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Teaching technology awareness: capabilities and thresholds to think about technology

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Technological advances are blurring the boundaries between technical and non-technical disciplines. This shift compels educators to develop teaching methods that equip students with the capabilities necessary to be aware of technological impact and investigate the meaning of technologies throughout their careers. Here, we address the challenge of teaching technology awareness in non-technical disciplines. We do so by presenting an account of the development of the course *Technology and Society* at Oslo Metropolitan University. Alongside providing insights into the curriculum design and evolution of this course, we offer a theoretical contribution. Specifically, we highlight the benefits of a capabilities-oriented curriculum design and the use of threshold concepts as tools to enhance students' *technological awareness*, understood as the ability to interpret the meaning of technology within their future professions. We conclude by presenting an example from teaching that demonstrates how technology can challenge the meaning of professional practice. In doing so, we show how professional practice, in turn, influence the meaning of technology, fostering a deeper understanding of its role and impact.

KEYWORDS

technology awareness, capability, threshold, pedagogics, critical thinking

1 Introduction

Technological innovation and implementation are breaking down the boundaries between traditionally technical and non-technical disciplines. Therefore, students need to think critically about the impact and meaning of technology in disciplines previously considered non-technical. This shift places the onus on educators to develop theories and pedagogical approaches capable of equipping students with the skills to encounter and employ technologies responsibly throughout their careers.

Drawing on our experience from developing the university course *Technology and Society*, we aim to make a pedagogical and theoretical contribution to teaching technology awareness in non-technical disciplines. Additionally, we explore how examining core concepts and practices across technical and non-technical disciplines can be mutually beneficial in investigating the broader meaning of technology—beyond its technical function and philosophical essence.

Following the development of digital technology, concepts like digital literacy and professional digital competence (PDC) are developed to enhance development of digital competence (Siddiq et al., 2024). However, as the tools applied are not merely technical, but also cultural, digital competence must entail awareness of the broader *meaning* of technology. Our bodies and environments are constituted and fragmented through the development of new technology, and both sensing and thinking follow from this development. Digital literacy and PDC is thus not sufficient to prepare students for a future as citizens and professionals in a situation with continuous introduction of

disruptive technologies. Consequently, we suggest a pedagogical turn toward technology awareness as connected to an inquiry into the meaning of technology in practice, rather than technical function.

"Technological awareness" is a term that often either lacks a clear definition or is reduced to "the amount of information one has about a new technology" (Edsand and Broich, 2020; Devisakti and Rohayati, 2025; Darbari et al., 2021; Wang and Li, 2024). Consequently, educating for technology awareness is in danger of being reduced to practical information regarding technical function (Besen et al., 2025). We do not seek to provide a conclusive definition of technological awareness but aim to broaden the concept by distinguishing it from limited general knowledge and positioning it as a foundational step in a capabilities-oriented curriculum.

A premise in this article is that technology shapes society. Technologies "did not fall from heaven" but must "be understood through the fantasies and politics that its invention was responding to" (Kittler, 2010, p. 22). Technologies can be seen as revealing specific realities for us, through enframing (Heidegger, 1977) and bring about cultural techniques and practices (Siegert, 2007).

Focusing on capabilities to identify, investigate, and think critically about technological change does not diminish the importance of knowledge. Rather, it emphasizes providing sufficient knowledge to raise personal and professional awareness while challenging students to reflect on the meaning of technology *in practice*. The primary objective of teaching technological awareness in this view is to instill in students the ability to pause and critically consider the meaning of emerging technologies as they are rapidly integrated into their future professions and the fabric of society.

The paper proceeds in four parts. First, we provide a brief account of the formation of the course *Technology and Society* taught at OsloMet. This includes how curriculum design and pedagogics changed over time in response to our own reflections, student feedback and the learning objectives of the course. Against this backdrop we make a theoretical contribution on teaching technology awareness. This includes the notion that awareness can be distinguished from general knowledge, and that it marks a fundamental step in any capabilities-oriented curriculum design. Inspired by the attempt of Baillie et al. (2013, p. 236) to integrate threshold concepts with capabilities approach, we discuss how threshold concepts are employed in *Technology and Society*. We further show how such concepts can be central in understanding how technology impacts the meaning of professional practice, and in turn informs the meaning of technology in that context.

Our contribution on how to teach technology in non-technical disciplines is based on reflections within the teaching team, drawing from chat logs and Teams discussions. It also incorporates an analysis of course descriptions, documentation from various iterations of the curriculum, and versions of the course hosted on the learning platform Canvas, accumulated over a five-year period, in which our team delivered the course 37 times to approximately 3,400 students. We also draw on feedback from students, collected through online, anonymized surveys after each iteration of the course. The surveys comprised a mix of closed-ended and open-ended questions and were summarized and reflected upon in course reports. Our theoretical contribution emerges through this history of the development of the course.

2 Teaching technology in non-technical disciplines: history of a course design

When OsloMet changed its name and status from a university college to a university in 2018, a decision was made to design a new course that would provide students across the university with basic knowledge about digital technology and the ability to reflect on how such technologies influence both personal and professional lives. By 2020, *Technology and Society* had been fully developed as a flipped classroom course, awarding 5 study credits. The curriculum consisted of seven modules hosted on the learning platform Canvas, featuring videos of experts from different fields explaining and elaborating on technologies, terms, and perspectives relevant to understanding the current technological landscape and its development. In alignment with the course vision and description, the course had high ambitions of fostering both awareness and competence among students:

> In this course, students will acquire the basic knowledge needed to harness the potential of digital technologies and identify opportunities to use technology to foster inclusion, active participation, and sustainability in society and the workplace. Through individual reflection, shared exploration, and group discussions, students will gain awareness of how technological developments might impact their future professions and their role as citizens in an increasingly digitalized society.

In 2020, the Faculty of Health Sciences incorporated *Technology and Society* as a mandatory course in its vocational study programs. To align with the overall structure of these programs, the course was adapted into a three-week intensive format. In the following sections, we will describe how we simultaneously adjusted the course to meet these structural requirements and developed strategies for teaching technology to students in non-technological vocational education. The first time we held this intensive course, we retained the same curriculum as before, using a flipped classroom approach consisting of seven modules on the learning platform Canvas. We held bi-weekly seminars to cover all the topics, but instead of prioritizing contemporary issues of public interest, we focused on discussing cases relevant to the students' future professions. For this group, which consisted of occupational therapy students, we planned learning activities that we believed would be particularly interesting and relevant.

In one of the seminars, the students took on roles as individuals with various disabilities and social challenges and attempted to solve specific problems using the chatbot of the Norwegian Labour and Welfare Administration. Afterwards, we facilitated a plenary discussion about the opportunities and challenges of chatbots in public administration. Ahead of the seminar, students had been provided with links to preparatory material on this topic. Despite this, the discussion did not go as planned. Very few students participated, and an awkward silence lingered in the classroom. This lack of engagement persisted throughout the 3 weeks of the course.

The student evaluation revealed that many students felt the seminars did not significantly contribute to their learning. In response to the question, "How important were the seminars for your overall learning experience?" one student wrote: "Did not help learning. Just set up for discussion. Difficult when we do not know anything and do

not have any opinions." This and similar statements indicated that several students found it challenging to engage meaningfully in discussions about topics they had limited knowledge of, such as their future profession and the digitalization of the health and welfare sector.

In response to the question about the importance of the seminars for learning, another student wrote: "Not important at all. The seminars were just a deeper focus on concrete examples that the teachers themselves could not even answer…" This feedback revealed that we had failed to effectively communicate the purpose of the seminars. It seems that this student interpreted the seminars as sessions where the discussion of problematic cases of digitalization would conclude with authoritative answers, rather than as opportunities to explore and discuss different dimensions of a technological phenomenon.

In addition to being dissatisfied with the seminars, the evaluation survey revealed that many students found the course messy and rushed and expressed a desire for more time to learn. The student feedback, along with our experience of failing to engage the students in the planned learning activities, prompted us to restructure the course. However, the structural limitation of a three-week timeframe for students to learn and demonstrate their knowledge in an exam was non-negotiable. As a result, we reorganized the curriculum into three phases, corresponding to the 3 weeks of the course.

The first week was devoted to introducing basic concepts necessary for understanding what technology is, with a particular focus on digital technology. These basic concepts included "technology," "infrastructure," "digitalization," "algorithms," "big data," and "artificial intelligence." They were presented in the first of three modules on the learning platform, and the seminar activities were designed to deepen the students' understanding of these concepts. By developing a shared vocabulary, students would be better equipped to engage in meaningful discussions with their peers and avoid the reported experience of feeling unprepared or lacking the necessary knowledge to participate.

The second week focused on digital technology in a societal context, with an emphasis on the health and welfare sector. The corresponding module on Canvas included short videos featuring examples from research projects and professional practice. This module introduced a set of dimensions for considering the role of technology in society. These dimensions addressed concerns such as universal design, sustainability, privacy and data security, as well as analytical concepts such as "affordances," "delegation," and "socio-technical interplay."

In the seminars, students applied these dimensions to analyze cases relevant to their future professions and to reflect on their own experiences from training periods and employment. We anticipated that using these dimensions to frame discussions would shift the students' focus from merely "solving a case" to exploring it with the goal of gaining insights and knowledge that could be applied to other cases, both in the present and in the future.

The first 2 weeks of the course were designed to equip students with the concepts and dimensions needed to analyze and reflect on real-life examples. In the third week, students were expected to integrate these concepts and dimensions into discussions of controversies and dilemmas related to digital technology, both in general and within their specific disciplines. To support group work, practical guides for approaching controversies and dilemmas in a structured manner were introduced during the seminars. Some of the cases were contemporary, while others were speculative, amplifying present trends. Interestingly, we have observed that some of the cases we initially presented as visions of a dystopian future have drawn increasingly closer to reality.

In keeping with the principle of alignment (Biggs, 1996), the three-part structure of the course was mirrored in the exam. In the first part, students were instructed to define and provide brief examples of the basic concepts. The second part evaluated their ability to use selected dimensions to analyze a case or phenomenon related to their future profession. The third part required students to discuss a complex, and often speculative, case. The exam was distributed on the first day of the course and submitted on the last day. By aligning with the overall course structure, the exam was designed to follow the students' progression of learning, allowing them to begin writing during the first week.

After restructuring the course, the evaluations revealed that while the brevity of the course was still a source of frustration, students also reported that they had incorporated new perspectives on technology and society, as exemplified by this quote from the fall 2024:

> I have learned how data created through daily habits can be used by cooperations and other bodies to manipulate and control the public. I've gotten a greater understanding for how machine learning and AI work. Lastly, I've learned to think about the connection between tech and people in a new way.

3 Theoretical reflections on teaching technology awareness

Students attempting to see technology, society, and their future profession in new ways are faced with several potential obstacles related to how technology is embedded in society. First, there is the fact that, although, in Arthur C. Clarke's famous statement, "sufficiently advanced technology is indistinguishable from magic," it sometimes fails to appear to us at all (Stahl, 1995). In everyday life, the technological infrastructure, from the sewage system to the data center, presents itself as simply existing and is noticeable only upon its failure. This phenomenon becomes more apparent as artificial intelligence becomes "ever more and often invisibly embedded in our day-to-day tools and as part of complex technological systems" (Coeckelbergh, 2020, p. 3). It seems that technology has a short journey from the spectacular to the taken-for-granted. Consequently, students must first become aware of technologies and acquire ways of noticing their impact in practice before turning to investigating their meaning.

Second, as technological development happens at a pace seemingly far exceeding other aspects of life—such as law, biology, nature, and cultures—it becomes difficult to keep up. Once research has been gathered on the effects of Facebook on young adults, they have long since migrated to other social media. Therefore, in-depth knowledge of specific technologies is always in danger of becoming outdated. Upon completion of their education, students will enter a profession in which they could potentially work for 35 to 40 years. They must, therefore, be prepared for a future that will include technologies and applications of current technology that have not yet been conceived, with potentially immense impacts on their profession.

Because of the above, it is tempting to revert to teaching the essence of technology, often framed within the discourse emerging from the philosophy of technology (de Vries, 2016, pp. 53–68). This approach—teaching the philosophy of technology through investigation into its essence—is an important vantage point. However, it has limitations in practical terms. For instance, if a new technology is introduced into the work environment, referring to arguments like that of Ernst Kapp's *organ projections* or Heidegger's *gestell* seems out of place. Similarly, since the meaning of technology is contextual, framing it in terms of a single overarching essence may also limit awareness and investigation into the concrete meaning of particular technologies.

3.1 Toward a capabilities-inspired approach to teaching technology awareness

Avoiding the epistemic, temporal, and philosophical limitations mentioned above necessitates teaching that looks beyond specific technical function and general philosophical essence, making students able to become aware of the impact of technology and to investigate its meaning in particular contexts and on a personal level.

Technology and Society is a capability-oriented subject. According to Bowden's capability theory (Baillie et al., 2013; see also Raaheim, 2019, p. 85), capability is not merely about reproducing knowledge but about developing one's own understanding and knowledge when faced with unfamiliar phenomena and situations. This includes the ability to identify key information in new contexts and to connect such information to prior knowledge (Raaheim, 2019, p. 86). Adopting a capability-oriented approach in a subject like *Technology and Society* is crucial because technological development progresses rapidly and has the potential to create radical changes in society. While we cannot teach students to assess the ethical and political consequences of a technology that does not yet exist, we can equip them with perspectives to evaluate such consequences and provide opportunities to practice assessing various technologies used today. In doing so, they can develop the skills needed to evaluate and respond to emerging technologies in their future professions and daily lives.

3.2 Technical knowledge and technological awareness

The central idea of the capabilities-oriented curriculum is to encourage students' "capabilities to act in previously unseen situations" (Baillie et al., 2013, p. 230). The fundamental question in this approach, therefore, involves asking what the student should "be capable of doing at the end, given the need to deal with an unknown future" (Baillie et al., 2013, p. 237).

Related to this central idea and initial question is the notion of awareness—the preparedness to stop and observe to think about what is happening. Awareness pertains to the activity of being watchful or vigilant. Looking out for something involves a general knowledge of its existence but does not necessarily require any deep understanding of the object. Awareness can be described as ontological rather than epistemic in nature. For example, when walking on a forest trail, one should be aware of the potential existence of snakes. However, this does not imply knowing that there are snakes on the trail or having detailed knowledge of snake species and their behavior.

The meanings of the terms *knowledge* and *awareness* are intertwined and, therefore, difficult to distinguish. The purpose of this discussion is not to delve into the field of epistemology but rather to highlight a possible distinction between general knowledge and awareness. It is tempting to put awareness and knowledge on two sides of a single scale. On this scale, awareness would represent the lowest level of knowledge—merely being aware of something with very limited understanding. In the middle of the scale, one would find general knowledge, and at the end, deep and specific knowledge of something particular.

It may be possible however to place awareness and knowledge on two different, albeit somewhat overlapping, scales (Trevethan, 2017). If one defines knowledge as the "comprehension of something or someone, such as ideas, information, descriptions, or abilities, gained by discovery or learning through experience or education," and awareness as "the capacity to be conscious of a new trend, such as new technology or system," it might be possible to place the concepts on different scales (Alordiah et al., 2023, p. 4; Trevethan, 2017). One scale could represent the continuum between general knowledge and deep knowledge, while the other could represent the continuum between low and high personal awareness. By viewing awareness and knowledge as belonging to two slightly different domains, it becomes possible to define combinations where someone could have a high degree of general or specific knowledge but still exhibits low personal awareness. For example, an expert may possess in-depth knowledge of a particular technological system but fail to be aware of an impending technological revolution within the field.

For those in technical education programs, the goal should be to obtain both general and specific knowledge while simultaneously raising personal awareness of societal impacts and trends within their field. In non-technical disciplines, where technical knowledge is not the primary aim, a compromise could be made by acquiring enough general knowledge to enhance personal awareness.

In teaching technology awareness, both knowledge and awareness are needed for different purposes but should ultimately become mutually reinforcing. A basic understanding of the functions of specific technologies and systems is essential for grasping the importance of technology in established professions and present-day society. Awareness, being more future directed, allows students to anticipate developments and trends that might emerge in the future.

When teaching technology awareness in non-technical disciplines, the aim could be to increase general knowledge about the use of technology within their fields while also fostering a "high personal awareness" of the potential impact of technology on their future professions (Trevethan, 2017). The goal should be to equip students with both awareness and sufficient general knowledge, preparing them to pause and critically reflect on the impact of technological developments and innovations within their disciplines, as well as to further understand and analyze their implications.

3.3 Seeing new dimensions: threshold concepts in technology and society

One way to raise personal awareness for lifelong competencies is through the introduction of threshold concepts. As argued by Meyer

and Land (2005, p. 374), when "students acquire threshold concepts, and extend their use of language in relation to these concepts, there occurs also a shift in the learner's subjectivity, a repositioning of the self".

In *Technology and Society* several terms are intended to function as threshold concepts. Learning a threshold concept is ideally "transformative (occasioning a significant shift in the perception of a subject), irreversible (unlikely to be forgotten, or unlearned only through considerable effort), and integrative (exposing the previously hidden interrelatedness of something)" (ibid., pp. 73–74). Additionally, these concepts may also be troublesome and lead to troublesome insights (ibid.). In other words, once acquired, threshold concepts can change how we experience and understand the world around us—something that cannot be unseen.

In the curriculum design of *Technology and Society* we incorporate both concepts aimed at expanding general knowledge of digital technology and threshold concepts intended to transform students' understanding of the relationship between technology and society. Three examples of threshold concepts used in the teaching of *Technology and Society* are *delegation*, *affordances*, and *the interplay between technology and society*.

A common-sense understanding of the relationship between technology and society often views them as separate yet mutually influencing domains. For example, the proliferation of algorithmic technologies in society might, from this perspective, be understood primarily as a result of progress in computer science. Through the concept of the "interplay between technology and society," students are introduced to a sociotechnical perspective. They are encouraged to consider how not only advancements in technical knowledge but also societal factors—such as emerging values of efficiency and progress—and political priorities, such as the allocation of funding for research and development, play an integral role in shaping the trajectory of technological development.

Familiar examples, such as smartphones, social media, and Google Maps, are used to inspire reflections on how technologies are not merely tools we use to accomplish tasks but are also devices that shape our perception and interpretation of the social and natural environment. This lays the foundation for understanding how algorithmic technologies used in professional practice are not neutral tools for representing an objective reality but devices that sort computable information into mutually exclusive categories and establish dependencies and hierarchies between them (Bowker and Star, 2000).

Understanding this can foster an awareness that alternative ways of classifying and processing information are possible. Moreover, professionals in the health and welfare sectors can—and should—have a voice in how these algorithmic technologies are designed.

When introduced in class, "delegation" is often interpreted by students in its common-sense meaning, typically related to the distribution of labor and hierarchical management in the workplace. However, within the context of *Technology and Society* this definition is overly simplistic and insufficient as a threshold for understanding how technological artifacts stand in for human actors. Delegation involves entrusting "a task to an artifact with the aim of affecting others over a greater distance and a longer period of time" and recognizing that these artifacts can "affect our actions and intentions" or become part of larger "programs" that include human actors (Waelbers, 2009, pp. 513–57). By exploring these aspects of delegation through real-world examples, students are given the opportunity to reflect on how the complexity of the concept opens up new ways of understanding the relationship between technology and society and further examine its relevance to their respective non-technical disciplines.

The relational aspect of the term "affordances" allows us to reach an understanding of meaning not solely connected to individual subjects, but to how our designed environments may distribute different possibilities of action for different bodies. This insight is important for understanding the pertinence of universal design, but also for how objects might be understood as interpellating, calling for our interaction. Furthermore, the term draws attention to ecology, bypointing to how properties are relational and context-dependent (Gibson, 1979, p. 127). In the context of digital environments, the term helps us identify and investigate the new dynamics, communicative practices, social interactions and ecologies afforded by platforms and mobile phones (Bucher and Helmond, 2018). An initial understanding of affordances helps us further unpack the differences between the analogue and the digital, and how their different affordances alter our practices, habits and cultures. By starting with the material and technical affordances of a specific media technology, say the vinyl record, we open up a room to investigate how the introduction of streaming changed our listening habits, the business model, and the duration of a song. Similarly, comparing affordances of different social media platforms allows us to discern how different platforms favor particular modalities or content, and how the affordances of communication rewards exaggerated or polarizing content, with potentially disruptive effects on the public sphere and democratic practices as we know them. The goal is to internalize a way of seeing, understanding that how we design our environments matter and can be changed.

Together, these three threshold concepts provide students with new ways of understanding the relationship between technology and society, enabling them to discover new connections or explore the complexities of the subject. These concepts can sometimes be troublesome, as they challenge common-sense perspectives on how we view the world, but they ultimately become part of a shared vocabulary within the course.

3.4 Merging threshold concepts and capabilities in technical and non-technical disciplines

Baillie et al. (2013, p. 236) have attempted to integrate threshold concepts into the capabilities approach, forming the notion of threshold capabilities. Inspired by this framework, we argue that threshold concepts in the course *Technology and Society*, explored through real-life or speculative examples and cases, can foster the capability for high personal awareness. This creates conditions for students to critically reflect on the meaning of technology in relation to the threshold concepts and their relevance to their respective non-technical disciplines.

A question that arises is what students and professionals should do when they become aware of something—technological in this context—that appears out of place, problematic, or potentially influential to their professional practice. In *Technology and Society,* students are encouraged to explore the meaning of technology

through threshold concepts, which offer novel ways of thinking about real-world and speculative examples of the interplay between technology and society. This approach is inspired by, but not limited to, problem-based learning and critical analysis—methods for systematically approaching problems and investigating the validity of premises, assumptions, and observations (Ennis, 1964).

Most important, however, is encouraging—even provoking—students to think. This more speculative and unsystematic activity arguably opens up a space for discussing the meaning of technology in context, as distinct from problem-solving and evaluating arguments.

For Arendt (1998, p. 78), the mental activity of thinking was related to "the quest for meaning—as opposed to the thirst for knowledge". In other words, thinking deals with interpreting what something means rather than pursuing truth (Arendt, 1998, p. 15). It is the "habit of examining and reflecting upon whatever happens to come to pass…to think beyond the limitations of knowledge, to do more with his intellectual abilities, his brain power, than to use them as an instrument for knowing and doing" (Arendt, 1971, pp. 418–421). Arendt (1981, pp. 433–434) distinguishes between truth and fact on one hand and meaning on the other. While factual truth can be confirmed through observation or mathematical logic, meaning is always an open-ended quest with no clear point of termination.

The search for meaning is carried out through thinking—the human capacity to challenge what is given and to "unfreeze, as it were, what language, the medium of thinking, has frozen in thought—[words, concepts, sentences, definitions, doctrines]" (Arendt, 1971, p. 433). In the introduction to *The Human Condition*, Arendt (1998, p. 5) acknowledged that technology is becoming an ever more present part of what happens in our lives and urged us to "think what we are doing".

This perspective aligns with the core of the capabilities approach, which emphasizes preparing students to "act in previously unseen situations" (Baillie et al., 2013, p. 230). Additionally, the activity of thinking seems closely related to threshold concepts, as understanding the often troublesome meaning of such concepts requires students to unfreeze and critically reinterpret the concepts crucial to understanding their disciplines.

An example where thinking, threshold concepts, and the capabilities approach intersect in teaching *Technology and Society* can be found in discussions about the impact of technology on the nursing profession. In this example the technological threshold concept *delegation* intersects with the nursing threshold concept of *care* in a particular situation in which technology impacts not only professional practice, but also its meaning.

Care can be seen as an important threshold concept withing the nursing profession. As nursing students experience care as a practice in treating patients, it becomes "superimposed on the commonsense or intuitive understandings of care…[and the] opening up of a previously unknown alternative way of viewing caring in a professional context can lead students to question fundamental beliefs and values, creating uncertainty and doubt" (Clouder, 2005, p. 506). In this context, caring is a complex concept encompassing the relationship between nurse and patient, acceptance, presence, and action, as well as professional self-esteem and personal growth (Brilowski and Wendler, 2005).

What happens to the meaning of care with the introduction of new technologies that alleviate or replace nursing practices? A frequently used example in *Technology and Society* is the real-life case of the introduction of Hospital-at-Home programs or similar trends in telemedicine and remote monitoring (Patel and West, 2021). Here, the threshold concept of delegation provides a way of thinking about the relationship between technology and the nursing profession, as it intersects with the concept of care. Some nursing tasks can be delegated to technology, but how does this affect the meaning of nursing care? Can care be delegated, can technologies care, and if so, how does that reshape their meaning in this context? Do Brilowski and Wendler's attributes typically ascribed to nursing care—such as acceptance, presence, and action—persist when technologies delegate tasks and place the nurse at a distance from the patient?

Thinking about such questions should prepare students for future investigations into the *meaning* of new technologies within their disciplines. This approach exemplifies a way to encourage students to "speculate about real situations in which aspects of different content areas are present or absent or have varying influences depending on the situation" (Baillie et al., 2013, p. 230). Emphasizing the meaning of central threshold concepts in both technical and non-technical disciplines—rather than focusing solely on technical knowledge or philosophical theory—and understanding how these concepts intersect should prepare students to engage with future cases where technology enters professional practice.

The ability to stop and think, in the Arendtian sense, requires not only considering the practical effects of new technologies within a given context but also reflecting on how they influence the concepts that shape the meaning of the discipline itself. Rehearsing the capability to think critically through real-life or speculative cases that challenge the meaning of both technological and discipline-specific threshold concepts is intended to cultivate "high personal awareness" as technology becomes increasingly integrated into their future professions and their understanding of its practical effects.

The example above demonstrates how technology can challenge the everyday practice of nursing by reshaping the meaning of care and, subsequently, the meaning of nursing itself. Likewise, it shows how the technological delegation of care influences the meaning of the technology employed in this context.

4 Limitations and further studies

The experiences and theoretical contribution in this paper marks a starting point for further explorations into the concept of technological awareness and its applicability in pedagogics aimed at teaching technology in non-technical disciplines. To explore the relevance of the approach, a more systematic method for testing technology awareness could be developed. This should secure alignment pedagogics and raised technological awareness but also allow for further clarification of the concept itself. Our experiences of teaching the course *Technology and Society*, is limited to the health sciences. The development of a method for testing technology awareness, based on the threshold concepts, the capabilities approach and the emphasis on meaning, could allow for comparison between different disciplines.

5 Conclusion

In this paper we have described a course design and discussed its theoretical and pedagogical underpinnings to illustrate one way of

addressing the question of how to teach technology awareness in disciplines typically considered non-technical. By outlining the history and development of the course *Technology and Society,* we have highlighted some of the pitfalls and opportunities involved in creating a curriculum that equips students with general knowledge of technology while, most importantly, introducing dimensions or threshold concepts that can be applied to the discussion and analysis of real-life examples and speculative cases.

Through our discussion of capabilities, awareness, and threshold concepts, we argue that a key to teaching technology awareness lies in enabling student discussions about the impact of technology, particularly in the reciprocal relationship between the meaning of technology and the meaning of professional practice. At its core, our argument is simple: as technology is implemented across society at an ever-increasing pace, the most important capability for students of all disciplines to pause for a moment to "think what we are doing" (Arendt, 1998, p. 5).

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

OS: Writing – original draft, Writing – review & editing. HG: Writing – original draft, Writing – review & editing. TK: Writing – original draft, Writing – review & editing.

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