




Transition from Academic Integrity to Research Integrity: The Use of Checklists in the Supervision of Master and Doctoral Students

Veronika Krásničan¹ · Inga Gaižauskaitė² · William Bülow³ · Dita Henek Dlabolova⁴ · Sonja Bjelobaba³ 

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Abstract

Given the prevalence of misconduct in research and among students in higher education, there is a need to create solutions for how best to prevent such behaviour in academia. This paper proceeds on the assumption that one way forward is to prepare students in higher education at an early stage and to encourage a smoother transition from academic integrity to research integrity by incorporating academic integrity training as an ongoing part of the curriculum. To this end, this paper presents three checklists developed as part of the Erasmus+ Strategic Partnership project *Bridging Integrity in Higher Education, Business and Society* (BRIDGE, 2020-1-SE01-KA203-077973). The aim of the checklists is to help students and their supervisors to bridge academic integrity and research integrity in research training. The checklists target master students, doctoral students, and their supervisors. This paper presents the theoretical background of the checklists, how they were developed, their content, and how they may be used in supervising thesis/dissertation work to promote a transition from academic integrity to research integrity.

Keywords Academic integrity · Checklists · Research Integrity · Master students · Doctoral students · Supervision

✉ Sonja Bjelobaba
sonja.bjelobaba@crb.uu.se

Veronika Krásničan
veronika.kralikova@mendelu.cz

Inga Gaižauskaitė
inga.gaižauskaite@lsta.lt

William Bülow
william.bulow@crb.uu.se

Dita Henek Dlabolova
dita.dlabolova@academicintegrity.eu

¹ Mendel University, Brno, Czech Republic

² Lithuanian Centre for Social Sciences, Vilnius, Lithuania

³ Uppsala University, Uppsala, Sweden

⁴ European Network for Academic Integrity, Brno, Czech Republic

Introduction

The importance of maintaining ethics and integrity in research is a growing concern in the research community and in higher education (Armond et al., 2021; Bonn et al., 2022; Fanelli, 2009; Helgesson & Bülow, 2023; Horbach & Halfman, 2017; Tauginienė et al., 2019). This is partly due to the prevalence of scientific misconduct and other questionable research practices, which all risk undermining public trust in science and research. For example, based on a widely cited meta-analysis of survey data, Daniele Fanelli (2009) concluded that about 2% of scientists admitted to having at least once fabricated, falsified, or modified data or results, whereas 33.7% admitted to other questionable research practices. In a survey study of recently graduated doctoral students in Medicine in Norway, “13% of PhDs reported that they knew of people in their immediate research environment who had committed serious forms of scientific dishonesty” (Hoffman & Holm, 2019, p.1). The same study reported that 1.4% of recent PhDs admitted to scientific dishonesty themselves, whereas 3% said that they had experienced undue pressure to commit serious forms of dishonesty in their research. Among students, outsourcing academic work to a third party using contract cheating (Clarke & Lancaster, 2006; Lancaster & Clarke, 2016) is yet another type of misconduct: a systematic review of 65 studies of self-reported contract cheating noted a historical average of 3.52% of students committing such cheating, with a sharp increase to 15.7% in 2014 (Newton, 2018). In addition, such outsourcing tends to repeat itself: of those who have engaged in contract cheating, 62.5% were repeat offenders (Curtis & Clare, 2017).

Even if there is no simple answer to the question of how best to prevent these and other types of misconduct in research and higher education, one way forward is to prepare students in higher education at an early stage and to encourage a smoother transition from academic integrity to research integrity by incorporating academic integrity training as an ongoing part of the curriculum (Balachandran Naira & Ascani, 2022; Bjelobaba, 2020). Since students are potentially future researchers, it is necessary to develop their attitudes, knowledge, and skills in line with responsible conduct of research, as well as their ability to deal with situations of unacceptable research practices (Gladwin, 2018). It has also been recognized that, next to formal education and training, students observe and learn from the behaviour of others in academia (e.g., researchers and supervisors) (Gladwin, 2018; Lofström, 2012; Rissanen & Lofström, 2014); therefore, role modelling and mentoring are inherent parts of teaching and learning about research integrity and research ethics (Holbrook et al., 2017; Hyytinen & Lofström, 2017; Satalkar & Shaw, 2019).

In line with these observations, we have developed three checklists that can be used to ensure that students uphold the appropriate research norms and values as they conduct their thesis/dissertation¹ work, under the guidance and mentorship of their supervisors.² These checklists target master students, doctoral students, and supervisors, respectively, and provide guidance on how to act in order to maintain integrity in their work, highlighting the importance of, for example, proper citations and references, handling of research data, respect for research participants, and meeting institutional requirements. In this paper,

¹ We use “thesis/dissertation work” to encompass both the master and doctoral levels (we recognise possible differences in terms across countries or fields), treating thesis/dissertation work as a process rather than narrowing it down to thesis/dissertation document preparation.

² The checklists can be found here: <https://www.academicintegrity.eu/wp/bridge-checklists/>

we present these checklists, their development, and how to use them to support thesis/dissertation work supervision at both the master and doctoral levels.

In what follows, we begin with theoretical background on the tasks of supervisors and of master/doctoral students (“[The Tasks of the Supervisor and of the Master/Doctoral Student](#)” section). The aim of this subsection is to place the checklists within the context of research on higher education. We then present the motivation for developing the checklists, i.e., the need to bridge academic integrity and research integrity in the early stages of student training, and describe how the checklists have been developed (“[Why and how the Checklists were Developed](#)” section). In “[The Content of the Checklists](#)” section, we present the content of the checklists and in “[How to Use the Checklists in Thesis/Dissertation Work Supervision](#)” section how we envision their use in thesis/dissertation supervision as a way of enculturating students into research practice based on responsibility and ethical values. The paper ends with a conclusion section (“[Conclusion](#)” section).

The Tasks of the Supervisor and of the Master/Doctoral Student

Previous research has shown that it is important that supervisors and students have similar expectations as to the purpose, responsibilities, and requirements of the supervision (Pizzolato et al., 2022; Pyhältö et al., 2015). Supervisors can have a major impact on the ethical development of the supervisee both positively and negatively (Bird, 2001) as they function as role models of responsible research practice and collaborative working (Brown & Treviño, 2014; Embassy Editorial Team et al., 2021). It has also been observed that supervision is a key area for developing students and socializing them into the research community. As Löffström and Pyhältö (2020) put it, “the members of the scholarly community, including supervisors in particular, convey images of what it means to be an academic, what are the explicit and implicit standards and practices as well as accepted behaviours in the scholarly community” (p. 536). From a research ethics perspective, supervision is perhaps one of the main social areas in which the importance of good research practice and responsible research conduct can be emphasized. It is also clear that supervisors have an important ethical responsibility to promote a sense of responsibility and integrity among their students. To achieve a culture of integrity, it is important that supervisors obtain guidance on supervision (Mejlgaard et al., 2020).

Lee (2008) proposed a framework for research supervision concepts, identifying five main approaches to supervision: functional, enculturation, critical thinking, emancipation, and developing a high-quality relationship. Although checklists can be seen as part of the functional approach to supervision, in which the focus is on project management and on advancing the emancipation process by highlighting student responsibilities, we also see them as a way to enable the enculturation of students into becoming members of the academic community, as they enhance the inculcation of the ethics aspect of the research process. While acculturation describes a process that occurs when different cultures interact, the concept of enculturation, first coined by Herskovits (1948), is used in anthropology to describe the way an individual acquires values, attitudes, norms, and behaviours within her or his own culture. The main aim of enculturation is cultural maintenance (Kim et al., 2009) and the end result is an individual who has acquired the values shared within their culture (Grusec & Hastings, 2014, p. 525). In academia, the enculturation process can help spread a culture of responsibility and integrity based on values of academic ethics and integrity.

Why and How the Checklists were Developed

Bridging Academic Integrity and Research integrity

The three checklists that we present in this paper have been developed as an output of the Erasmus+ Strategic Partnership project *Bridging Integrity in Higher Education, Business and Society* (BRIDGE, 2020-1-SE01-KA203-077973). Recognizing that academic integrity, research integrity, integrity in business, and integrity in society are widely treated as separate fields, the motivation for this project is the need to create bridges between them in order to achieve a broader understanding of interrelated aspects of integrity among these fields. The idea behind the checklists, then, is to assist both master and doctoral students and supervisors and to facilitate the transition from academic integrity to research integrity. It is important here to recognize that although these are indeed overlapping fields, they are not interchangeable. While the term “academic integrity” incorporates “compliance with ethical and professional principles, standards, practices and consistent system of values, that serves as guidance for making decisions and taking actions in education, research and scholarship” (Tauginienė et al., 2018), the complementary terms “research integrity” and “research ethics” focus on the ethical aspects of research as well as the integrity of researchers, research, and research-related institutions and systems (Helgesson & Bülow, 2023; Horbach & Halffman, 2017; Shaw, 2019; Vie, 2022).

As part of the BRIDGE project, existing laws and regulations, policy documents, and guidelines in several countries (i.e., Sweden, Lithuania, North Macedonia, Czechia, and Ukraine) were reviewed, with the aim of exploring the connection between academic integrity and research integrity. The review took the form of desk research and focused on how academic integrity and research integrity, respectively, are defined in the different countries and on the types of measures used to promote integrity. The results were presented at the *European Conference on Academic Integrity and Plagiarism*, 9–11 June 2021. While there are some noteworthy differences between the different examined countries, for example, in terms of definitions of academic integrity, the review suggests that there is a need to bridge academic integrity and research integrity in the early stages of research training. Regarding students, the focus is commonly on academic integrity (e.g., practices of ethical academic writing, preventing plagiarism and cheating, study behaviour, and values), whereas research integrity and ethics are confined to researchers and research conduct at more advanced stages of the academic (i.e., research) career (e.g., authorship, intellectual property, data management, and preventing research misconduct). In addition, academic integrity training is often given at the beginning of the study programme, while research ethics and integrity training target early-career researchers, leaving an educational gap between those two groups. However, students do engage in research, most obviously during their thesis/dissertation work, so aspects of both academic integrity and research integrity should preferably be combined in student training as early as possible. This is evident at both the master and doctoral levels.³

³ We acknowledge that bachelor-level students can also engage in research practices as a part of their final theses. Although the BRIDGE project focuses on higher levels of education where research generally becomes a required element of student work, we believe that some segments of the checklist could be useful and easily adaptable for those preparing or supervising bachelor theses as well. However, our primary target groups are master- and doctoral-level students and their supervisors.

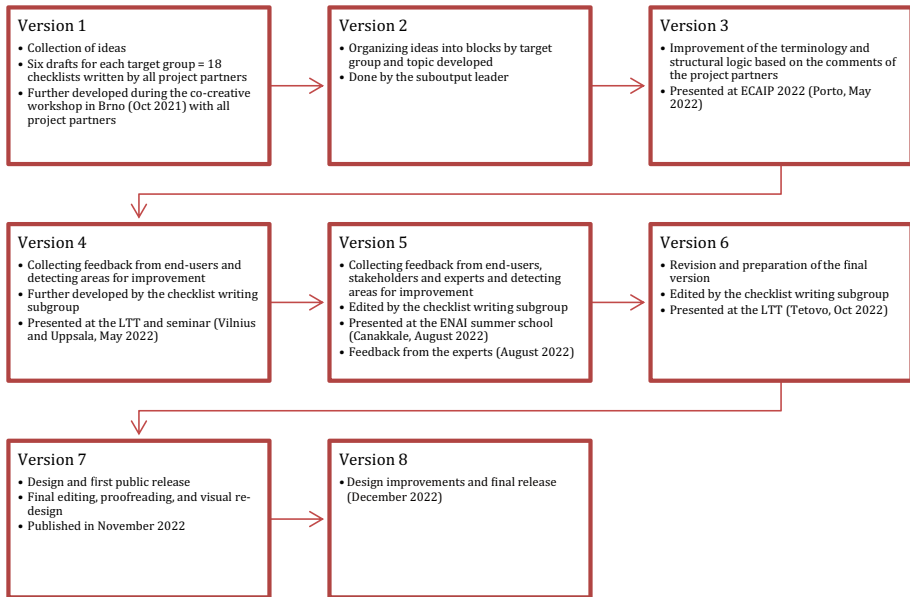


Fig. 1 The process of development of the checklists

The Development of the Checklists

Creating the checklists themselves was a co-creative, multistep, and iterative process that included stakeholders from different parts of Europe and, as the checklists were presented at various international conferences and the ENAI summer school, even included stakeholders outside Europe. The checklists have undergone several transformations at different stages of the process, evolving through eight different versions before attaining their final form (see Fig. 1).

In early fall of 2021, each of the project partners involved in the BRIDGE project was asked to create drafts of the checklists independently of the others based on their experience of thesis/dissertation work supervision and academic integrity teaching, their experience as former students, and other relevant experience, focusing on the issues they found most important. The project partners come from different countries and academic and scientific fields, including various disciplines within the humanities, the social sciences, engineering, and technology. This diversity constituted an initial advantage, as it helped foster a more general view of thesis/dissertation work preparation and supervision. Although the initial step towards creating the checklist drafts was quite broad, it gave the individual partners of the project enough latitude to design not only the content but also the structure of the checklists based on their own ideas and experience. Each of the project partners submitted initial proposals for the content of each of the target group checklists. The proposals differed in many ways, but also overlapped in content. Based on these drafts, the first version of the checklist for each target group was created, containing all the ideas collected in the previous step. At this stage, the ideas were not evaluated; rather, a list of items that appeared in the proposed checklists was compiled and converted into a uniform form.

The work on this first extensive version continued at a project meeting in Brno in October 2021. The first version was made available to the partners in advance and discussed at

the meeting point by point. Further revision and grouping of individual points into logical blocks led to the second version of the checklists.

Version 2 went through five rounds of feedback from project partners. After the checklists were cleaned and organized into blocks, the focus shifted to the choice of terminology and creating a logical line following the thesis/dissertation work preparation process of the students as well as the supervisors' tasks in their supervision process. Other ideas were constantly added and existing ones were modified when needed. To make the checklists available to anybody, it was decided to create checklists not only in printable PDF form but also in a "smart version" with pop-up windows explaining individual concepts, and to provide definitions and references. Space for additional notes was provided as well. The editing was done online in a shared Excel file, commented on by the project partners, and finalized by the first author of this paper.

This resulted in version 3, which was graphically processed into the first PDF form, in order to get feedback from people outside the project team. The first public presentation of the checklists to an international group of academic integrity experts took place in a workshop at the *European Conference on Academic Integrity and Plagiarism* in Porto in May 2022. After presenting the aim and methodology of the checklist development, the workshop participants were divided into groups according to the target stakeholder groups of the checklists. Each group received the targeted version of the checklists, read it, and was asked to discuss the content of the checklists and provide comments, ideas, concerns, and any other feedback via Padlet (for the online participants), in a discussion with a BRIDGE project representative, or directly on the printed checklist sheet (for physically present participants). This workshop exercise with the early-stage version of the checklists proved to be useful in at least two regards: one, the workshop participants unanimously agreed that the proposed checklists were greatly needed and would be very useful; two, that further work was needed to make the content applicable to as wide an audience as possible and that the language used should have positive, encouraging connotations rather than accusatory ones. The general reactions and detailed feedback in the Porto workshop allowed us to detect the main areas for improving the checklists from the perspective of their potential end-users.

After the conference, a subgroup of partners (i.e., the authors of this article) was formed within the project to refine the drafts and prepare version 4 of the checklists. Version 4 was presented to checklist stakeholders – master students, doctoral students, and supervisors – at the Learning, Teaching and Training (LTT) event in Vilnius, Lithuania, 17–19 May 2022. Like the workshop participants in Porto, the LTT participants provided valuable ideas for further improving the checklists and confirmed the usefulness of such a tool. Among other things, students provided feedback that a "smart" version of the checklists with an explanation of the concepts would enhance the understandability of the checklists, while the supervisors drew our attention to the directive tone of some points as well as inappropriate wording that could not be verified and subsequently marked as fulfilled. Supervisors also affirmed that the responsibility for guiding students and providing them with academic integrity knowledge and skills should not be placed only on supervisors; rather, it is a shared responsibility and task of the community of a higher education institution. It should include the academic integrity and research ethics training of students prior to their thesis/dissertation work, the presence and availability of institutional policy documents, and the availability of resources and assistance (e.g., librarians and academic writing units). The checklists should therefore communicate that, whenever reasonable or applicable, the supervisors should guide students to seek such assistance or use available resources. Further feedback on this version was obtained at a seminar with researchers at the Centre for Research Ethics & Bioethics at Uppsala University in May 2022. This

seminar identified a need to further clarify the roles of the different stakeholders (the student's and supervisor's obligations, respectively) in the thesis/dissertation writing process for some specific items in the checklists. Feedback from these two events formed the basis for further revision of the checklist content.

Version 5 was edited internally within the project team in the summer of 2022, and presented to students and supervisors at the ENAI PhD Summer School in August 2022, in Çanakkale, Turkey. These participants provided further input on content refinement in a discussion with a BRIDGE project representative or directly on the printed checklist sheet. The ENAI PhD Summer School was a very multicultural event with participants from various parts of the world – doctoral students from ten countries and teachers from seven – which enabled us to benefit from a global perspective on the checklists. The comments primarily focused on linguistic features (e.g., needed rewording), graphic design, and adding clarification to the items where needed. The feedback also highlighted the need to direct the stakeholders to where they could get advice if some items were not fulfilled.

In addition, 14 academic and research integrity experts from different parts of the world were invited to provide feedback on possible improvements. The experts were asked to share their feedback using a Padlet with uploaded checklists. Their comments mainly consisted of suggestions on rephrasing or changed wording.

After implementing the comments, the new version of the checklists (version 6) was presented to the target groups at the LTT event in October 2022 in Tetovo, North Macedonia. The participants provided additional feedback on the content and visual form of the checklists; for example, they suggested adding a place to write the names of the supervisor and student and using different colours for each stakeholder group to more easily distinguish the checklists.

After the final content improvement, the checklists were sent for proofreading (the language of the checklists is English) as well as to the BRIDGE project graphic designer (version 7), and the final version of the checklists (version 8) was published on the project website in December 2022.

The Content of the Checklists

The final versions of the checklists are published at the BRIDGE projects website (<https://www.academicintegrity.eu/wp/bridge-checklists/>) under open access and can be downloaded and printed without cost under the CC license. The checklists have also been translated into several languages, with an open invitation to anyone who wishes to translate the checklists to other languages to contact the BRIDGE project. As explained in the instructions, the users can adapt the content as needed.

Our aim in this section is not to summarize the content of the checklists. Instead, we will only explain the focus of the checklists and present how we envision their use in the thesis/dissertation work of master and doctoral students.

Each of the three checklists starts with general tips that may help the students throughout their thesis/dissertation work and their supervisors in their supervision. Both master and doctoral students are encouraged to keep a research diary and use an appropriate tool for working with literature sources. As was pointed out in “[The Tasks of the Supervisor and of the Master/Doctoral Student](#)” section above, supervisors can have a major impact on the ethical development of the supervisee, both positively and negatively (Bird, 2001). Supervisors are therefore reminded that they are role models, and that they should enculturate their students into their discipline, helping them develop critical thinking and

awareness of ethical requirements. Students are advised to interact with the research community and participate in academic events, which their supervisors should encourage as part of their enculturation. Doctoral students are advised to share their experiences with fellow doctoral students.

Following the general tips, the checklists targeting master and doctoral students are divided into several subheadings that cover a range of concerns related to academic integrity and research integrity ordered according to the research project phases: pre-writing preparatory work; the different steps of research design, such as formulating the research question(s); study design, data collection, and data processing and analysis; the writing process, including academic reading and writing; ethical publishing; and finalizing the thesis/dissertation work.

As part of their preparatory work, both master and doctoral students are instructed to familiarize themselves with the notions of academic and research integrity as well as with the relevant requirements and expectations associated with thesis/dissertation work and writing, including ethics requirements in research. Correspondingly, one of the items on the checklist for supervisors is whether the student has received training in academic integrity and research ethics, as well as obtaining the relevant information concerning institutional requirements.

As completion rates as well as doctoral students' satisfaction with their overall doctoral education have been connected to the frequency of supervisor–supervisee meetings (Antes et al., 2019; Pyhältö et al., 2015), the checklist addresses the importance of frequent and regular meetings. At the same time, it is important to set the boundaries of interaction, i.e., to foresee reasonable timelines as well as breaks in the thesis/dissertation work to avoid work overload or burn-out.

Each of the three checklists includes items on data collection and data processing, as both raise important research ethics concerns, including the importance of keeping good research protocols and research notes, acquiring informed consent from research participants, and anonymizing research participants. As Shamoo and Resnik (2015) clearly pointed out, keeping good research protocols is important for several reasons, including to maintain the objectivity and integrity of one's research, to allow replication, and to facilitate investigations of research misconduct. This relates to the research ethics norms of transparency, honesty, and accountability (Shamoo & Resnik, 2015). Correspondingly, the checklist for supervisors again stresses that these topics should be discussed with the supervisees.

Proper citation is imperative in research for reasons concerning transparency and academic credit. Knowing how to properly cite academic sources is also crucial in order to avoid plagiarism. To successfully master adequate referencing techniques in order to engage in the intertextual relationship with source texts, it is necessary – as Howard and Jamieson (2021) have pointed out – to discuss not only ethical values, but also academic writing skills. Therefore, all the checklists put a great emphasis on the importance of academic reading and writing.

The checklists for doctoral students and supervisors also include a section on ethical publishing. There are several issues that we wish to highlight here, including so-called predatory journals and issues relating to co-authorship. The prevalence of predatory journals is indeed a growing concern in research. Although there is open debate among scholars of research integrity as to how best to define predatory journals (or even whether this is a suitable term to describe the phenomenon), the concern is non-serious journals that often claim to have a thorough peer-review process when in fact they do not (Eriksson & Helgesson, 2017, 2018). Publishing in such venues may be problematic for junior researchers as it may reflect badly on them, and because they may not be allowed to include such

publications in a compilation thesis/dissertation. Hence, the checklists encourage supervisors and doctoral students to talk about this issue. As for co-authorship, the checklists state that the student should be made aware of the importance of only listing all of those who have made relevant contributions to the work as co-authors. This may sound obvious, but the fact remains that the practice of gift authorship, in which someone is listed as a co-author of a research paper without having contributed significantly to the study, is still common in academia and is a form of dishonesty that needs to be discouraged (Cutas & Shaw, 2015; Helgesson et al., 2018, [forthcoming](#); Hoffman & Holm, 2019; Zaki, 2011).

How to Use the Checklists in Thesis/Dissertation Work Supervision

Ensuring and promoting integrity in research is an important concern. Recognizing that this is a complex problem and that, as previously noted, there is an education gap between academic integrity and research integrity in the early stages of research training, we suggest that one step forward would be to develop appropriate means for aiding the transition from academic integrity to research integrity. One such means is the checklists provided by the BRIDGE project.

For students, this means helping them acquire relevant knowledge and academic skills to conduct good research. The role of the supervisor in this is not merely to check whether the student has acquired this knowledge. Instead, we suggest that an important aspect of being a supervisor is to facilitate the enculturation of students into their discipline, including helping them to further develop the values of academic integrity and good research practice. To this end, the checklists will be most beneficial if used as a tool to foster dialogue between the supervisor and the supervisee. We envision the checklists not merely as lists to be used single-handedly by the student (although they may of course be used as such), but as a tool that may help supervisors enculturate students into the ethical norms and practices of their discipline.

Though every student and/or supervisor can generally independently decide how to use the checklists, we offer some insights into how we envisaged the application of this tool and where we see its greatest value. To begin with, we do not propose the checklists as static or rigid “must do it all in exactly this order” documents; rather, they are a guiding resource that should work best when adapted to specific needs and circumstances. At the same time, our aim was to cover the key areas that proved to be commonly highlighted by both the project partners and stakeholders. Therefore, the checklists give a good overview of what thesis/dissertation work entails so that it corresponds to the principles of academic integrity and responsible research conduct.

We suggest treating the checklists broadly, as more than just lists of bullet point boxes to be ticked off. Use them as process documents, revisited at different stages of the thesis/dissertation work, making notes and reminders, adding relevant points, or removing what is irrelevant to your specific case. Moreover, some of the points in the checklists may require shared effort. We suggest that students and/or supervisors seek help or consultation inside their institution if needed (e.g., if a supervisor notices that a student needs additional consultation on academic writing, they can suggest approaching library and/or academic writing centre staff).

How exactly the checklists will be used in the thesis/dissertation work supervision is up to the supervisor and the individual student. However, given the rather general nature of the checklists, it may be beneficial to address some of their bullet points in groups of two

or more students. Such a setting may not only help promote dialogue between the supervisor and the supervisee, but also encourage careful and constructive reflection among peers. Group supervision can provide multi-voice feedback that can improve scientific writing and help students solve the problems arising in different phases of the research process (Dysthe et al., 2006). This can encourage students to build a community of practice (Wenger, 1998, 2000) that can improve shared practices (Wenger, 2000) and thus empower their enculturation in their discipline.

In addition, the checklists can also be used at the institutional level. Previous research has shown that institutions play an essential part in ensuring responsible supervision and leadership (Pizzolato et al., 2022). The checklists can thus be used as an additional resource to ensure that all the stakeholders within an institution are aware of their roles and responsibilities. In addition, they can also be used in preparatory courses for supervisors and in discussions in supervisor communities of practice (Wenger, 1998, 2000). As the checklists are provided under the CC license, which enables changes, institutions can adapt the checklists to fit their particular needs and contexts. In the process of discussing checklists with relevant stakeholders and end-users (see “[Why and How the Checklists were Developed](#)” section), the need to have such checklists as institution-wide resources (translated into the applicable national language) was obvious. It is also obvious that higher education and research institutions differ in their internal policies, resources, and infrastructure (e.g., some might not have academic writing centres available for student or supervisor support or may not have established ethics approval procedures). Therefore, the checklists could also serve as a hint to how institutions could develop and advance their academic and research integrity culture.

Although stakeholders from across Europe and beyond and from different disciplines have provided feedback on the checklists both orally and in writing, in person and online, there might be additional points that we have overlooked. In that case, implementing the checklists in the actual academic context will provide input for further revisions and adaptations. The checklists were designed to be used and adapted by stakeholders in Europe in general, and that is also their weakness: they were not developed for any specific country, institution, local context, or discipline. Therefore, we recommend further customization of the checklists to ensure their usability for individual needs. The checklists are intended to be used as an additional resource that is complementary to academic and research integrity policies, guidelines for doctoral students and supervisors, and other resources.

Conclusion

In this article, we have outlined the theoretical background and development of three checklists developed as research output within the Erasmus+ Strategic Partnership project *Bridging Integrity in Higher Education, Business and Society*. As part of this project, it was observed that there is often a gap between teaching about academic integrity, on one hand, and research integrity, on the other. Part of the aim of the checklists is therefore to provide a smoother transition from academic to research integrity. As noted here, supervision is a key area for developing students and socializing them into the research community. As such, our hope is that the checklists might be used as a tool to assist the enculturation of students into a research culture based on ethical values and integrity.

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Declarations

Ethics Approval N/A.

Conflict of Interests None.

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