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Flipped Classrooms & Project Dojos for Enhancing Peer-Learning in Classrooms

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Project Dojos for Enhancing Peer-Learning in Classrooms

TREO Talk Paper

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Abstract

Creating spaces for students to learn with and from each other can enrich students' learning experiences and relationships. Peer learning experiences are commonly designed in a near-peer format within a given discipline in which tutors teach the learners. In classes, peer-learning very commonly occurs through ad-hoc group activities or discussions or as in-class group work or longer-term group projects. Our proposed approach in this study is based on three pillars: (1) students practice the skills needed for group learning in a flipped classroom manner, (2) students engage in group-based reflection and meaning making, such as collaborative concept mapping, and (3) students complete projects in Dojo sessions, in which student interactions are observed and guided. Cooper (2012) has identified four major peer-learning design elements that our flipped classes and Dojo sessions addressed as follows: (1) **Classroom environment**: the environment was participatory and interactive. Throughout the semester students were consistently required to share reflections with learning partners and with the class. In essence, reflection and meaning-making was established as a prioritized value in the learning process. (2) **The role of technology** was prominent in skills, as students coded to experiment with project management techniques, wrote ReadMe pieces for each piece of code they developed, and shared that publicly on GitHub. The class used Azure as the DevOps platform, in which students could follow the learning plan and progress on the Kanban board. The course had a wiki page for the major terms used in the class, and students imported their work to the Azure environment through GitHub. The choice of Azure as the DevOps platform was purely based on ease of access (for students, free of charge). (3) **Task-Method Fit**: depending on the cognitive requirements of the activities (recall vs analysis vs synthesis), suitable peer-learning methods must be used. Examples are reciprocal questioning (King 1990), collaborative concept mapping (van Boxtel *et al.* 2002), and Learning Dojos (Heinonen *et al.* 2013). Dojo sessions are intensive deliverable-oriented work sessions that aim to enhance skills in different areas of IT such as coding (Sato *et al.* 2018). Learning Dojos have been used in the IT field to create focused and intensive learning experiences that have an immediate impact on the learning or job outcomes (e.g. Target Dojo). (4) **Stance of the instructor**: the instructor must establish class structure and norms that are conducive to peer-learning. This part requires allowing time and valuing discussion at group and class levels. It also includes the design of activities that systematically and continuously require students to brainstorm, collaborate, and engage in collective reflection on the learning material. Creating relationship-rich educational spaces can lead to higher levels of cognitive processing. Although individuals make meanings in their own minds, peer interactions impact the cognitive processes within individual minds (Piaget 1970, King and O'Donnell 1999). In this forum, we review the peer-learning literature that is focused on design elements in classroom settings. We present the design of classroom activities to enable peer-learning in a systematic, guided, and IT-enabled structure. We believe that a subset of Information Technology courses can be excellent vessels through which peer-learning skills can be systematically incorporated, practiced, and improved. We also believe that enhancing peer-learning is a fruitful effort with impacts that can last beyond the scope of a given course.

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