

## Creative online collaboration: A special challenge for co-creation

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The trend towards digitally facilitated collaboration is irreversible. Basic tasks comprise communication, sharing of documents and documentation of the working process. Technical solutions that enable collaborative work exist aplenty and are constantly evolving. However, the main challenges involved in digitally facilitated collaborative work that includes elements of creative co-creation—typically found in the area of higher education or professional settings that involve creative and design tasks—can be found in the facilitation of creative environments in "virtual space". Online collaborative creative processes comprise all such activities which aim to solve in a group problem that do not have standard solutions, mediated through web-based tools. Typically, such problems require interdisciplinary, lateral thinking, social empathy and extensive ideation with the aim of mutual inspiration. The processes applied are often nonlinear and rely on multimodal means of synchronous and asynchronous communication, with a special focus on visual tools.

This special section explores the emerging socio-technological platforms for creative collaboration for both team-work in business settings as well as in educational environments. The first paper, "One for all and all for one - towards a framework for collaboration support systems" by Dominik Siemon, Felix Becker, Linda Eckardt and Susanne Robra-Bissantz develops a framework for Collaboration Support Systems with the goal of enhancing the performance output of these collaborative units. The focus here is on basic principles of collaboration in virtual, digital environments in order to identity the specific aspects that support system must provide in order for collaboration in such environments to be productive.

The second paper, "Professional development learning environments (PDLEs) embedded in a collaborative online learning environment (COLE): Moving towards a new conception of online professional learning" by Roland vanOostveen, François Desjardins and Shawn Bullock, by contrast, focuses on teams as part of learning groups. The authors describe the development of Professional Development Learning

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Environments (PDLEs), that require the collaboration of users to solve in the digital realm problems as part of a problem-based learning approach. Their study shows evidence of some effect on beliefs about personal theories of learning, causing shifts from technical issues to those surrounding processes of learning but also cautions, that learners who are not used to the collaborative opportunities provided in such PDLEs will find it harder to facilitate those learning and collaboration tools, instead seeking out traditional forms of cooperation from non-digital and face-to-face environments as the main route to success as an alternative and superior method.

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