What kind of technology competence do we actually need?

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Developments in technology are constantly and rapidly driving the evolution of the way we work. Advanced digital technologies increasingly produce the basis for meaning-making, decision-making, and intervention in professional practice. In this way, technology is not merely mediating existing professional practice, but is also actively changing the range of possibilities and default assumptions in professional practice. In the healthcare industry, for example, sensors attached to or embedded in the body can change how patients are cared for and treated; nurses need to be as equally au fait with data flow as they are with blood flow. In construction engineering, advances in robotics make it possible to do repair work in areas that cannot be accessed by humans.

These digital transformations relate to the broader research literature on innovation and organizational change (Asheim & Gertler, 2005; Campbell, 2004; Carlsson, 2006; Conran & Thelen, 2016; Cooke, 2001; Cooke, Uranga, & Etxebarria, 1997; Hekkert, Suurs, Negro, Kuhlmann, & Smits, 2007; Mahoney & Thelen, 2010a, 2010b; Moulaert, Mehmood, MacCallum, & Leubolt, 2017). This paper draws inspiration from the growing demand for digital knowledge, skills, and competencies that has emerged as part of the economic and social trends such as industrialization 4.0 and the global knowledge economy. One particular aspect of these trends is the extent to which technology and society interact as an integrated reflexive system of invention, innovation, systems change, and value expression. This interactivity prompts a reconsideration of the role of higher education from its formal role as knowledge arbiter to more active role in institutionalizing a new set of culturally bound norms and values.

This paper describes how Oslo Metropolitan University (OsloMet) has attempted to address this challenge through the course Technology and Society. Acknowledging that technological competence is as fundamental to early childhood education, nursing or journalism as it is to engineering, the course is offered to all students, independently of their study programme and background. Developing a course of this nature presents a number of didactic, pedagogical, logistical, and, to some extent, philosophical challenges.

The aim of Technology and Society is to provide students with fundamental knowledge of contemporary technological tools and methodologies, and the skills with which to navigate this complex and constantly evolving landscape. The course seeks to foster a level of technological competence that goes beyond technical know-how to encompass the application of broader social norms, values and processes in interdisciplinary and interprofessional work innovation, and critical reflection.

In its current form, Technology and Society is designed so that interdisciplinarity is balanced with technological specificity and depth. However, early feedback on the course indicates a desire from faculty members from various disciplines for the course to explicitly refer to the professional fields they represent. If taken too far, relevance to a particular field or profession could undermine the interprofessional and interdisciplinary aspect of the course.

The focus on cutting-edge and emerging technologies requires that the content of the course will change and evolve dynamically and often radically, each time the course is offered. This is a significant challenge in a higher education institution where the quality assurance systems for the development of study programs rely on fixed and often protracted processes. This illustrate the paradox that Norwegian education is currently embodying: on the one hand, education is meant to prepare for a fast-changing world and needs to adapt its curriculum at a fast pace; on the other hand, tremendous efforts need to be made to get courses to comply to a rigid set of rules and norms defined as the safeguards of educational quality.

A course that aims to both increase knowledge about the fundamentals of technology and stimulate epistemological and ontological reflection is clearly challenging to an educational system whereby the acquisition of technical knowledge and the development of critical skills are generally kept separate in the curriculum and are also often taught by faculty from different departments. The course's aim to bridge the two knowledge areas, and thereby create a new type of knowledge that is not easily classified as either technical proficiency or critical competency can be seen as unorthodox and controversial. This course aims to challenge the dichotomy between acquiring technical technological skills and developing a rich, nuanced and critical understanding of technology. By adding an interdisciplinary component, it also takes the focus away from the dichotomy and adds a new perspective that can help fostering an understanding of education as both the bearer of new knowledge and as a self-developing experience.

This paper will go through the main epistemological and philosophical reflections that went into the design of this particular course and will discuss findings and reflections from having actually conducting the course (including the student perspectives).

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