CUTIE LITERATURE REVIEW: methodology and main findings

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Introduction

Literature review process had the main aim to explore the ways in which students can be engaged in co-creation or partnership processes with teachers. Also, it aimed to explore how the mentioned practices aligned with the DigCompEdu framework. Such findings will be used to identify gaps but also examples of good practices in the co-creation process which would serve as a baseline for proposing and piloting co-creation approaches in project partners' institutions.

Review process started by searching relevant databases taking into account following criteria:

1. Databases: Web of Science, Scopus, Eric, Ebsco
2. Search string: student co-creation OR student partnership,
3. Time span: 2018 - 2023
4. Language: English

The results were analyzed for duplicates and the final number of papers is as follows:

- Keyword - "student co-creation" - 39 papers
- Keyword - "student partnership" - 199 papers

In the next step, UNIZG read the abstracts of the titles that did not reveal clearly the focus of the papers in order to exclude the ones which have been out of scope. After reading the abstracts, the total number of papers for further analysis was cut down to 181:

- Keyword - "student co-creation" - 28
- Keyword - "student partnership" - 153

All papers were downloaded to the Microsoft Teams folder and were further analyzed by the following criteria:

1. Does the article have information relevant to engagement of students in the co-creation process?
2. Which methods / models / frameworks / options / actions were used to engage students in the co-creation process?
3. What was the topic of the co-creation?
4. How were students involved (or selected?) in the co-creation process?
5. Is student involvement described in any way in relation to the development of teachers' digital competencies?
6. Number of students involved in co-creation (individual, small (up to 10), medium (10 to 50), large group - over 50).
7. Time-span of the initiative/co-creation? (days, months, years) - repeated (continuous) or one-time activity?
8. In what context is the initiative presented? HE, Adult education, LLL?
9. What elements (if any) are transferable to the CUTIE project?

After the initial analysis of 181 papers we identified 107 papers which are relevant for the engagement of students in the co-creation process. Among them, 49 were identified as papers of high relevance for the project topic, while 58 were identified as partially relevant.

In the next step, the analysis was focused on the 49 papers identified as highly relevant to the project. Furthermore, out of those papers, 19 of them were identified as the ones who involved the development of teachers' digital competencies and were analyzed in more detail. A summary is given below.

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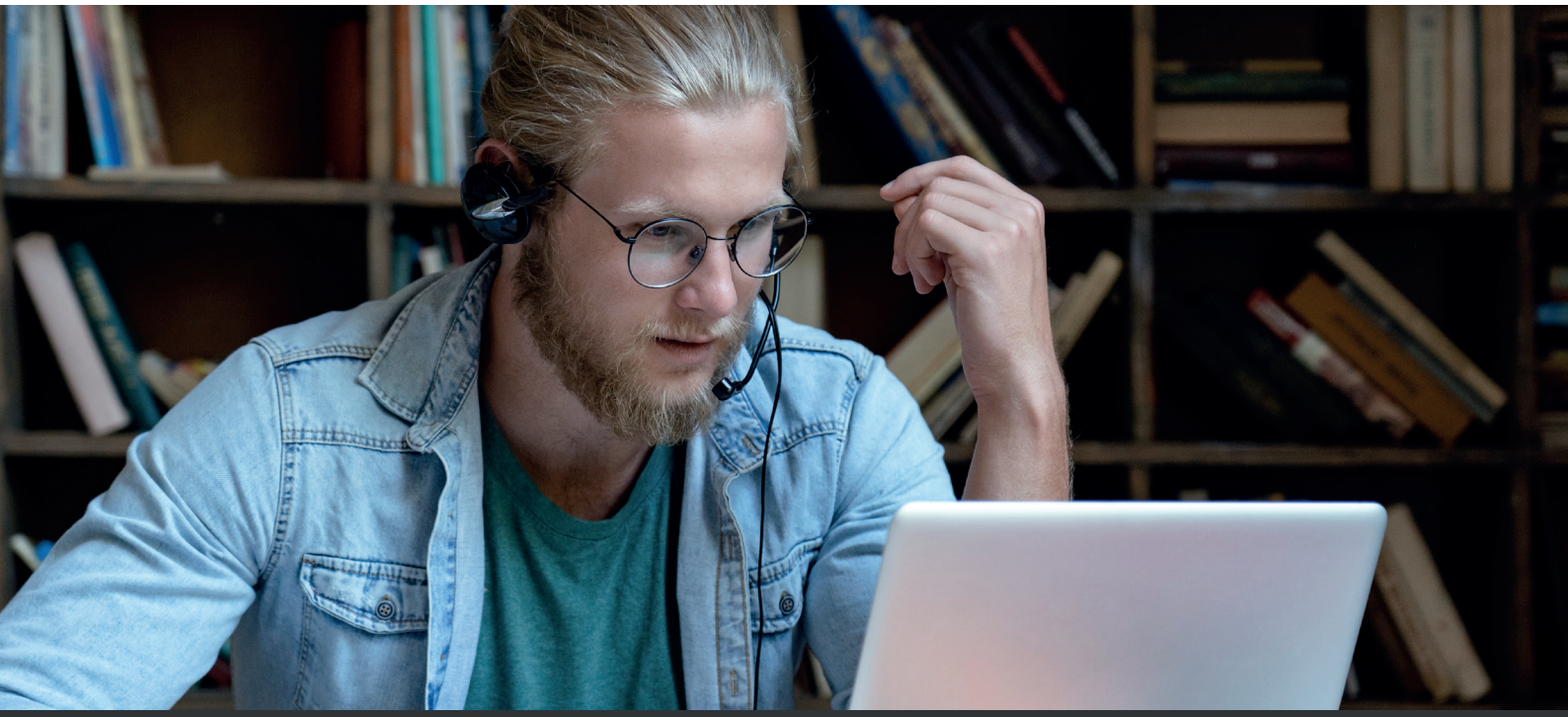
Major findings

The literature review delved into multiple facets of student co-creation in higher education, specifically focusing on digital competence and technology integration. A comprehensive analysis was conducted, examining 19 papers that explored students' involvement in the development of teachers' digital competence. In this section, we present the key findings organized into distinct domains identified in the papers: 1) General implications for student-staff partnerships; 2) Assessment; 3) Students' feedback; and 4) Students' role as creators.

An overview of student roles and the possible ways of co-creation as well as challenges in student-staff partnership was introduced in several papers. Warwick (2021) focused on enhancing student engagement with digital education during the Covid-19 pandemic and the demands of active learning.They also emphasized the need for student involvement in shaping digital education practices. Judd et al. (2021) reflected on the challenges and advantages of online student-staff partnerships during the COVID-19 pandemic, including issues related to online tools and platforms. Zorec et al. (2022) explored technology and inclusion in higher education in Ireland, highlighting the importance of student perspectives in achieving a whole-campus approach. Furthermore, various roles students can play, including consultants, facilitators, co-designers, and actors in collaborations related to digital age projects were discussed by Felten et al. (2019). Könings et al. (2021) developed a guide that briefly mentions the role of digital environments in facilitating co-creation and offers guidance on co-creation in various contexts. Another example comes from McIntosh et al. (2020) who developed „The Third Space" concept for staff-student partnerships, emphasizing the use of technology to improve learning culture and bridge digital divides. Scalability of technologies was explored by Dollinger (2023) who discussed strategies supported by technology to enhance co-creation scalability, including crowdsourcing, customization, and prosumer behavior. In the end, Birney& McNamara (2021) dealt with a project which focused on integrating problem-solving into a long-term environmental restoration initiative. It aimed to empower underrepresented students in S.T.E.M. fields to strategize, analyze, and address environmental challenges in their communities. The initiative enhances students' critical thinking skills and drives positive change but does not specifically address teachers' digital skills.



Another domain of interest of the papers was assessment. Doyle et al. (2018) discussed **assessment** co-creation in a business school context, exploring students' perceptions and addressing operational challenges in implementing co-creation, while Killam & Luctkar-Flude (2021) explored the use of virtual simulations and gamification, involving students as co-creators, in nursing education.

Students' feedback was another larger field of interest of the analyzed papers. It does not deal with an active participation of students in co-creation activites, but explores how post-hoc activities such as surveys and interviews can be used as a student voice to improve teaching and learning. A study involving students in providing feedback on digital competencies, with a focus on continuous improvement and real-time feedback was described by Setterington et al. (2023). Marquis et al. (2019) explored how student evaluation of teaching influences student-teacher partnerships and how students actively participate in course development.Students' experiences in active blended learning, including their views on technology use, flexibility, and tutor responsiveness was discussed by Armellini et al. (2021). Another interesting contribution, although not directly related to the development of teachers' digital skills, comes from Isaeva et al. (2020). Their work highlights the importance of timely, concise, and trustworthy information, along with the need to avoid complex, generic questionnaires. Students expressed dissatisfaction with systems that compel them to complete feedback surveys and were critical of the lack of feedback on survey results and superficial implementation of changes. Students seeked more meaningful participation in quality assurance processes and a shift away from formal, top-down requirements.

The last major domain of interest identified from the papers relates to **students as creators**. Evans & Luke (2020) discussed students' engagement in developing teachers' digital competences through lecture capture technology and challenges traditional assumptions about its use. Students' engagement was also explained by Lee Wen-Shya et al. (2020) who showed how students played a significant role in the development of teachers' digital competence and the transformation of teaching models at National Taiwan University. Next, a remote co-creation using digitized tools, showing its effectiveness in comparison to traditional methods was described in the paper from Jost & Divitini (2021). Cho et al. (2020) explored the Value of Student Work in Co-Creation in Teaching and Learning presents an approach involving three parties: instructors, senior student contributors, and junior student learners. The senior students created additional resources like videos and practice problems to enhance the teaching and learning experiences for junior student learners. The study examined the roles, impacts, benefits, and challenges of student contributors, using interviews, surveys, and analytics. Their involvement not only improved teaching and learning but also fostered a community of practice that engaged student contributors in teaching design and evaluation. Finally, Jamouli et al. (2020) focused on positive outcomes of co-creation. In their work they highlighted various co-creation activities (e.g. curriculum, resources, modules, etc.) involving students and their positive outcomes, including improved engagement, learning experiences, and institutional image.