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From Classroom to Industry: Teaching and Learning Anthropology through a Real-Life Case Study in Slovenia

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Abstract

This paper examines a new approach to teaching and learning anthropology, developed within the European Knowledge Alliance project PEOPLE. The learning cycle approach aims to address the mismatch between skills gained by students and the ones expected by employers in industry. It elaborates on an example of university-industry cooperation established in Slovenia, in which students of anthropology and other related disciplines worked on a real-life case study, gaining skills as well as the ability to communicate across disciplines. The authors examine and evaluate the problem-based teaching and learning process, in which the students, supervised by academic and industry mentors, experimented with anthropological knowledge, skills, and methods. By taking the learning process outside of the classroom into a research field site and industry environment of an automation and manufacturing IT company, the students gained experience in positioning themselves as anthropologists within a research & development team, communicating their research processes and findings, and understanding the relevance and potential of their knowledge and skills in a non-academic setting.

Keywords: university-business collaboration; applied anthropology; people-centred development; learning cycle.

Introduction

Recent global movements (e.g., School Strike for Climate, Global Week for Future, Extinction Rebellion) indicate a rapidly growing awareness, frustration, and eagerness of European youth to actively engage with securing a more sustainable future. It has been argued that anthropologists in particular have the potential to, and should more openly engage in, supporting environmental and social change rather than only observing and commenting on society as "social critics" (Peacock 1997: 14). Anthropology does not in itself profess to solve the problems facing humanity, but it gives its practitioners skills and knowledge that enable them to address complex issues in relevant ways (Eriksen 2021: 18). As argued by Podjed and Gorup (2021:7) in the *Why the World Needs Anthropologists* introductory essay, anthropological intervention is urgently needed to change the world for the better; however, ethical considerations should remain an indispensable part of anthropological endeavours.

Despite all the potential, the high unemployment rates among anthropology graduates are a burning issue that the discipline has faced in recent decades (Podjed and Gorup 2014). Although anthropological education is predominantly oriented towards shorter or longer periods of fieldwork which supplement theoretical knowledge with practical experiences, it still lacks significant spaces to engage with contemporary problem-based opportunities for students to implement the acquired knowledge in interdisciplinary settings outside of the traditional academic boundaries (see Ulk 2021). Different debates have therefore evolved around the necessary changes in the higher education teaching and learning practice with some suggesting a shift towards embracing more interdisciplinary, collaborative, challenge-driven, action-based, and interventional future-oriented research paradigms (Pink 2021; Pink and Salazar 2017). A number of anthropology higher education programmes are already placing a stronger emphasis on the applied aspects of anthropological work (see Nolan 2017; Podjed, Gorup, and Bezjak Mlakar 2016). Some of them involve problem-based learning methods (Savery 2006: 12) together with elements of human-centred design and ethnography-inspired methodologies as a means for product and service development (e.g., Techno-anthropology at Aalborg University, AnthroAnalysis at University of Copenhagen, Emerging Technologies Research Lab at Monash University, 3A institute at

Australian National University); still, there is a significant, untapped potential of these practices and learning takeaways that could be transferable to other contexts within the European higher education arena.

This paper describes the experiences from the Erasmus+ PEOPLE project, which is an international knowledge alliance between universities and businesses, aiming to improve the relevance of higher education teaching, learning and research. Specifically, it aims to address certain challenges of anthropological higher education teaching and learning, such as the skills mismatches among anthropology graduates across Europe. During their studies, anthropology students have little opportunity for implementing their skills to address sustainability issues or translating the acquired knowledge into design and development of interventions and actions. The situation is exacerbated by the failure of society at large and the industry and business world in particular to understand how young people trained in anthropology could contribute towards improving products, services, and processes or by developing innovation in rapidly evolving technological areas.

By bringing together Higher Education Institutions (HEIs) from the social sciences and industries from the energy sector to work on joint cross-fertilisation, the PEOPLE project aimed to address the needs of graduates and industry representatives. A new approach to providing anthropological knowledge and skills to students was developed, incorporating practical work, problem-based learning (Fukuzawa et al. 2017; Savin-Baden and Major 2004), people-centred development principles, and direct collaboration with the industry (Cerinšek et al. 2016). It was tested in four countries: Slovenia, United Kingdom, the Netherlands, and Czechia.

The paper presents the PEOPLE learning approach to teaching and learning, as well as the baseline premises upon which it was designed. Next, it focuses on the Slovenian experience within the project, while also drawing on comparative evaluation of all four pilot cases as presented in the evaluation section. The discussion highlights challenges and benefits of establishing collaboration between academia and industry as experienced in the PEOPLE project. Overall, the paper shows how the approach which highlights the value of anthropology for industry and *vice versa* can provide new employment opportunities for graduates of anthropology as well as related fields of social sciences and humanities.

PEOPLE approach

The PEOPLE approach largely relies on applied anthropology principles and methods (e.g., Pink 2006; Pink et al. 2017; Podjed, Gorup, and Bezjak Mlakar 2016; Nolan 2003). Its impacts have increased markedly in recent decades, with ever higher numbers of anthropologists choosing to move beyond the traditional spheres of academia and "pure" research to work in industry and non-academic sectors. There are numerous resources outlining what anthropology can offer to business and identifying the key skills anthropologists need to acquire and demonstrate to succeed in industry (see Podjed et al. 2021; Ladner 2014; Jordan, A. 2013). Consultants and industry researchers with background in anthropology or sociology have written in considerable detail about the distinctiveness of the qualitative research methods as the added value that ethnographers can bring to the table, as well as the significance of social and cultural contexts or the difference between "etic" and "emic" perspectives (see e.g., Ackerman et al. 2015; Cefkin 2009; Jordan, B. 2013; Nippert Eng 2002; Nyborg 2015; Squires and Byrne 2002). Others have debated the extent to which qualitative methods can be adapted to the constraints and parameters of industry, which for instance cannot afford two-year or even one-year research projects (see e.g., Jordan and Dalal 2006, Isaacs 2013: 93).

Before the start of the PEOPLE project, the involved industry representatives made significant efforts to achieve breakthroughs in several sustainable technology areas, such as energy management and efficiency, energy transition, sustainable mobility, and telecare. However, their product and service design were dominated by technical engineering, mostly excluding social science expertise and insights. Thus, the key starting point and motivation for joint collaboration was the notion that knowing and understanding people should become an indispensable part of the development process if we want to achieve new categories of products, services, or business strategies that fundamentally address people's needs and lead to innovation. The PEOPLE approach therefore builds on the practical implications of the people-centred development model, which has been developed on the basis of various research and development (R&D) groups that integrate ethnography into their work (Kirah 2021; Hale 2018). These types of R&D approaches use participatory and collaborative (rather than observational and detached) ethnography. They are intensive excursions into people's lives, using both intervening and observational methods to create contexts through which to explore questions that reveal what is important to these people in the context of what the researcher is trying to find out (Pink and Morgan 2013). The people-centred development model is presented more in detail in Podjed 2019 and Cerinšek et al. 2021.

PEOPLE Learning Cycle

The main contribution of the PEOPLE project is the development and implementation of the learning cycles as a novel pedagogical approach in which teams of students, academic and industry mentors jointly examine actual challenges and aim to match the proposed solutions with the needs of people. Inspired by the four steps of the people-centred development approach, Figure 1 presents the PEOPLE learning cycle with four corresponding phases: from planning, through launch, to the implementation of case studies, and their finalisation.

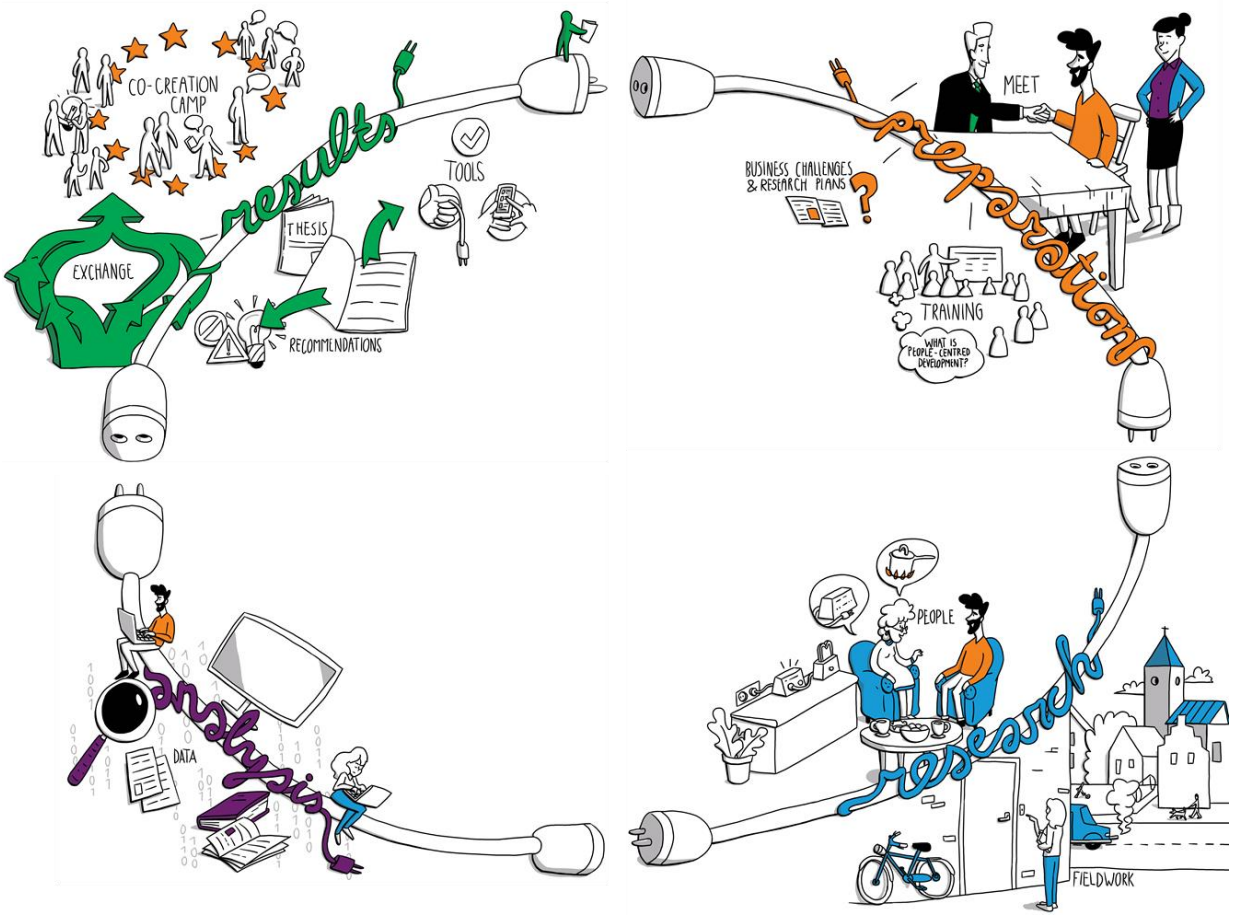

Figure 1: PEOPLE Learning Cycle

The PEOPLE learning cycle spans over two consecutive semesters. At a preliminary stage – before the start of the study year and first semester – an analysis of the local curriculum and the learning environment ensures that the new module is integrated within existing learning structures and is compatible with each participating university. Industry mentors and academic instructors jointly identify preliminary challenges that can be explored through a people-centred development approach. While the PEOPLE approach builds on a similar strategy as problem-based learning (Savin-Baden and Major 2004), the "ill-structured problems" in learning cycles are not only simulations; instead, by building and actively managing the university-industry partnership, the loosely formed challenges are identified between the university partner and the industry partner to reflect the common project goals and particular goals of each party (i.e., an existing business challenge and learning goals). A call for anthropology students is released in the higher education institution before the start of the learning cycle in order to identify appropriate candidates. At the very beginning of the learning cycle and study semester, an exchange session is delivered to students for the purpose of community building. The introductory PEOPLE training includes an exploration of applied research methodology and people-centred development approaches.

> Next to the methods training that is part of our master program research lab, the students received an additional "people-centred training". This workshop consisted of presentations, speed-dating with ethnographic experts, and a practical exercise. Firstly, experienced fieldworkers from the department of anthropology shared stories about their challenges and wins during fieldwork. Afterwards, the students received the opportunity to 'speed-date' with the experts. During these talks, the students asked methodological questions about their research proposals. At the end of the talks, all students had a concrete concept work plan in terms of methodology for their upcoming

> fieldwork. In the afternoon, the students practiced their ethnographic methods. Their 'field' was the main University building. Equipped with the research question: "How do students and staff members shape their daily lives/practices within the University in contribution to sustainability efforts?", the students went into the building to put the discussed research methods in practice. Afterwards, the collected data was compiled, and students practiced ways in which they could analyse it. Finally, we reflected as a group on the challenges they perceived during the data collection (extracted from Salaru and Cerinšek 2019).

Students then begin engaging with the local partner company. This may include gathering information about products and services or usability testing of products and other activities (e.g., ethnographic inquiry with staff). Target groups outside the company are identified and initially contacted through the participating company and/or through academic partner. Students' work is jointly monitored by the university and industry mentors, who provide guidance and feedback through regular joint meetings. Research project development is furthermore enhanced by student participation in research methods modules taught in each existing study programme. Students keep an ethnographic journal documenting meetings and activities, but also as a reflexive record of project activities, research methods, and reading. The following example describes one of the eight different PEOPLE case studies as implemented in the academic year 2017-2018:

> Students addressed research questions relating to the design and operation of telecare products and services. The company develops a telecare product that allows older people to live independently in their own homes by enabling carers to track the elder person's activity in the home, or lack thereof. Because the technology was in its early days, there was a lot of room for improvement, both for the software and the hardware attached to the company monitoring device. Smart sockets are installed in the homes of elderly residents living independently in properties owned and managed by two housing associations. Sensor data is analysed by artificial intelligence algorithms that learn patterns of daily activity and alert families or carers if they detect significant changes in residents' daily routines. Students studied how housing managers with the duty of care for their residents need and use the telecare service provided by the company. The students' starting initial aim was to understand more about the product and the business drivers behind the company. What had inspired the development and what it hoped to get out of the development, alongside a better understanding of the product itself? Additionally, they undertook a literature review of the published information around ageing and telecare to be able to put the product in context and start to devise the key areas of enquiry for the project. Having developed a preliminary understanding, they moved on to focus on the potential users and existing trials and demonstration sites. The students interviewed the wardens and managers from the housing companies on these sites, in order to understand how the devices were being used, how they aligned with what was already in place and what had attracted or put people off in using these devices. Following these conversations, they arranged a series of interviews and workshops with residents, some of whom had the device installed already, to see how they had found having the device, why they had chosen to have the device installed, or why they had not wanted to have the device. As part of a wider investigation into telecare, ageing, and support, they have organised focus groups with elderly people to understand the broader application of the product and what other needs/attractions or detractions might be linked to the product (extracted from Salaru and Cerinšek 2019: 15-19).

At the end of the learning cycle, the final fit-for-industry reports are submitted by students and a presentation for the company management is organized. An evaluation meeting of the students, faculty, and industry mentors takes place in each country to explore emerging findings, potential new ideas, and/or ways to improve existing processes based on the research. The following example demonstrates the recommendations from the previously described case study:

> In response to the findings from the fieldwork undertaken, a series of recommendations have been identified. These were grouped into two broad sections, i) those relating to the product and ii) areas of valuable future study. For the next stage of development for the device, the students recommended that: (1) The use of the phrase 'telecare' within publications and functional material be discouraged. (2) The alert service provides additional options to customise the frequency and nature of alerts, including when an alert is first triggered or once a care provider or emergency services have responded. (3) Different levels of notification are provided (urgent response to make social call) to different types of contact, carers, family, friends and across different technologies (desktop, tablet, smart and non-smart phone). (4) The older person is notified when an alert has been triggered to provide comfort that support has been flagged and the device is working. (5) Continue to improve the pattern learning software to reduce alerts and build confidence in the alerts model and integrate with other devices already provided. (6) Development of the 'active' alert button continues to improve functionality and speed of response. (7) Consider options to build-in greater social interaction to address issues of loneliness (extracted from Salaru and Cerinšek 2019: 15-19).

Analysis of the Slovenian Case Study

In this section, we present in more details one of the PEOPLE case studies, carried out in Slovenia in the study year 2017-2018. The PEOPLE-team work was centred around the energy information system for energy management developed by the participating industry partner, customised and designed for managing energy consumption in industry, infrastructure facilities, and buildings. The industry partner is a provider of automation systems and IT solutions for the digitalization of industry, smart buildings, and critical infrastructure.

Specifically, the Slovenian case study was the energy information system installed in one of the buildings managed by the University of Ljubljana (for detailed analysis see Pretnar and Podjed 2018).

> The key research question was how to make the building a people-friendly and sustainable place by improving existing and designing new solutions. Specifically, the team was researching: (1) Whether and how the Energy Information System is influencing energy use and energy-related behaviour in the building. (2) Whether and how a people-centred approach could improve the energy efficiency of the smart building as well as the wellbeing of building occupants; i.e., Who is using the system? How is the data managed? How do the building occupants feel in the building? What are their values, ideas about energy use? What could influence the building occupants to behave in a more energy efficient way? Could the data from the sensors and energy system be used to support energy efficient behaviour? How could the smart building be tweaked in order to improve the way its occupants feel about it and in it? And more specific questions, such as: How are professors actually interacting with the automated building? Could the students see and read the energy use reports and analyses? Could their behaviour be influenced by the software in order to increase energy efficiency and the quality of the indoor environment? (Extracted from Salaru and Cerinšek 2019.)

With support from the mentors, a team of anthropology students combined qualitative, ethnographic research methods (participant observation, semi-structured interviews, focus group discussions) with quantitative research methods (questionnaires and analysis, data mining): (1) A questionnaire with scale and open-ended questions that was sent to employees and students of the respective faculties housed in the case-study building. SPSS analysis and interpretation; (2) Focus group interviews with a mix of faculty staff, students, and technical maintenance staff; (3) Open-ended interviews with selected staff, energy managers and students, (4) Participant observation (lectures in different classrooms, offices, corridors, the control room); (5) Data ethnography / Data mining (analysis of the data from sensors – room temperature, ventilation, window opening, door, room occupation, air quality in selected sample rooms). Interpretation of data to inform and guide subsequent interviews with the occupants of those rooms; (6) Analysis of research data, preparing guidelines for the company, and a presentation for the management board. One of their most innovative approaches was combining qualitative research data with the data gathered from sensors in a chosen set of rooms. Through data mining and statistical analyses, they defined patterns of workplace behaviour, which they contrasted with data from their interviews to address and explain the most interesting observations.

The research findings revealed that even though the case study building was only recently built and is highly automated, their occupants were not satisfied with it, and were sometimes outright frustrated with it. For example, the building occupants showed high awareness of the importance of having an energy efficient building and value sustainable living. However, they were unable to perform their tasks (studying, lecturing) well, as they often felt either too hot or too cold in the building, the air ventilation was too strong and not optimally placed. One frustration was also the minimalist interior design, i.e., many concrete walls, which were perceived as cold and uncomfortable. There was also lack of understanding, knowledge, and/or time invested by the people who should be working directly with the energy system (maintenance staff).

The results of the case study also showcased the relevance of the people-centred approaches in the field of technology development, energy efficiency, and energy information systems in smart buildings. The research conducted within PEOPLE sparked a lot of interest, specifically around the following questions: (1) how building occupants interact with the smart building systems and (2) how they experience or perceive smart building. The PEOPLE team realised that these are both particularly relevant to them but have thus far not had the opportunity to share their experiences or contribute ideas. It was shown, for instance, through a very high response rate to the PEOPLE questionnaire that included hundreds of comments that expressed the respondents' dissatisfaction with the smart building, and in particular its energy system and automated functions (heating, ventilation, air-conditioning, automated external shades, etc.).

The research team prepared five key recommendations, based on their findings. (1) Systematic approach to involving their product users into the optimisation loop during the development of new energy products. (2) Using ethnographic methods to define 'user needs' when configuring the system. (Installation of the system is always adapted to the individual building – taking into account who will be using it, how, and why throughout the process.) (3) The PEOPLE case study's ethnographic material could provide a story for marketing purposes. (4) Public display of data and analyses from the energy system, which could be interesting and meaningful to the building's occupants or could incite them to behave in a more energy-efficient way. For instance, showing how much energy was saved in the past week, designing a "competition" to improve the result in the next week; showing the frequency and intervals of when windows are commonly opened and advising on when it would be better to air the rooms (e.g., in the morning, not after lunch when the day is hot). (5) Strategic idea – marketing the company and its product as environmentally responsible, showcasing the data from the case study and other examples, how an energy information system contributes both to indoor environment quality and the environment. As stated by the company representatives:

> The PEOPLE project has brought interdisciplinarity into our company, which predominantly employs engineers and IT experts. Through the case study and the learning cycle, the project introduced hitherto unused methodologies (people-centred approaches, qualitative approaches) that contribute to the product development process and improvement of a particular product (an energy information system), which lead to generating new ideas. /…/ The PEOPLE case study has brought the company's product closer to its users and individuals, affected by the system (i.e., all occupants of the building: academic staff, technical staff, administration, researchers, students). Previously, there were only a few technical and accounting personnel that were in contact with the energy system. With PEOPLE's development approaches, the energy system got to be a part of a bigger story, while a wider array of users was directly involved in the research.

Evaluation

The project evaluation activities focused on assessing the different impacts of the learning cycles and the collaboration between higher education and industry partners in general. Specifically, the aim was to evaluate to what extent the students gained valuable practical skills complementing their theoretical education and to what extent they were able to better articulate their added value as social scientists for the industry. Evaluation was undertaken by the main stakeholders in the project, i.e., the students, industry professionals, and faculty educators. In each learning cycle, baseline data was collected at the start of the academic year, mid-term data included reflections by all stakeholders on progress made and closing statements at the end of the learning cycle measured development against the initial baseline (see Figure 2). At each of these points, national evaluation reports were compiled and collected.

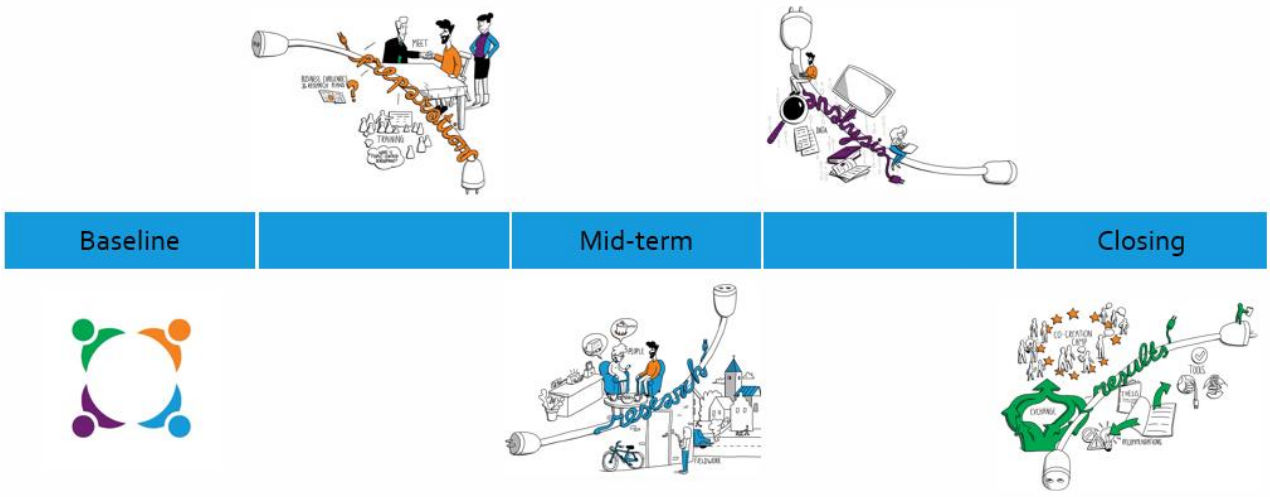

Figure 2: Three evaluation stages in the PEOPLE learning cycle

Several evaluation tools were designed for each stakeholder group, including online self-assessment questionnaires, reflexive reports, notes from workshop discussions, and blog entries. Additionally, data was collected through personal communication (e.g., informal conversation, e-mail, phone calls, etc.) and focus groups. The evaluation results from all case studies were analysed qualitatively to measure whether and how the indicators for success were reached. The dataset comprised 80 documents, including meeting notes, joint

PEOPLE event notes, (national) evaluation reports, students' motivation letters, and reflexive reports. Atlas.ti (a software tool for qualitative data analysis) was used for data analysis, using inductive and deductive coding. The first coding round was deductive: codes were pre-set based on the Evaluation Strategy. The following codes were used in the first coding round: 1) Case info, 2) Collaboration, 3) Evaluation tools, 4) Faculty educators, 5) Industry professionals, 6) Participants, and 7) Students. In the second round of coding, a combination of deductive and inductive coding was used. All quotations were reviewed once more and divided further into specific codes, using an iterative process. Finally, 25 main codes were developed with 127 sub-codes (for more information see van Merriënboer 2019).

Making a difference

As mentioned in the introduction, a key challenge addressed by the PEOPLE project was the mismatch between skills gained by anthropology students and the ones expected by employers in industry. Most students participating in the project did not have previous experience in working in the industry. One of them stated: "One of the most important reasons to participate is professional development. I want to get practical experience of how a business consultant should behave, and how to communicate in a formal working environment while doing research for industry."

Some students were able to reflect more concretely on the skills that anthropologists bring into industry-focused case studies, and to express some of the limitations of their discipline. For instance, one explained that anthropologists have the ability "to place development projects into a wider social context and estimate how a certain product can influence our future and collective awareness."

Most students had a prior interest in sustainability issues, and many of them said they wanted to participate to "make a difference". However, the data shows that at the beginning of the learning cycles the students were unable to articulate the added value of anthropology because they lacked confidence in their own capacities as social scientists. Most students were filled with doubt. "At the moment," one of them told us, "I would say I am confident about the application of anthropology in some limited areas drawing on previous experience but would not be confident to do this in a comprehensive or well-rounded way due to lack of framework or wider understanding of potential areas and knowledge." Frequently, students were only able to provide some general comments on the topic. They said that anthropology could help to bring in the "social aspect" and gain "insights in users" but were unable to express their own added value.

Collaborating with the industry

Working with industry was indeed identified as one of the key benefits of the PEOPLE project, but also quite a big challenge for students. For example, sometimes they found it hard to identify themselves with the industry partner. One of the students explained that "working with a company that is so big is very different than with smaller companies I have experience with. I believe this was my biggest hurdle, getting used to the way processes work in a big company." Still, the interaction with the industry partner gave them the opportunity to gain work experience whilst studying. One student stated in simple terms that they "obviously need experience in working with industry, so that we [students] have a clear idea of what it is like."

Students admitted that in the beginning, they felt "a bit lost". The process of building confidence is exemplified in the following abstract from a mid-term report as indicated by a university teacher:

> ... they [students] still don't feel like they are 'helping or working with the industry partner' or that their 'research outcomes will be very valuable for the industry partner'. In short, while having greater insight into the fact that their knowledge as anthropologists is needed by industry, they still feel insecure about how this might be the case and therefore how they should translate their newly acquired knowledge into something that is useful for industry.

Linked to this, students also expressed fear of not having sufficient knowledge or experience to conduct meaningful research. Some were hesitant about the advanced software methods they were going to use; others had no previous experience in interviewing. They experienced the fear of making mistakes. As the learning cycle approached its end, one of the students admitted that she "would have liked to speak out more often and bring more ideas. [She] would want to have been less worried about how that would make [her] look."

How to engage with industry was certainly a challenge for students but was also identified as one of the most important skills that students acquired during the project. Industry professionals offered training in skills that students need but faculty educators are unable to provide. In one of the trainings for instance, students and faculty representatives learned how to structure their presentations to effectively communicate their message to non-academic audiences. As stated by the faculty representative: "It is important to be aware of your own role as a future applied anthropologist. And it might be necessary to change your own attitude towards industry and learn how to tell stories to different audience groups."

One of the national evaluation reports describes how the industry partner attended classes and actively participated in all aspects of teaching, including discussion, collaborative walks in the building, meetings with the technical staff, and a focus group interview with employees in the building.

In addition, working with an industry partner also gave students access to research data, for instance by providing measurement tools or by facilitating access to interview respondents. Research in industry might apply the same methods as used in academia, but the goals are defined in a particular way, which requires a more practical, solution-focused mindset and orientation, as stated by the industry representative. The research team "had to think more in terms of the 'possible' and 'available', and a bit less in terms of 'desirable' or even 'ideal'."

In some cases, industry partners were not persuaded, and students were forced to rethink their goals, yet they recognised the value of their work even if the industry partner did not, as a student explains: "We conducted interviews and they said that it was not representative. They were used to surveys with lots of people. So, we had to convince them that our methods were valuable."

Using an iterative process was important to allow for ongoing research findings to be incorporated into the project as it progressed. The industry representative recognised concrete benefits of the study and anthropologists' contribution to the project, but also observed some of the limitations of anthropology. For instance, she stated that anthropologists can easily "shift the focus of the study, perhaps too quickly allowing 'the field' to guide their research," as it actually happened in their case study and as is often the case in academic research. Instead of only focusing on the energy information system, the research team took their research wider to explore the interaction between the occupants and the buildings, their values towards energy saving and energy efficiency, and their experience with the smart building in general. While the professional suspected that this "might not be in the direct interest of the company", students and university mentors felt that their findings identified important material that the company was hitherto unaware of. Therefore, when the student team was in the phase of structuring their research data analyses and forming clear recommendations for the company, they also expressed concern over the difficulty of doing this in a way that could actually be useful or beneficial for the company. They recognised that the industry's perspective and goals are different from their own as researchers. Even though the Slovenian team's research brought interesting results about the interaction between the occupants and the smart building, about the energy efficiency in the building, etc., they were yet unsure how to formulate their findings in a way that would satisfy the industry partner. This indicates that through their experience in PEOPLE, they learned that one of the most challenging parts of working with and for industry is to translate research findings into business-relevant information.

In certain cases, disagreements between industry and academic partners were difficult for students to cope with. Because the PEOPLE project hinges on industry-academia collaboration, students were able to observe at close range how professional disagreements were handled and resolved. Although the process was traumatic, it was resolved with care and concern for student well-being, as the following quote from a faculty educator shows: "The students have learned the value of effective communication, demonstrated excellent conflict resolution skills, and shown how value can be added even in an unhappy marriage."

In the final stage of the learning cycle, all students presented their research findings and recommendations to the management board of the industry partner. Learning to communicate in a fit-for-industry way was identified by nearly all students as a key skill they had acquired in the process. In addition, university teachers were able to observe how students connected with their industry partner during the presentation and reflected on their work.

Interdisciplinary teamwork

Students also identified the interdisciplinary nature of the PEOPLE project as a benefit of the project, allowing them to work with colleagues from different backgrounds. "One of my key findings is," explained a student,

"that interdisciplinary groups bring better results because of their different approaches and differing views. I think this should be more often included in university curricula and more resources should be provided for it, as it would strengthen innovation and progress." Another student remarked that each team member brings a different perspective to the project and "one does not go without the other" in the field of energy information systems and energy management, which were in the focus of their case study. Additionally, they enjoyed the interaction with university teachers during the project, as well as specific teaching elements in the PEOPLE project, as mentioned in a reflexive report of a student: "I appreciated the attitude of the teachers where I always feel I do not have to be ashamed of asking questions or of not knowing everything."

As a university teacher stated, the group dynamics of students was completely different in the learning cycle, where they usually met in the 'field' (i.e., the researched smart building) than it was in the classroom where he usually teaches. In contrast to the rest of their study experience, the project brought them together in a social setting in which they felt comfortable to share ideas and exchange experiences, the teacher explained and continued: "I remember vividly a meeting at which we used BeeBox [a tool for defining team goals]. The exchange of information was at that occasion very good and completely different from the lectures at the university department, where it was more difficult to establish the feeling of closeness and cooperation." Closely linked is the fact that students learnt how to work in a team, and where efficiency may be compromised, as mentioned in a student reflection: "Whilst our team is great, we definitely didn't do anywhere near as much work as we should have done, something I would largely attribute to a lack of accountability towards the group - we never called each other out for not doing agreed upon tasks or pulling our weight."

However, students also reported that teamwork was an important additional skill acquired during the PEOPLE project. They also expressed the perceived impact of their participation on their personal skills, such as being collaborative and more confident as anthropologists and individuals. More specifically, they mentioned the relevance of socialising, communicativeness, and being "part of a group working towards a common goal."

People-centred development in practice

The most frequently mentioned benefit was the chance to conduct meaningful practical research. For many students, this was their first-time conducting research based on a 'real' case, as their studies previously focused predominantly on theory or academic research results. One student, for example, reported: "Only now was I able to comprehend where such a research can be useful, and which could be the fields of applied anthropology. In my study programme, I was already starting to lose interest."

Students gained skills in conducting surveys, interviewing, observation and informal conversation, writing field notes, visual methods, etc. As the context of the cases was very diverse, skill development differed, with some students conducting in-depth ethnographic fieldwork whereas others used mixed methods, conducting experiments and/or used sophisticated analysis software. They also underlined the importance of learning about the specific research topic, e.g., energy efficiency in buildings, through their own fieldwork experience and through collaboration with their mentors. Since some student team members were enrolled in a BA programme, they appreciated the opportunity to test the ethnographic methods in a real-life case study, bringing theory into practice early in their studies. Although practical work was part of their existing curriculum, they appreciated that they were able to try out the anthropological methods in a contemporary, interesting, and challenging case study, in contrast to studying "peasant life and hayracks", as in the average student fieldwork.

Students also praised that they had an opportunity to see a focus group in action and that the collaboration in the team made them realise how anthropology can tackle a specific topic as well as how it can address wider social and environmental issues. Even though the students expressed their recognition of the relevance of what the other team members and their knowledge or research methods brought into the project, they also observed and expressed their awareness that the "classical method of participant observation and doing interviews benefits the development of new solutions, because it brings first-hand information from key research participants."

A university member who has been in direct contact with the students and is not an anthropologist, but an engineer, stated that for him personally the most meaningful new insight was the people-centred development approach, as it changed his perspective on the technology development and implementation. "Now I see the people-technology interactions everywhere," he explained, "and incorporate views of social sciences and humanities in day-to-day activities, such as project executions, various trainings, and the lectures I regularly hold. I became a humanistic engineer."

Building confidence

The learning and teaching methods employed in the PEOPLE project allowed students to acquire practical skills and build confidence at the same time, and particularly benefitted from learning *in situ*. According to educators, the students have become more self-assured and assertive when they conduct research in non-traditional anthropological settings. They were also more relaxed in cooperation with people from industry and ready to present their findings in professional settings and to broader audiences.

The PEOPLE project provided students with an experience that was designed to prepare them better for future employment, as a university teacher observed: "Students can demonstrate their involvement, being supervised by company professionals and their work on real-life interdisciplinary case. For sure this is a valuable reference they can use for their CV demonstrating acquiring semi-work experiences during their studies."

What is clear from the evaluation data is that students did build confidence by participating in the project. As one of the students explained: "I sometimes find it hard to celebrate small wins when things do go well. I seem to always worry about the next step. I think that this partly has to do with my insecurities of being a novice researcher. In saying this, I must acknowledge that my involvement in the PEOPLE project helps me reflect on these insecurities, and thus helps me be more positive about my progress." Another student said that they suffered from low self-esteem at the beginning and were inclined to give up because they knew "the outcome would not turn out perfect." Finally, most students agreed that engaging with industry taught them to "step out of their comfort zone, be more proactive and assertive". With the skills acquired and their confidence level built up, students were able to recognize and express their added value as anthropologists and social scientists for industry.

Discussion

The evaluation of the PEOPLE project demonstrates that students gained a unique research experience and acquired new skills, but also came to learn and understand the conventional research methods from a different perspective. More specifically, students adopted an applied perspective on social science and humanities theories and methods, especially by incorporating industry requirements in their research design. They learnt about the amount of effort and time that is taken up in research projects through identifying third parties whose input was essential to conducting the research and managing relationships with them.

Collaboration between social science faculties and organizations operating in the industry of sustainable living and energy can be quite challenging to set up and maintain. Research activities were successful when the project met a range of criteria, such as being: (1) suitable for social science research, (2) framed well, (3) suitable for students to work on, and (4) fit for research in the given time frame (based on academic semesters). The task of concretizing the cases takes time. Still, projects should become concrete as early as possible in the research process to avoid causing issues at a later stage, as becomes clear in the following excerpt of a national evaluation report: "It's important for the industry partner to have some sort of lead, so that they remain interested in the case, engaged, otherwise it'll be the same as in every other university-led project, where the university defines the research problem, question etc. and the business's needs are left out."

Another hurdle was the difference in timeframes between the academic year with industry cycles. For example, students were ideally recruited before the closing date of registration for the following years' programs. In a fast-changing business environment, it was difficult for the industry partner to provide sufficient information about possible case studies at this stage. The research in itself also takes time, which industry professionals did not always feel they could spare. The length of time required for anthropological research before reaching a conclusion was identified by an industry professional as a "crucial problem" for industry-academia collaboration. This challenge requires regular dialogue between academic and industry partners. Methods such as action-research offer one possible model, where the researcher shares preliminary findings with the industry partner, who then supports the researcher in defining focus as the research progresses.

There were several factors that were seen to facilitate industry-academia collaboration. Primarily, collaborations that included a high level of co-creation were more successful than those without. Co-creation happened through the shared development of training, events, or documents or through jointly presenting the collaboration to an external audience, or by doing empirical work together, as a university teacher observed: "By co-creating, the participating engineer really got it. The thing is, there was not one particular thing that changed his mind. It was

the process of working with us that changed his thinking. By working together, we learned new things about each other." Or, as expressed by an industry professional: "In all instances, insight into the work-plan of the others sparked ideas about how the plan could be better tailored, as it allowed respective needs/added value and opportunities for exchange to emerge that would have gone under-detected."

It proved instrumental that the industry partners were aware and agreed that the primary aim of the project was educational. In other words, business representatives had to acknowledge that the students' projects served education purposes and that the added value of business involvement is designed for students to develop new skills and build their experiences. Fruitful suggestions might come out of the student research but cannot be relied upon.

Non-academic partners therefore needed to be patient during the student research process, allowing time for collaboration to work. Whether or not students should be 'held accountable' for the relevance of their research conclusions proved to be a point of discussion. Some faculty educators defined the university as a "safe environment" in which students should not be exposed to negative or harsh criticism (which might lower their self-esteem or cause frustration, etc.), while others, mostly industry professionals, felt that on the contrary students should be exposed to criticism since this is what they would experience in the world of work. In other words, business should be frank about the outcomes of research and potential added value and the students and university should understand this as a valuable feedback. The key lesson here is the necessity for all partners to align their expectations beforehand.

Likewise, trust between partners needed to be developed as early as possible. Ideally, a trust relationship should already be present before commencing a long-term project, but this was not always the case. The evaluation also suggests that collaboration was more successful with the presence of an intermediary - someone who understood both worlds and was able to facilitate and translate between industry and academia. There were several national teams with such an intermediary, such as social scientists working in the industry partner organizations and faculty educators with previous work experience in industry. One of them explained that to act as an intermediary you need "industry and business skills, the ability to communicate, and speed. In anthropology we teach students that quick and dirty is bad. In industry, we produce what we can in two weeks." In addition to speed, intermediaries needed to translate across disciplines and professional contexts. Their vocabulary had to be flexible, so that professionals from a wide range of disciplines and organisational ranks could fully grasp the complexity of the research findings, without struggling with academic jargon (and *vice versa*).

The evaluation showed that communication between the industry partner and the students was particularly important, with communication recognised as an essential skill for students to learn. One of the students reflected that more communication between students and industry partner would have been beneficial: "I think communication with the industrial partner is a very important thing to learn from this project and we didn't make the best out of this chance. Maybe it [would be] helpful if you enforced some of the communication with them."

Ensuring regular contact between industry partner and students could be a challenge, since unlike other research-based internships or placements, these students spent most of their time doing research 'in the field'. In one example, industry managers voiced concerns that they felt less engaged whilst students were conducting fieldwork. Thus, in the following semester, several additional meetings were scheduled at which students and industry partners discussed preliminary results. These additional updates and insights in the anthropological research process significantly improved the partners' understanding of the added value of the students' research.

Conclusion

Although this paper described the experiences and learning takeaways from a European project, PEOPLE is not considered a project in its conventional meaning but rather as an ongoing initiative and learning experiment. In the preparation phase, it started as a promising idea with a clear goal to rethink, reposition, articulate, and widely promote the added value of social sciences and humanities in general and anthropology in particular in tackling the contemporary challenges of our societies. On our journey we were (and still are) dealing with different challenges, such as overcoming existing stereotypes; aligning different – sometimes contradictory – agendas of students, teachers, and business professionals; and connecting different expertise, perspectives, paradigms, and working principles, such as engineering mindsets, anthropological deep insights, emic vs. etic perspectives, big data vs. thick data, ethical considerations, etc.

In its essence, PEOPLE was an experiment that helped to redefine roles and change mindsets within academia and industry when it comes to interdisciplinary university-business collaboration and co-creation between social sciences and humanities on one hand and engineering on the other. In addition, the unconventional approaches, experimentation and reconceptualising of higher education are needed to equip students with the required and radically different understanding of the environment, society, and socio-economic processes. Both require a shift from monodisciplinary expert mindset to a development approach which combines technical expertise with socio-cultural knowledge, insights, and rigorous ethical considerations. What started as a PEOPLE project has now grown into a Active8-Planet initiative (www.active8-planet.eu), bringing a shift from predominantly "ego-centric" to a future-oriented "eco-centric" mindset laying ground in shaping new applied sciences and supporting the transition towards a balanced life on our planet.

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