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NARRATIVE ETHICS AND NARRATIVE PEDAGOGY IN ENGINEERING ETHICS EDUCATION: A ROAD NOT (YET) TAKEN

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ABSTRACT

The paper explores the potential of using narrative-centered pedagogies in Engineering Ethics Education (EEE), drawing insights from their successful application in nursing and business ethics education. While traditional methods in EEE focus on fostering moral reasoning through case-study analysis and teaching ethical theories, increasingly, there is a need for fostering soft ethical skills, such as moral sensitivity and creativity, which, in turn, demand new teaching approaches. Initially developed for nursing ethics, narrative pedagogy emphasises understanding experiences through storytelling and dialogue, contrasting with the decision-oriented focus of EEE. While narrative pedagogy allows for understanding stakeholders' motivations, there is a gap in translating this understanding into ethical decisions, which engineering students must make. Drawing from a literature survey of the existing research in ethics education, the paper describes three kinds of narrative pedagogy to be used for EEE. Despite its theoretical potential, narrative pedagogy has not been deployed in EEE due to a lack of systematic research on its effectiveness. The paper calls for more experimentation and documented case studies in teaching to explore the potential narrative pedagogy in EEE. Without such experiments, the theoretical potential of narrative pedagogy in EEE may remain unproven.

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1 INTRODUCTION

1.1 Narrative ethics and narrative pedagogy in Engineering ethics education

Recently, there has been a growing interest in diversifying the methods used in teaching ethics in professional domains, such as engineering, design, nursing, business, law, etc. While standard teaching methods focused overwhelmingly on the fostering of rationality by promoting moral reasoning and moral deliberation as the main competencies that students were expected to acquire (Zhu and Clancy 2023), more recently, there has been a growing interest in developing methods for targeting skills and competencies that are more contextual and holistic, such as moral sensitivity, moral perception, moral imagination, moral creativity, empathy, etc. (Lönngren et al. 2023). While these latter competencies do not necessarily exclude rationality and reasoning, these are demonstrably focused on the a-rational part of ethics, namely what is left outside the mere rational exercise of reasoning about ethical issues as problem-solving attempts. For the purposes of this paper, I will designate these a-rational skills and competencies with the overarching term *soft ethical skills*.

While the need to foster soft ethical skills in engineering ethics education (EEE from now on), and in general in professional ethics education, is widely acknowledged, ethics instructors find that the methods for fostering these skills are rather unclear. For reasoning-focused skills, there is already a well-established pedagogy in EEE consisting of case-study analysis, discussions, and deliberations, paired with teaching ethical theories that are used to devise an acceptable solution (Jalali et al. 2022). However, such traditional methods cannot be used in the soft ethical skills pedagogy, which target another domain of thinking and feeling altogether (Tormey et al. 2022). Soft ethical skills demand new methods in teaching ethics, and ethics instructors will find themselves confronted with the need to think outside the box when devising methods for such elusive yet ambitious goals (Martin et al. 2021). It is clear that the same methods used for teaching moral deliberation and reasoning cannot work for moral sensitivity, imagination, and creativity. Still, there are already promising ideas and directions for pursuing a systematic approach to soft ethical skills pedagogy: arts-based methods, theatre, role-plays, stakeholder direct engagement, etc. (Frey 2015). These ideas either promote embodied pedagogy – i.e., using the body to express and enact ethical situations (van Grunsven et al. 2024) – or *narrative pedagogy*, which I will analyse next as a promising pedagogical approach that has been yet underexplored in EEE.

More than two decades years ago, Martha Nussbaum (1997) argued convincingly for the important role that reading fictional narratives plays in cultivating moral imagination through narrative imagination, i.e., the capacity to “put oneself in another person’s shoes and to understand their emotions and desires” (Wright 2002). While Nussbaum argued that narrative imagination is necessary for everyone to become a world citizen (1997), we can extend this argument from citizens to any professional dealing with stakeholders, either directly or indirectly. Based on Nussbaum’s ground-breaking work and on similar works (Newton 1995), the inquiry into the ethical and educational potential of literary narratives gained quite some momentum, branching out into *narrative ethics* (Netwon 1995; Adams 2008; Pehlan 2014), a distinctive field of research, at the intersection of philosophy and literary studies. Recognising the potential of narrative ethics, various educational researchers working on professional ethics education have coined different strands of narrative-centred pedagogy, most

remarkably in nursing ethics. However, in EEE, narrative ethics and narrative pedagogy remained mostly explored. A brief literature search on EEE and narratives found 27 results out of which very few papers have engaged with the pedagogical potential of narratives for EEE. Several notable examples were (Miller and Bennett 2008; Hitt and Lennefors 2022; Halada and Khost 2017). What explains this hesitance to take up narrative-based ethics in the pedagogy of EEE? This paper explores the potential of narrative ethics and narrative-centred pedagogy for EEE, provides some explanations for past neglect of narrative-centred pedagogy in EEE thus far, and offers some concrete suggestions about the potential of narrative ethics for developing soft ethical skills in engineering ethics.

2. METHODOLOGY

In exploring the potential of fictional narratives and narrative-centred pedagogies for EEE, I am mainly drawing some insights from the previous usage of narrative pedagogy in nursing and business ethics. The first method is a literature review of the ways in which narrative pedagogy has been used in professional ethics education thus far, which resulted in a taxonomy of the types of narrative uses in ethics education. Using these insights, namely mapping what narratives can be used for which soft ethical skills, I then theorise possible narrative ethics uses for EEE as well as its limitations. I am mainly interested in exploring narratives' potential to achieve new pedagogical outcomes that traditional EEE methods do not usually deliver. For this second part of the paper, I use educational theory and philosophy as a ground for theory building: knowing the desired outcomes of EEE and the potential of narrative pedagogy, which learning outcomes are more likely to be achieved?

3. THE POTENTIAL OF NARRATIVE PEDAGOGY FOR ENGINEERING ETHICS EDUCATION

In a systematic review centred on the pedagogical interventions in EEE in the American context, Hess and Fore (2018) list the most common pedagogical activities as: "Codes of Ethics or Rules, Developing Code of Ethics, Ethical Tools, Processes, or Heuristics, Developing Heuristics, Philosophical Ethics, Case Studies, Developing a Case Study Micro-Insertion Real-World Exposure Community Engagement Discussion or Debate Presentation Peer Mentoring Individual Written Assignment(s) Team Project or Position Paper, Game" (Hess and Fore 2018, p. 562). Narratives can be found in both case studies – included in the reading material - and presumably can be embedded in individual written assignments. Yet narratives as a specific genre do not stand out in EEE pedagogy and are not considered a specific approach to teaching or developing assignments to deserve their own category.

In professional ethics education (such as engineers, designers, nurses, medical doctors, managers, or legal practitioners), the main aim is not in-depth theoretical understanding, rather, it is about developing the skills and competencies that will allow practitioners to act with integrity when a challenge arrives. This makes ethics education for professionals quite a unique discipline in educational sciences, with specific learning goals and instructional methods (Hess and Fore 2018). This uniqueness can be summarised as action-oriented, whereby theory is used only as an instrument that can help in fostering the competencies and the attitudes for ethical action (Clancy and Zhu 2023). In EEE, instructors are focused on the

applicability of what they teach and on fostering lifelong competencies that can be drawn from by future professionals in various contexts. Because of this competency-first focus, with theoretical knowledge being a secondary concern, teaching methods that use extensive writing are usually discouraged. When EEE students are asked to write essays, the focus is on exploring an ethical issue and not so much on the quality of writing itself. This is why writing-focused pedagogies have been historically ignored in professional ethics pedagogy. Writing an argumentative essay is already difficult enough for engineering students who are not that familiar with writing long texts, and asking them to write fictional narratives seems even more demanding. What about case-study pedagogy? Could this be a way to introduce narrative pedagogy into EEE?

Traditional teaching methods used in EEE include case-centred approaches, the so-called microethics approach (Martin et al. 2021). In case-centred pedagogy, students discuss a fictional or historical case of a problematic issue in their profession and are asked to decide what needs to be done or who is blameworthy. The tools used to deliberate are ethical theories, which were then applied to find an acceptable solution to the case, to enhance the student's moral deliberation and reasoning capacities. Case-based pedagogy has its limitations which have been thoroughly discussed by Martin et al. (2021), who instead proposed also to consider macro-ethics alongside by discussing the wider societal, political and cultural context in which professional incidents occur. What interests us here is that case-based pedagogy is reasoning-based, whereas macro-ethics seems to target the soft ethical skills discussed above more. Macro ethics is about stepping outside the case and using a wider lens, while the targeted competencies are about moral perception and moral sensibility, hence more fitting for the development of soft ethical skills. However, there are no established methods for teaching macro-ethical approaches in EEE (Martin et al. 2021), neither narrative-based nor argumentative-focused. If narrative ethics is to enter EEE pedagogy more, macro-ethics seems to be a promising domain of application.

Narrative pedagogy has been used primarily in nursing ethics, the field where it was first conceptualised. Narrative pedagogy is a way of making sense of ones experiences by telling stories about them and enacting "crucial conversations" with others, usually colleagues in the same professional field. Narrative pedagogy was initially about making sense of an experience that already happened to a participant, and creating a shared common understanding through "an interpretive phenomenological approach" (Diekelmann and Diekelmann 2000, p. 226). This makes sense in nursing, where experiences of care are particular to each patient and care situation and where sense-making seems to be crucial. Understanding is built through dialogue and collective sense-making: "In this new pedagogy, ethics ceases to be answers, made within frameworks, or principles or rules applied universally to situations. These understandings are a part of the converging conversations" (Diekelmann and Diekelmann 2000, p. 229). We can see how different narrative pedagogy is from the traditional micro-ethical EEE approaches centred on reasoning, where the usual aim is arriving at the most acceptable solution for a given ethical case. Engineers do not strive for understanding of experiences or situations primarily, as their main concern is decision-making of how to design or implement a specific technology, hence the final aim of ethics is the right action (Zhu and Clancy 2023). This is not to say that understanding is not useful, but in engineering, this needs to be translated into a decision. Because of the decision-

oriented focus on EEE, rather different from the focus on understanding in nursing ethics, it makes sense why narrative pedagogy has not been the first choice for EEE instructors. If narrative pedagogy allows for a deep understanding of the stakeholders and their motivations in engineering ethics, there seems to be one more step needed to arrive at a decision. Understanding alone is not enough to make an ethical decision. However, a too hasty understanding of the stakeholders also poses a danger. Engineering students may think that they understand all parties involved in a techno-social decision and rush to "solve" the problem with incomplete information. From this brief reflection, it should be clear that understanding alone is not enough to make narrative-centred pedagogy interesting for EEE pedagogy. We need to get something more out of narrative pedagogy since using narratives to make sense of morally loaded situations will not be enough for engineering students. The next section explores the multiple facets of narrative pedagogy for engineering ethics education.

4. TYPES OF NARRATIVE PEDAGOGY USED IN PROFESSIONAL ETHICS EDUCATION

The following table summarises the kinds of narrative pedagogy used thus far in professional ethics education and its targeted competencies. Each category will be explained below.

Table 1. Kinds of narrative pedagogy, teaching activities and targeted learning outcomes

Kinds of narrative pedagogy	***Teaching and studying activities***	***Targeted skills, competencies, and learning goals***
A. Discussing narratives created by others	• Film-based discussions • Collective discussions on a narrative text • Individual readings and reflections on a narrative (Text-based commentary)	• Moral sensitivity/ perception • Empathic perspective-taking (Narrative imagination) • Empathy and understanding • Stakeholder engagement (imaginary stakeholders)
B. Completing unfinished narratives	• Starting from a given scenario outlining an ethical situation, students imagine possible outcomes (in writing, discussions, or as a performance).	• Stakeholder engagement (imaginary stakeholders) • Empathic perspective-taking (Narrative imagination)

C. Creating narratives	• Writing a short story about a technology or an ethical issue with a technology • Sci-fi narrative writing with a focus on anticipation • Writing a poem, a short dialogue, a script for a performance • Performing as improvisation starting from a prompt	• Moral creativity • Moral imagination • Empathic perspective taking (Narrative imagination) • Responsible anticipation

4.1 Discussing narratives created by others

In this approach, the students read or watch the narratives created by others. The advantage here is that the creator of the narrative is usually an experienced writer/ artist, and the narrative has a certain quality about it, which makes empathic reactions more likely. The main goal here is that students make sense of the narrative, either individually or in groups, and expand their understanding of the ethical situation by imagining what it is like to be another person embedded in that situation (the fictional character or the testimony provider who narrates their experience), or by being confronted with the strangeness of the other perspective and having to make sense of the distance between oneself and the other. The learning outcomes of encountering narratives, already extensively explored in nursing and business ethics research, are: “thinking, empowerment, interconnectedness, learning as a process of making meaning, and ethical and moral judgment.” (Brady and Asselin 2016, p. 2). It has been argued that, at least when compared with standard lectures, narrative pedagogy is more effective for increasing the moral sensitivity of students (Bagherian et al. 2023).

In EEE, experiments with encountering narratives have been done starting from film narratives (Hitt and Lennefors 2022) or reading fiction to make sense of the professional’s ethically relevant experiences (Mawasi et al. 2022). In this case, students are exposed to the story, and then they create a common understanding of the story in the absence of the one who has lived the story. The fictional characters are not present to take part in the sense-making conversations, and students as spectators project themselves into the shoes of the fictional characters and think “as if” they were one. This has the potential of asking students to imagine being someone else, but it also poses a danger that, if the students' imagination capacities are limited, they will not be able to imagine what it is like to be another. On these limitations of imagination in the context of disability, see (van Grunsven et al. 2024).

4.2 Completing unfinished narratives

This is a somewhat more creative task. Students receive a narrative that has not been completed and are then asked to finish it by providing possible ends. This is different from the traditional case-based pedagogy, where students were asked to choose the most acceptable outcome using an ethical theory (Whitbeck 2011). Instead, students are asked to take into account the character’s psychology and situatedness in a context, the available choices, and then choose the most likely scenario. This format can also be used to ask students to imagine the most

appropriate ending but still keeping in mind the limitations of the main characters' psychology and perspectives. This relatively recent format has been employed in medical education with patient scenarios (Marei et al. 2018) and in business ethics (Kujala and Pietiläinen 2007). This format has not yet been explored in EEE; hence, further research is needed to map out its full potential, starting from its theoretical potential that has already been demonstrated in other branches of professional ethics.

4.3 Creating fictional narratives from scratch

Some pedagogies ask students to make up their own stories from scratch, such as improvisational pedagogies and narrative fiction-writing pedagogies. In improvisational pedagogies, students start a prompt, giving the outlines of a case and arrive at a story while performing it. Students do not know what the story will be at the end, they create it in the staged interaction with their colleagues. In fiction writing pedagogies, students write from scratch a story in which they make sense of an ethical case or explore the ethical implications of a technology. This approach has been less explored in EEE. One example is the work of Torras and Ludescher (2023) in the context of AI ethics. Another example is using the crafting of narratives in engineering education in general, without particular concern for ethics (Halada and Khost 2017).

The main difference between the three kinds of pedagogical approaches outlined above is the degree of creativity required from students, which ranges from creativity in making sense of other's stories to crafting their own stories. Standard narrative pedagogy, as used in nursing ethics and business ethics, is centred on using other's stories. Crafting one's stories seems to be an even more complicated task and not usually a method employed in ethics courses across all fields. Yet, in view of fostering moral creativity, it seems to be the most promising approach. However, narrative pedagogy is risky and has some pitfalls, making it a difficult endeavour for EEE.

4.4 An example of a practical application: writing a short Sci-Fi narrative

Using the narrative pedagogy approach of the third kind, creating fully a story from scratch, I designed an entire course centred around writing a Sci-Fi narrative as the main outcome of the course and piloted it in the academic year 2023/2024 at TU Delft (course code TPM042A). Students were asked to start with a specific technology and imagine a science fiction narrative of a maximum 1500 words centred around one ethical issue with that technology. The students received creative writing training in several workshops throughout the semester. The final sci-fi narrative was built in incremental steps (a pitch centred on the ethical question, an outline of the action, and a preliminary draft). Finally, students also wrote a reflective essay in which they commented on their own narrative and its ethical significance. The course was entirely elective, and it was taken only by students who were interested in story writing. I did not document the moral imagination before and after the course, as this was a pilot meant to test the pedagogical methods as such and the students' reactions to the narrative pedagogy approach. In the course feedback, all the students appreciated the class and were very engaged in its activities. I will offer the same course in the next academic year and document the moral imagination changes through elective student surveys before, during, and after the course completion. A lesson learned, and an immediate limitation is that narrative

writing relies on skills that cannot be built entirely in one course, although all students did show a demonstrable improvement in their writing skills throughout this course. But because of this heavy reliance on writing skills, the courses centred on narrative pedagogy will need to be offered either only as electives or rely on narrative writing only as formative activity, with no influence on the final grade.

5. Discussion. Limitations of narrative pedagogy in EEE. Pitfalls and limitations

As mentioned, soft ethical skills require different approaches, more creativity, and less focus on providing reasons and exchanging arguments. While narrative-based pedagogy seems a promising direction to take for EEE, it is quite a rare occurrence in the current educational landscape. This is understandable, given the scant research that has been done on narrative ethics and its methods in EEE. Some instructors may be adventurous and inclined to try out new methods, but most prefer to stick by the already validated paths. The community of researchers working in EEE is constantly developing new methods involving arts and more playful approaches, but we lack a systematic way of testing just how effective these methods are. In the absence of these kinds of systematic studies on effectiveness and for collective educational experiments, we are left with anecdotal evidence and small experimental deployments in our own courses. This paper is also a call to explore more and try out the methods of narrative pedagogy in reproducible and documented case studies in EEE coursework. Without these experiments, we would not know if narrative pedagogy's theoretical potential in EEE can bear fruit.

The main limitation in implementing narrative ethics and narrative pedagogy in EEE stems from the lack of specific training for instructors. A narrative ethics instructor would need to provide guidelines to students on how to read a literary text, interpret it, perform it, and even write a fictional text. At some stages in these activities, professional writers or scholars from literary studies would need to be involved directly or indirectly. If ethics instructors want to experiment with narrative methods in their teaching, they will need to dedicate some time to learning these techniques and the scholarship grounding these methods, which means putting aside time in a time-scarce environment such as contemporary universities. A second limitation lies in assessing students' work. Similar to arts-based pedagogical activities, the criteria for evaluating narrative work are quite specific and revolve around aesthetic criteria as well as criteria for assessing the personal growth of students: how to evaluate the increased moral imagination or sensitivity remains an open question for EEE in general. How to evaluate a good story or a creative ending to a given narrative seems even more hazy. We do not have the assessment criteria in place to ensure that, as instructors, we can be fair to the student's work. For students, the main limitation of creative methods in ethics, such as narrative pedagogy, lies in the unequal distribution of skills: some students can feel more comfortable than others in writing fictional narratives or in interpreting texts, while others may feel paralysed. However, we should not assume that students will not enjoy some creative challenges, as seen in the pilot class on sci-fi narratives. Furthermore, everyone can experiment with artistic methods, and even if the outcome is not an artwork, the very process of thinking and reflecting about narratives and art is valuable in itself. We should not shy away from more experimental and arts-based methods simply because students may feel uncomfortable at the beginning.

However, ethics instructors may need to consider narrative pedagogy sooner than anticipated. With the rise of ChatGPT and other large language learning models, traditional written assignments in EEE are under threat as argumentative essays are written starting from a series of questions or prompts that can be generated automatically all too easily. In evaluating the correctness of the arguments, it becomes difficult to discern the student's work from an automated generated text. However, with narrative pedagogy, an important criterion is students' creativity and insight in interpreting a narrative or writing one themselves. Even if tools such as ChatGPT can write short stories or interpret or summarise existing ones, they cannot yet show the insight and unique style that a human interpretation can. Many have noticed that ChatGPT outputs sound and feel generic, cookie-cutter prose. While such generic prose would be acceptable for an argumentative essay, narrative pedagogy demands a personal point of view, a personal interpretation, insight, and creativity in one's understanding. Given that these raw qualities cannot be simulated by a large language model (yet), ethics instructors can turn to more creative assignments to avoid their students defaulting to the ChatGPT route. Narrative pedagogy and narrative ethics are roads not yet taken in engineering ethics education, but we may have to explore this path quite soon, given that other more standard paths are becoming unavailable.

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