Transformative Digital Competences: Reclaiming Creativity for Critical Thinking[1]

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Introduction

The contemporary educational policy discourse on digital competence development – especially in the face of rapid AI developments – has placed substantial attention on mastering the digital transformation of society throughout the continent. In the European Union, numerous initiatives have been shaping this approach towards the "green and digital transition" (European Commission Joint Research Centre, 2022), formulating digital competence requirements in the Digital Education Action Plan (European Commission, 2020), and are accompanied by monitoring in the European Skills and Jobs Survey (CEDEFOP, 2022), amongst many others. We use this supranational policy context as a starting point for discussing the relations between digital competence, critical thinking and creativity in contemporary Higher Education, as policy not only shapes practice but is also co-shaped by it.

Regarding Higher Education, "teaching should contribute to the facilitation of shaping the future [...] above all of critical, creative and entrepreneurial thinking, of the ability [...] to proactively shape this change" (Reichert, 2022, p. 93, own translation). In practice, however, the design of teaching in universities – and consequently, its contribution to such goals – is usually "left to the individual commitment of the individual lecturers" (ibid., p. 94). From a viewpoint of educational science, the current digital transformation of universities (and society) opens up a space of possibility in which the subject can (and should) shape its environment in an "active access to the world" (Holzkamp, 1995, p. 23, own translation). Yet, to describe this space of possibility an adequate understanding of digital competence is needed that connects at least two dimensions: 1) *a societal dimension of digitalization as a "megatrend"* (WBGU, 2019, p. 31) or a "great transformation with digital means" (ibid, p. 1, own translation), interpreted in a Polanyian sense and visible in policies, politics and discourse; and 2) *the subject dimension of individual digital capabilities,* which are systemized in concepts, models and frameworks of digital literacy, skills or competences, and developed through learning, e.g. in higher education settings.

Transformative digital competences

We aim to connect these two dimensions in our concept of *transformative digital competences*. Our concept originates in the policy-oriented frameworks on digital competence like DigEuLit (Martin, 2006) and DigComp (Carretero et al., 2017; Vuorikari et al., 2022), which understands digital competence as assessable knowledge, skills and attitudes. It is also related to frameworks such as OECD's 2030 learning compass (OECD, 2019), which conceptualize transformative competences as the ability to contribute to ongoing societal transformations.

Yet, we re-consider these technocratic systematizations of individual capabilities from an emancipatory viewpoint, leaving the conceptual sphere of educational policy and framework-building and digging deeper into the transformational aspects of learning and *Bildung* in digital competence development. We aim to reclaim creativity for critical thinking by taking up the foundation of critically reflected enlightenment and respect for human dignity formulated by the WBGU as a critical-reflective ability. Therefore, we emphasize the normative element of shaping this digital transformation sustainably and for the benefit of the subject and society alike. Digital

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competence, broadly understood as the ability to participate digitally, can therefore often no longer be clearly distinguished from the ability to participate in society. An emancipatory concept of transformative digital competence must thus encompass both creative-productive and critical-reflective aspects, enabling individuals to actively and powerfully influence their living environment by means of digital competence. In this regard, we understand digital competence not only as digital knowledge and skills but focus on attitudes in a broad understanding of a creative way of dealing critical-reflective and imaginative-productive with the digitalized world. We operationalize competences as how attitudes as values and beliefs are fostered in the digital practices of higher education students, emphasizing the relationship between the individual and society in terms of a creative understanding of *Bildung*.

Transformation Impulses in Everyday (Academic) Life for the Development of Digital Competencies: Theoretical and Empirical Insights into our Project *DigiTaKS**

Consequently, in our project *DigiTaKS* – Digital Key Competences for Higher Education and Work*, we aim to cultivate transformative digital competences among bachelor students without technical backgrounds at a German university, thereby preparing them for academic achievement and future career paths (Schmidt-Lauff et al., 2022). The project's objective is to enable students to take an active role in broad transformative processes by equipping them with essential digital competences and a forward-looking mindset for use in their education, everyday lives, and professional contexts – ultimately positioning them as agents of digital transformation. Our concept originates in the policy-oriented discourse on digital competence frameworks, such as DigEuLit (Martin, 2006) and DigComp (Carretero et al., 2017; Vuorikari et al., 2022). We relate these understandings to broader, more future-oriented notions like transformative competence, as defined in the OECD's Learning Compass 2030 (OECD, 2019), where it is seen as the ability to contribute actively to ongoing societal transformations. To foster these capabilities, three cohorts of students (from 2021 to 2023) in the Faculty of Humanities and Social Sciences at Helmut-Schmidt-University/University of the Federal Armed Forces Hamburg (HSU/UniBw H) were provided with laptops equipped with pre-installed software packages, tools for competence assessment and development, and accessible, collaborative educational resources. The project utilizes a multi-method longitudinal approach to explore the acquisition and ongoing development of transformative digital competencies over time (Rathmann et al., 2022).

Heuristic of Transformative Impulses to Identify the Acquisition of Transformative Digital Competences

To support this overarching goal and gain a deeper understanding of the relationship between creativity, critical thinking, and learning from a digital practice perspective, our research project also develops a *heuristic to identify transformative impulses*, that enable the development of such competences. In this sense, those impulses function as learning opportunities (Faulstich, 2006) that can stimulate rethinking and relearning (Holzkamp, 1995), foster exploratory and imaginative movements and at the same time initiate new views of the self and the world in the subject. This heuristic understands competence as a form of comprehensive and self-reliant agency that is created in digital practice (Reckwitz, 2003) through learning processes that are transformative in nature, in the sense of a transformation of self- and world relations described in transformative learning resp. transformative *Bildung* theory (Koller, 2012, 2022; Mezirow, 2018), forming "a parallel action with convergence potentials (Nohl, 2016). With this heuristic, it is not only possible to identify the handling of challenging situations in the digital transformation, but also to categorize these practices as critical, reflective, imaginative, or productive ways of dealing with challenges and, in doing so, acquire transformative digital competences – all in a creative manner.

Based on Holzkamp's learning-theoretical perspective, which attributes to the individual a fundamental interest in understanding and shaping their own world, the individual seeks to expand their capacity to engage with the world (Holzkamp, 1995). Therefore, the starting point of this heuristic is situations that students encounter as challenging in their (academic) everyday life. These situations may arise suddenly – unexpectedly or without any apparent reason – or may be deliberately initiated within formal educational contexts, for example, by instructors. In such moments, the individual's habitual (routinized) actions no longer suffice to deal with the situation immediately. This gives rise to a moment of initial reflection, during which a so-called learning discrepancy (Holzkamp, 1995) becomes apparent – a divergence between existing knowledge/behaviors and the demands of the situation. This discrepancy is often accompanied by a desire to end a perceived state of disquiet (Dewey, 2002, p. 14).

The individual may consciously or unconsciously recognize this learning discrepancy as a learning opportunity – or may choose to ignore it. Nevertheless, the challenging situation urges the individual to engage actively and reflectively with changing circumstances (Reckwitz, 2017). If the individual perceives the challenge as a learning opportunity, particularly in the context of dealing with digital technologies, they begin to explore various solution strategies. These can be understood as learning-related practices that follow a learning loop, such as searching for solutions via Google, asking peers for help, or experimenting independently. Such processes can lead to a transformation of the individual's relationship with self and world: the individual develops new perspectives, takes active agency in the digital realm, and begins to perceive it as modifiable. When these learning loops and practices are examined, challenging situations can be identified as impulses for transformation, enabling the development of critical, reflective, creative, and innovative digital competencies. However, if the individual perceives the challenging situation but does not treat it as a learning opportunity, the acquisition of such transformative competences remains largely absent. The heuristic presented here makes it possible to identify transformation processes based on challenging situations in academic everyday life. It considers whether and how a learning discrepancy is perceived and taken up as a learning opportunity – and thus allows for a categorization of transformative digital competencies along key learning-related practices.

Empirical Insights on Transformative Impulses in Handling Digital Challenges

In our presentation, we will share findings from a total of 31 episodic interviews (cf. Flick, 2011) conducted at the beginning of the participants' bachelor studies. The central research question was which transformative impulses could be identified within the narrated episodes and how the associated learning-related practices could be characterized. The aim of the interviews was to reconstruct challenging and successful situations from students' (academic) everyday life to uncover both situationally anchored and semantic knowledge (Flick, 2011). This approach allowed us to explore subjective knowledge and media-related practices in dealing with resistant or difficult situations.

The interviews were analysed using a content-structuring qualitative content analysis (Kuckartz, 2019). Across the 31 interviews, a total of 68 relevant episodes were identified that students perceived as either challenging or successful – interpreted as learning discrepancies in dealing with digital demands, which could largely be addressed through specific practices. In the presentation, we highlight selected episodes that are characterized by particularly complex reflective, critical, productive, or creative-innovative learning-related practices, as well as episodes that stand in stark contrast to one another. These student narratives from their (academic) daily lives illustrate, on the one hand, transformations in their relationships with themselves and the world – particularly along critically reflective and creatively productive lines – and, on the other hand, the interconnectedness of transformative impulses that can contribute to the development of digital key competencies. It also becomes evident that the majority of these impulses are initiated by tasks embedded in the formal context of Higher Education.

Results & Outlook: Transformative Digital Competences in Higher Education

Based on the heuristic framework and empirical insights, we draw conclusions regarding possible ways to support transformative digital competence development and acquisition in higher education resp. (in)formal learning settings, both in terms of its theoretical traceability and empirical observability. On the one hand, our concept aims to contribute to the discourse on transformative learning in the context of digital competence development and its relevance for the digital transformation of society alike. On the other hand, we try to offer an understanding of how students can be empowered to engage with digital technologies both creatively, yet critical-reflectively, thereby contributing to higher education as key institution of education with societal impact.

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