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Drawing From SEFI Ethics Knowledge To Support Eco-Ethics Education Within The European University Of Technology

Jye Benjamin O'SULLIVAN

TUDublin, Ireland, jyebenjamin.osullivan@tudublin.ie

Shannon CHANCE

TUDublin, Ireland, shannon.chance@tudublin.ie

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Drawing from SEFI ethics knowledge to support ecological ethics in technological education.

Initials Last name

Affiliation

Town, Country

ORCID

(1 space)

Initials Last name

Affiliation

Town, Country

ORCID

(2 spaces)

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ABSTRACT

We are leading a project called Ethico within the European University of Technology (EUt). Ethico aims to design and promote the uptake of innovative, ecological ethics for technological education.

This practice paper briefly summarizes the aims and structure of the Ethico project, and then focuses on the work completed as part of the teacher training module developed in Cluj, 7-9th March, 2023. This workshop drew its conceptual framework from the short abstracts currently available for the Engineering Ethics Education Handbook. The structure developed was then implemented in a student facing workshop in Troyes between the 10-14th July 2023. The handbook is under development by SEFI's Ethics special interest group, who shared the content with us (the second author of this paper is part of both projects). We drew particularly from Theme 3 of the handbook, which covers Teaching Methods for Engineering Ethics Education (EEE), for the Intensive Study Periods in Cluj and Troyes.

Drawing from these EEE abstracts, we designed and tested a teacher training course, with the express aim of achieving flexibility for appropriate application in diverse cultural and administrative university settings. This is because the EUt is comprised of eight universities in eight separate European countries. We explored

how we could apply the literature review chapter of theme 3 (on education methods) and of the *EEE Handbook*, as well as the dialogical/reflective chapter, and some of the specific pedagogical methods for building student awareness, understanding and analytical decision making in ethics. Our work in Cluj focused on three of the Student-Centred Learning approaches presented in the Handbook— case studies, challenge- and problem-based learning, and Virtuous Practice Design—with very promising results.

The paper examines the ethical model engaged with and the teaching models developed at the EUT event in Cluj and Troyes using the *EEE Handbook*. It outlines our proposed module for eco-ethics in technological education, highlighting the key tensions for implementation in cross-cultural and interdisciplinary contexts and incorporates preliminary feedback from student participants.

1 INTRODUCTION

Engineering students need to understand ethics and ecology, including environmental and social justice models, in order to practice effectively in today's rapidly changing world. Weighty challenges have resulted from the Anthropocene era—where human activity has become the dominant influence on both the environment and the climate—and we believe it is imperative to re-conceptualize and re-prioritize how ecological ethics feature in higher education.

To accomplish this, we argue that firstly we need to establish transdisciplinary educational methods to establish multi-perspectival and value-based ethics. Secondly, we need to reconceptualize both ecology and technology as well as the discourses and associations that surround them (Steigler, 1998). Thirdly, we need to bring about a shift in the ethical models we use to regulate our development and implementation of technologies at individual, societal and global scales (Guatarri, 2000).

We further argue that, through the teaching of eco-ethics, educators can provide learners with the tools needed to guide their decision-making processes toward ecologically sound and sustainable outcomes. Helping students locate and frame eco-ethical problems in contemporary scenarios forms an essential step in effectively addressing contemporary challenges. But how can this be accomplished, and how can we move the field of engineering, as it is envisioned and practiced within and beyond technological universities, toward embracing and enacting the values of eco-ethics as a praxis of decision making?

The authors of this paper are providing leadership for a project called Ethico that is part of the European University of Technology (EUt), an alliance of eight (soon to be nine) universities across Europe working together to align our curricula and pedagogical methods in ways that provide greater transparency, flexibility and responsiveness to the needs of European and global societies.¹ Ethico is an Erasmus+ funded project that is part of the European Culture and Technology Lab (ECT Lab+) created by and for the EUt. Ethico aims to design and promote the uptake of innovative education methods that integrate ethics and ecology and are transferable to the many varied disciplines provided across the EUt, from arts and humanities to engineering and environmental sciences. Ethics, in our context, is understood as a form of praxis, led by virtues that guide accumulative decision making to a collective goal at individual, societal and planetary scales (Guattari, 28). To develop this module, we drew from the *EEE Handbook*.

¹ The participating universities are the following: Cyprus University of Technology, Darmstadt University of Applied Sciences, Riga Technical University, Technological University Dublin, Technical University of Sofia, Universidad Politécnica de Cartagena, Université de technologie de Troyes and the Universitatea Tehnică din Cluj-Napoca.

2 HANDBOOK

The SEFI Ethics SIG took the lead on compiling a comprehensive, state-of-the-art overview of the existing research in Engineering Ethics Education (EEE). The *Engineering Ethics Education Handbook* under development provides teaching, research, philosophy, and administration perspectives, to deliver a useful resource for established academics and new researchers who want to enter this field. Thus far, 115 researchers from various parts of the world have been involved in the work. Engineering is currently being taught at different types of educational institutions worldwide, ranging from universities to technical institutes, including the emerging Technical Universities in Europe. The knowledge compiled and synthesized can enhance the teaching methods at these institutions. The knowledge of EEE will be presented in six sections each representing a central research area of EEE:

1. **Foundations of Engineering Ethics Education**
2. **Interdisciplinary contributions of Engineering Ethics Education**
3. **Teaching methods for Engineering Ethics Education**
4. **Accreditation of Engineering Ethics Education**
5. **Ethical issues in different engineering disciplines**
6. **Assessment of Engineering Ethics Education**

The section used by Ethico for its teacher training module, is ‘teaching methods’. The theme comprises seven chapters, all of which are of potential use to Ethico and the EUt. Ethico took five of these sections as the structure for the teacher training module; a module designed to train teachers to incorporate ecological ethics into pre-existing curricula. Five of the abstracts form the thematic core for five micro-credentialised workshops.

The third section of the handbook aims to identify established and emerging methods of teaching engineering ethics. Current research indicates a lack of coherence and confusion among educators about the most effective approach to prepare socially responsible engineers, and limited empirical evidence to guide instruction. The first chapter of the section will provide a “Literature Review Mapping the Use of Teaching Methods in Engineering Ethics Education” (Polmear, M., Borsen, T., Love, H., & Hedayati, A., *pending*). The authors explained that they will identify the established and emerging teaching methods used in engineering ethics and provide a broad view of how it is taught. The chapter will describe the patterns and trends regarding teaching methods, and will emphasize the importance of aligning learning objectives, teaching methods, and assessment strategies to improve instruction effectiveness. The abstract of this section has been used to structure the first module for the overall EUt Teacher Training course alongside the literature review generated by Ethico.

The second chapter will discuss “Teaching Ethics Using Case Studies” (Herzog, C., Jorhi, A., Gordon, D. T., & Roach, K. *pending*). The authors have proposed to evaluate the use of case studies in engineering ethics education, providing arguments for and against their adoption and discussing their potential contribution to the classroom. They will present ways to integrate case studies into teaching, including real-world case studies and role-play scenarios, and showcase various repositories of engineering ethics case studies. As case

studies represent a viable and well-tested method for teaching ethics to students of engineering and technology, this content will be of great interest and use to EUT stakeholders and will be highly referenced in the design and delivery of EUT's Teacher Training course. Inspired by this, one hoped outcome of Ethico is an online database of approved case-studies. The generation of a case-study is also one potential assessment technique for the teacher training course, permitting continual generation of new, free-to-access case-studies.

The handbook theme's third chapter will discuss "Challenge-based and Problem-based Learning in Engineering Ethics Education" (Bombaerts, G., et al). The authors intend to address an existing gap in research on challenge-based and project-based learning in engineering ethics education. These methods have become increasingly visible and the EUT stakeholders attending the Intensive Study Period (ISP) in Cluj-Napoca saw great value in applying the abstract and forthcoming content of this chapter for the Teacher Training course.

The fourth chapter, will focus on "Ethics in Service Learning and Humanitarian Engineering" (Daniel, S., Yeaman, A., Navarro Forero, C. A., & Oakes, W. *pending*), *Ethics in Service Learning and Humanitarian Engineering*. It will discuss the future of engineering ethics education in the context of societal needs and global responsibility. It will examine the ethical challenges posed by emerging technologies and the implications for engineering ethics education.

The handbook theme's fifth chapter will discuss "VSD and Beyond - Value Sensitive Design and Design-Based Learning in Engineering Ethics Education" (Gammon, A., Zolyomi, & Van de Poel, I., *pending*). This chapter will present VSD as a leading approach for introducing ethical and value considerations to engineering and design students. The chapter will introduce VSD, including its key ideas and commitments, explaining how it has been taken up in design and engineering education. This chapter's abstract was a focus of the discussion in Cluj around the move towards holding virtue ethics at the core of technological education as opposed to applied ethics (Reijers, W., & Gordijn, B., 2019).

The sixth chapter will discuss "Arts-Based Methods in Engineering Ethics Education" (Hitt, S. J., Gillette, D., Shumaker, L., Lefton, T., 14) and relates to the transdisciplinary goals of the Ethico project. The chapter's authors seek to explore the value of incorporating arts-based teaching in engineering education, particularly in the context of ethics education. The authors will examine how arts-based methods have been defined, described, and assessed in educational contexts and how they might help achieve ethical education outcomes that other methods do not.

The final chapter was of great relevance to the ISP in Cluj, although participants lacked adequate time to discuss the ideas in detail. That forthcoming chapter will discuss "Reflective and Dialogical Approaches in Engineering Ethics Education" (Martin, L., Jalali, Y, Morrisson, A., & Voinea, C., *pending*). In it, the role of reflection as a valuable learning experience in the ethics classroom will be explored, as well as dialogical techniques that can foster or provoke reflection among engineering and STEM students in existing curricula. The authors have proposed to open the chapter by describing ethical reflection as a core

competency, to enable both “moral deliberation and responsible action” among future practitioners. One way in which this has been developed for Ethico is in the use of a student-completed glossary, trialed in at the ISP held in the Technological University of Troyes (UTT) (see Fig. 3).

The participants in Cluj were enthusiastic about using the handbook and eager to see it published. The chapters were used to structure the following iteration of the ISP at UTT between the 10-14th of July and form the core of teacher training and student facing modules of Ethico. Many expressed sincere interest in inviting the authors and editors of the handbook to help guide the faculty or their own campuses in implementing the approaches covered in the handbook. In this regard, the handbook has facilitated future transdisciplinary collaboration between different European educational institutions.

3 ETHICO

The following sections outline the aims and structure of the Ethico project, and then focus on the work completed as part of the teacher training module developed in Cluj, from the 7-9th of March, and implemented in the last ISP ran from 10-14th July, 2023 at UTT. Both iterations constructed their conceptual framework from the short abstracts currently available in the *Engineering Ethics Education Handbook*, which is under development by SEFI’s Ethics special interest group (SIG). The six editors of the Handbook, all members of the Ethics SIG, agreed to sharing the abstracts with us and have been enthusiastic about seeing their author’s content being applied in practice.

We drew from the short abstracts that had been prepared for the handbook’s publishing company when developing the schematic design of a teaching training course with flexibility to apply in the diverse cultural and administrative conditions of the partners in our EUT alliance. In Cluj, we explored how we could apply the literature review and dialogical/reflective chapters of the EEE Handbook, as well as three of the SLC pedagogical approaches featured in the handbook: case studies, challenge- and problem-based learning, and Value Sensitive Design and beyond, to include Virtues Practice Design.

The overall teacher training course for EUT involves five components with each one attributed 1ECT credit. The first comprises an introductory session to define essential terms and describe the framework we’ve used. This grounding framework is followed by three pedagogical application sessions where teachers learn to use various student-centred learning (SCL) approaches to delivering content related to eco-ethics and to explore ways of applying the techniques within their own EUT disciplines. The teacher training course culminates with a dialogical and reflective component to help teachers understand the role of reflection and how to prompt students to become reflective learners and practitioners (see Fig. 1). All five of the elements of the course listed above are covered in chapters of theme 3 of the *EEE Handbook* (Børsen, T., et al, *pending*).

Day	Activity
1	<ul style="list-style-type: none"> - Workshop to establish communal understanding of ecology. - Lecture on Ethics models, techne and ecology. - Introduction to Ethics Canvas. - Introduction to glossaries as tool.
2	<ul style="list-style-type: none"> - Case Study methods.
3	<ul style="list-style-type: none"> - Challenge- and Problem-based learning methods.
4	<ul style="list-style-type: none"> - Virtues Practice Design methods.
5	<ul style="list-style-type: none"> - Dialogical/Self-Reflective methods. - Summary discussion of Implementation. - Comparison of glossaries. - Summary discussion of <i>Ethics Canvas</i>.

Figure 1, *Outline of the Ethico Teacher Training Module*

We believe that, once published, the *EEE Handbook* can serve as a resource for EUt educators, as well as people running or attending teacher training sessions across the EUt. Our activities can also serve as inspiration, providing a precedent from others outside the EUt to emulate.

This model was then adapted for the student-facing component at the UTT. Twenty-seven student participants ranging from Masters to PhD level were brought together at UTT and given the following courses that had been developed from the *EEE Handbook* and its first use in Cluj. First, they engaged in a series of lectures and workshops, discussing the broader themes, discourses and literature of ecological-ethics. On day two, they were introduced to the problematisation of case-studies and problem-based learning through real world examples. They were then tasked to use VSD in a speculative workshop to imagine the future of the EUt Sustainability Lab. Throughout the four day workshop, each student was also tasked to maintain a glossary that had space for the word, definition and a personalised example (see Fig. 3). These glossaries were compared, alongside the different outcomes in a self-reflexive and dialogical session at the end of the ISP. Furthermore, students completed an anonymous survey before and after completing the workshop via Mentimeter. The following pages will summarise the activity taken place in Cluj and Troyes, its use of the *EEE Handbook*, and the results of these days.

4 ETHCIO: DEVELOPING AND TESTING THE TEACHER TRAINING COMPONENT

On the first day of the Ethico module in both Cluj and UTT, participants from the eight different EUt universities were asked to engage in a learning activity designed by UTT to develop a shared understanding of 'ecology'. In this activity, piloted in 2021 online, participants develop tree diagrams that use the matrices created by UTT to demonstrate the permeability of classic ontological categories (see Fig. 2). Participants are first asked to begin mapping the "roots" of the trees, making a differentiation between different human (h), technical systems (ts) and nature (n). Participants are then asked to map the different h, ts and n actors, and demonstrate, through the prepared matrices, the different ways in which h, ts and n systems interact. This exercise aims to demonstrate to participants the

co-formation that exists between technical objects and biological systems, what is termed, a biosocial-technological matrices (Steigler, 1998).

The diagrams developed are then used to understand a real-world example related to climate change, and participants were tasked with exploring the different roles humans and non-actors play within the case study using the Ethics Canvas (developed by ADAPT). Participants were asked to rank the severity of the impact of the situation presented in the case study, from the perspective of each identified actor. Through this activity, participants were guided to an understanding of the inability for a cause-effect to be drawn that excludes one actor from another. This cultivates a system(s) thinking approach within participants, at varying scales, from the personal, to the societal, to the global.

The H-tS-N matrix has been shown to be a tool for case study analysis in around forty minutes. The session ends with a discussion of values and ethics that establish critical viewpoints on the H-tS-N model and facilitators are expected to guide this conversation from definitions of terms, towards questions of ethics. Participants were also asked to take notes, reflecting on their own thinking, which was used in conjunction with the dialogical end unit. This was piloted in Troyes very successfully, with students commenting on the way it aided in transdisciplinary conversation.

Lecture on Ethics, Techne and Ecology

The second half of the first day covers Ethics, Techne, and Ecology, with a lecture that argues for a shift in the way ethics is taught in engineering education. The lecture highlights the need to move away from the dominant form of ethics taught, which is applied ethics, and towards virtue ethics, which is more adaptable and dynamic. A need that was made clear in the primary demonstration of the results of Ethico at the 2022 CREATE research symposium (Benedicic, Ursa et al, 2022). The lecture emphasizes an expanded view of technology that includes not just mechanical objects such as cars or computers but is inclusive of tools that connect humans with the world, and allow them to 'become' in it, such as art, language, and communication. The lecture develops an ecological ethics for "techne" education, which is inherently transdisciplinary.

The goal of developing ecological ethics for technological education is to give learners the tools to make accumulating decisions that benefits all actors, recognizing the different roles of all components in the formation of the whole. Developing ecological ethics involves expanding the categories of human, natural, and technology and establishing a praxis of care in the relationality between posthuman beings, techne, and an ecology of pluralistic actors (Bellacasa, 2022). Ethico proposes a framework based on a set of virtues to guide decision-making processes that are both varied and coherent. This approach aligns with Paul Ricœur's notion of little ethics, where the sum of micro-decisions forms an ethical whole while retaining epistemological diversity and specificity in actions, which has been used in other scientific practices including Marie-Josée Potvin's bioethicist practice (Potvin, 2010). Although this model may be critiqued for a lack of criticality towards virtue ethics (Moloon, 1998).

This lecture, delivered by Prof. Noel Fitzpatrick was highly successful in both Cluj and Troyes and has been recorded as a learning resource at UTT. Learners and educators alike have requested that it be made available online for integration into their existing curricula – and following the anonymous survey, all participants felt ‘more prepared to make ethical decisions in their practice’ following this content.

Case Studies and Problem-Based Learning

Following the guidance of the *EEE Handbook*, in Cluj and Troyes, with educators and learners respectively, we engaged in a series of real-world case-studies during the second day of the workshop. These included the case study of a fire in a pig farm developed by Pauline Picott, Ester Toribio Roura and Jye O’Sullivan and one focussed on the Colectiv nightclub fire in Cluj-Napoca (2015) developed by Silivan Moldovan. For the first case study, the participants were asked to role-play different members of a jury to develop perspective from multiple stakeholders. Furthermore, this use of role-play engaged with arts-based methods for transdisciplinary education. In the second, the participants were asked to analyse the case study according to its problematics using the *Ethics Canvas*, a tool developed by the ADAPT centre.

Through this variety of approaches, educators and learners alike were introduced not only to problem-solving, but to locating ethical problems from multiple (and more-than-human) perspectives. This shift away from problem-solving represented a significant step forward in the implementation of ecological-ethics.

Self-Reflexive and Dialogical Session

In Cluj, educators were given the opportunity to develop ideas around how to cultivate ethical self-reflection in engineering education. In Troyes, we addressed this component by asking students to complete glossaries throughout the week (see Fig. 3). Furthermore, they were asked to complete a Mentimeter anonymous survey before and after the workshops (see Fig. 4). The glossaries and mentimeter results, along with the complete *Ethics Canvas*’ from the prior module then formed the basis of an open ended discussion on self-reflection and ethics as praxis. Through comparing a contrasting different terminology and embodied understandings, we were able to firstly, ensure that the course had been well delivered through conversation around the key learning outcomes and discourses. Secondly, however, we were able to demonstrate the benefit of continual self-reflection inside and outside of the classroom, and therefore also demonstrate the benefit of viewing ethics as a self-reflective praxis as opposed to an applied code.

Students were highly receptive to this dialogical component and asked for an extension to the time of this module. Reviewing the Mentimeter results, nearly 70% of the students found the glossary a useful tool throughout the module and 100% of students stated they ‘felt more informed on the question of ecological ethics’. Perhaps most significantly, all of the participating students stated that they felt more prepared to make ethical decisions in their practice after this training module. This is coherent with the individual interviews conducted throughout the module, which are awaiting analysis.

5 RESULTS AND CONCLUSIONS

The authors have found that the use of the handbook and the methodologies it outlines, greatly enabled the teaching of Ethico's proposed ecological ethics framework and significantly reduced potential frictions in its uptake across disciplines. Drawing on the specialist knowledge of the handbook, the Ethico module has been enriched in its capacity to bring critical contemporary sociocultural and philosophical thinking around ecological ethics to a wide variety of disciplinary practices through a robust, informed and pedagogically viable set of methods, derived from the *EEE Handbook*.

These methods have successfully provided a framework that can be adapted for disciplinary, cultural and institutional differences, whilst still maintaining enough coherency to be validated for teaching at the EUt level. By giving educators this set of tools, it is hoped that they will be able to incorporate the eco-ethics framework developed by Ethico into pre-existing curricula, as a form of embedded learning through micro-credentials, a proposal that has been well received across the eight university partners.

Having completed an online trial of the H-tS-N matrix in 2021, the lecture component each year from 2020-23 and having collectively formulated the structure of the teacher training module using the *EEE Handbook*, our trials in both Cluj and Troyes were highly successful. All interviewed students both reported that there was a need for more complex ethical models, beyond applied ethics, to be introduced into technological education, and reported that they found the ISP very useful in establishing a groundwork for this. According to the mentimeter conducted at the end of the ISP, students on average rated the ISP as 4.4 out of 5 in usefulness. Furthermore, 88% of students who participated in the final mentimeter stated that the discussed 'ethical decision-making models' were applicable in their practice (see Fig. 4), although only 63% of students felt that 'the incorporation of eco-ethical models into the curricula at your institution would be well received'.

Coherent with the literature review of both the *EEE Handbook* and the Ethico project, there is a clear need and want for the incorporation of innovative ecological ethics models in technological education, however an anxiety surrounding the implementation and reception of these models in existing faculties. One notable problem evidenced in the mentimeter, was that there was no significant change in students willingness to use ethical models over 'the specific situation'. This demonstrates the need to instruct more clearly the range of ethics models as different tools to help in distinct situations. We will identify different ways this can be achieved after the qualitative analysis of the glossaries and interviews conducted in Troyes. Initially, however, the glossaries demonstrate a high level of embodied learning, and self-reflection (see Fig. 3).

The Ethico team are now in discussion with the EUt Sustainability Lab and are working on credentialising the module for use across the EUt. We have identified this as an outstanding opportunity to continue collaboration with the authors of the *EEE Handbook* and to establish transdisciplinary eco-ethics in technological education at a European wide scale.

5.1 Figures

Figure 1. *Proposed schedule of activity for Ethico module.*

Day	Activity
1	<ul style="list-style-type: none"> - Workshop to establish communal understanding of ecology. - Lecture on Ethics models, techne and ecology. - Introduction to Ethics Canvas. - Introduction to glossaries as tool.
2	<ul style="list-style-type: none"> - Case Study methods.
3	<ul style="list-style-type: none"> - Challenge- and Problem-based learning methods.
4	<ul style="list-style-type: none"> - Virtues Practice Design methods.
5	<ul style="list-style-type: none"> - Dialogical/Self-Reflective methods. - Summary discussion of Implementation. - Summary discussion of <i>Ethics Canvas</i>. - Comparison of glossaries.

Figure 2, *H-tS-N matrix*, Developed by Nadege Troissier and Santiago Perez, 2021.

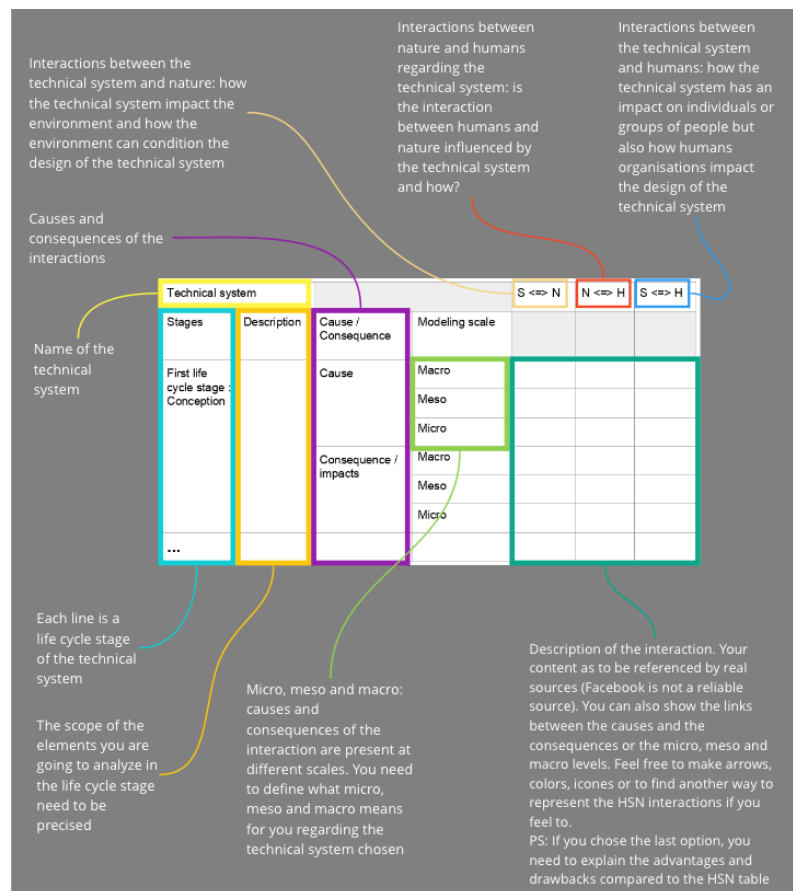


Figure 3, Student Glossary Example, used in ISP3 at UTT, 10-14 July, 2023



Glossary for Ethico Intensive Study Program: Troyes

Word	Meaning	Example
Friction	<p>Español: se refiere a los conflictos éticos o morales que surgen cuando se enfrentan diferentes valores, principios o intereses en un determinado campo, como la ingeniería. Estos conflictos éticos pueden generar tensiones y desafíos al tomar decisiones éticas.</p> <p>Inglés: refers to the ethical or moral conflicts that arise when different values, principles or interests are confronted in a given field, such as engineering. These ethical conflicts can generate tensions and challenges when making ethical decisions.</p>	<p>Español: En la ingeniería, cuando un ingeniero se enfrenta a la disyuntiva de seguir los estándares de seguridad y protección ambiental en un proyecto, a pesar de los posibles costos financieros adicionales que ello pueda conllevar. La fricción ética se presenta cuando los valores de responsabilidad y sostenibilidad chocan con las consideraciones económicas y de eficiencia.</p> <p>Inglés: engineering, when an engineer is faced with the dilemma of following safety and environmental protection standards on a project, despite the possible additional financial costs that this may entail. Ethical friction arises when the values of responsibility and sustainability clash with economic and efficiency considerations.</p>
Ecology	<p>Español: Es una ciencia que estudia la relación/conexión que existe entre los seres vivos y el ambiente que nos rodea, además de cómo influye en la biodiversidad, nuestra conducta y posibles interacciones entre las diferentes especies que convivimos, así como las modificaciones que ocasionamos en el medio ambiente. Ejemplo: Los ecologistas estudian cómo los cambios en el ecosistema afectan a las especies que lo habitan.</p>	<p>Español: los ecologistas estudian cómo los cambios en el ecosistema afectan a las especies que lo habitan.</p> <p>Inglés: ecologists study how changes in the ecosystem affect the species that inhabit it.</p>

Figure 4., Table of Mentimeter Results taken on the first and third day of ISP3 in Troyes

Pre-ISP		Post-ISP	
How much experience do you have in Ethics? (1-5)	1.8	How useful was participating for you?	4.4
Are you familiar with different ethical models	5 No 17 Yes	Do you feel more prepared to make Ethical decisions in your practice after training	14 yes 0 no 2 no answer
		To what extent did you find the use of a	6.9

		glossary helpful as a tool (1-5)	
When evaluation ethical behaviours do you tend to be driven by:	1 Ethical Models 4 Personal Experience 4 Intuition 15 The specific situation	When evaluating ethical behaviour, do you tend to be guided by?	0 Ethical models 4 personal experience 2 intuition 12 the specific situation
For me, the personal judgment of ethical behaviour in the situation is more important than the consensus reached between the participants when deciding	18 yes 9 no	For me, the personal judgment of ethical behaviour in the situation is more important than the consensus reached between the participants when deciding	7 yes 12 no
How important is it for me to think about the consequences of unethical behavior in the case studies? (1-5)	4	How important is it for me to think about the consequences of unethical behavior in the case studies? (1-5)	4
Is nature separate from culture?	4 yes 22 no	Is nature separate from culture?	5 yes 12 no
Are values important to making ethical decisions?	26	Do you think the incorporation of eco-ethical models into the curricula at your institution would be well received?	12 yes 7 no
Is there a need for ecological ethics in your discipline?	22 yes 2 no	Do you feel more informed on the question of ecological ethics	18 yes 0 no

When do we make ethical decisions?	0 When required 5 When acting in a way that affects others 18 Constantly	When do we make ethical decisions?	0 When Required 3 when acting in a way that affects others 14 Constantly
		Do you think the discussed ethical decision-making models are applicable in your practice?	16 yes 2 no

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