators integrate e-learning into their teaching practice, they should seek ongoing professional development and support to ensure its effectiveness. In addition, further research is essential to assess the long-term outcomes of e-learning and its impact on student learning. While e-learning is a promising educational tool, it should be used judiciously and should not be seen as a complete replacement for traditional teaching methods.

The second chapter of the book is a pedagogical resource dealing with the multiple educational and psychological dimensions of e-learning. Based on extensive research and enriched by the perspectives of experienced practitioners, the various teaching paradigms and learning outcomes in the e-learning milieu are explored in depth. Although e-learning has many positive attributes, it is not without challenges that require special attention. These challenges include aspects such as content presentation, time management and learner engagement. The authors of the book provide valuable insights into how to overcome these challenges and offer pragmatic guidance to teachers who want to create a more effective e-learning environment. In terms of critical evaluation, the second chapter provides a comprehensive overview of the key issues and debates surrounding e-learning, while presenting a range of practical strategies

that teachers can incorporate into their teaching practice. The chapter proves to be an invaluable resource for educators who wish to explore the pedagogical and psychological dimensions of e-learning. It provides an insightful and practical compendium that highlights the challenges and opportunities of this rapidly evolving field.

Blended learning, a hybrid learning approach that combines both traditional face-to-face (f2f) and online learning activities and online learning, is comprehensively described. The authors explain the different types and modes of blended learning, including the sequential model, the simultaneous model and the flipped classroom model. Chapter four introduces e-learning and the different forms of e-learning: distance learning courses, courses via radio or TV, videoconferencing and courses that use ICT and the Internet. The authors also provide an overview of the benefits and challenges of implementing blended learning and online learning in the traditional education system. The content of these two chapters is informative and relevant for educators who want to incorporate technology into their teaching methods. However, the authors' discussion of assessment in blended learning is limited and this chapter would benefit from a more in-depth exploration of the different assessment methods available to teachers. In addition, the authors do not provide detailed examples of how blended learning has been successfully implemented in practice. The inclusion of more case studies and practical examples would make this chapter of the book more interesting and understandable for educators. Despite these shortcomings, the content of the chapters should be of interest to educators who want to improve their teaching strategies using technology.

The use of Massive Open Online Courses (MOOCs) as a means of disseminating education to a large participant base is steadily increasing. The authors of the book describe the challenges associated with creating MOOC content, which include selecting respected lecturers as mentors; preparing, recording and broadcasting lectures; developing assessments and assignments; and providing supplementary materials. Furthermore, this chapter acknowledges that not all materials in MOOC courses can be classified as open educational resources due to possible copyright restrictions or time limitations. One of the biggest hurdles for MOOCs is undoubtedly their assessment. Multiple-choice questions provide automatic assessment and feedback, but their effectiveness in assessing higher-order cognitive skills such as problem solving and creative thinking remains limited. In the MOOC milieu, it is emphasised that the successful completion of a course does not guarantee the acquisition of ECTS (European Credit Transfer and Accumulation System) credits, as only a limited number of institutions accept MOOC certificates as a substitute for

credits earned in their own courses. This discrepancy poses a major challenge for evaluating the effectiveness of MOOCs as a learning or accreditation medium. While the chapter provides an overview of the existing literature, the presentation of future research perspectives is somewhat limited. Nevertheless, it encourages reflection on the role and accountability of MOOCs and the methods used in their evaluation. To further enhance the chapter, the authors could suggest possible avenues for future research, such as conducting a comparative study that includes both MOOCs and traditional courses, or exploring alternative assessment strategies that have emerged as MOOC offerings have evolved. Given the pervasive interest in MOOCs, readers of educational literature would likely welcome additional suggestions and directions for future research efforts.

The next section comprehensively explores the application of digital technology in education and identifies the benefits it offers. The authors emphasise the importance of interactive multimedia textbooks and web-based training in modern education. The chapter describes the different types of interactive content and multimedia elements that digital textbooks should provide to increase engagement and retention. The review is critical of typical digital textbooks, which the authors believe behave more like traditional textbooks and offer little beyond that. They also question the effectiveness of passive computer-assisted instruction (CAI) and suggest that approaches that allow the system to adapt to student characteristics are more effective. The authors briefly introduce Intelligent Tutoring Systems (ITS), which use artificial intelligence to model learning content and individualise instruction, but their practical application in education has been limited due to the complex and costly development process. Intelligent tutoring systems, which are currently developing very quickly, have the advantage of adapting individually to the pace and learning abilities of each student. Hypertext and hypermedia systems allow teachers to create interactive learning materials that students can explore according to their abilities and interests. At the same time, students can create their own materials and link them to teacher-created content, which is the highest level of interactivity. Educational hypermedia systems take a constructivist approach to learning, where learners actively construct knowledge based on their prior understanding and dynamic interaction with knowledge sources. This leads to higher intellectual engagement, better understanding and improved cognitive skills such as the organisation of information and logical thinking. The authors conclude that web-based training (WBT) is currently the most popular method of distance learning and has many advantages over traditional methods, such as higher student engagement, the ability to incorporate multimedia elements and the ability to customise the learning pace.

The authors go on to give a comprehensive overview of e-learning systems, activities and management. They present different types of e-learning tools, ranging from online courses and open educational resources to multimedia and interactive learning applications. There is a presentation of the Moodle platform, which is a widely used example of an e-learning system for organising and managing online courses. In addition, the authors discuss various activities available on e-learning platforms, such as forums, quizzes, workshops and wikis. The authors also provide insight into the importance of organising the content of e-learning courses and incorporating multimedia elements into the material. The chapters provide an informative guide to e-learning, consisting of a technical introduction to various systems currently used in education. However, the suggestions for the implementation of the tools in education are rather simplified and do not elaborate on the advantages and disadvantages of using e-learning systems. It would therefore be helpful if the authors highlighted the impact of e-learning on learners and teachers.

Chapters nine to eleven serve the purpose of educating educators about the importance of evaluation in the context of e-learning, considering both formative and summative approaches. They also provide educators with comprehensive guidelines and methods for conducting evaluations effectively. The chapters include illustrative examples of online tests, peer review tasks, and criteria to promote student motivation and engagement. Taken as a whole, the chapters are an invaluable source of information, providing accurate insights into the various facets of e-learning evaluation. They cover a wide range of topics, from assessment goals, methods and tools to strategies for constructive feedback that supports students' continued learning and growth. In addition, they consider the central role of factors such as students' cultural and linguistic backgrounds and the impact of e-learning technologies on testing and feedback mechanisms. It would, however, have been beneficial if the challenges and ethical considerations surrounding the assessment of e-learning, particularly in the digital age, had been explored in more depth.

The last two chapters of the book provide a comprehensive guide to designing and creating effective and engaging e-learning materials. The chapters cover the various stages of e-course development, including audience analysis, defining learning objectives, selecting teaching strategies and assessment methods, creating multimedia content, and testing the final product. The authors describe a systematic approach to the creation of online or blended e-courses or teaching materials known as instructional design, with the ADDIE model (Analyse, Design, Develop, Implement, Evaluate), which is one of the simpler and most popular models. They emphasise the importance of Game-Based

Learning (GBL) as an interdisciplinary field that utilises educational games to enhance learning outcomes, especially digital games on computers and mobile devices. Distinct from gamification, GBL aims to increase student motivation, efficiency and engagement, while emerging technologies such as augmented reality (AR) and virtual reality (VR) show potential for the education sector. The chapters therefore provide practical tips and strategies for creating high-quality e-courses that promote learner engagement and motivation and increase learning success. The use of multimedia content, interactivity and formative assessments is particularly emphasised to keep learners engaged and motivated throughout the e-course.

In summary, *Uvod u e-učenje: obrazovni izazovi digitalnog doba* is an invaluable resource for anyone interested in e-learning, as it provides a comprehensive and practical overview of the field. By focusing on real-world examples and practical applications, the book is aimed at a wide audience, from students to experienced practitioners, while also serving as a valuable reference tool for researchers.

> "You can't teach people everything they need to know. The best you can do is position them where they can find what they need to know when they need to know it."
>
> Seymour Papert

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