

Learning within Digital and Social Media

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The Learning within Digital and Social Media mini-track is an interdisciplinary forum for studies of how human learning takes place via interactive and social processes enabled or supported by digital and social media. We seek to bridge disciplines and research communities between system and learning sciences, so within this scope a broad range of research questions, learning settings, and theoretical and methodological traditions are welcome. The shared focus is on relationships between human learning activities and the technologies used: the designed or discovered affordances of digital media that can be taken up to support learning through interaction with others.

The first three papers examine diverse forms of affordances for LDSM in classroom or blended learning settings in primary and secondary school. Our best paper nominee, *“Social Affordances of Mixed Reality Learning Environments: A case from the Science through Technology Enhanced Play project (STEP)”*, by Noel Enyedy, Joshua Danish, David DeLiema, Asmalina Saleh, Christine Lee, Noelani Morris, and Randy Illum, shows how the study of affordances for learning in digital and social media can be pursued at the primary school level. Children’s socio-dramatic play is seen as a form of informal inquiry and modeling the world, in which children engage in constant negotiation and justification of what they are doing. A mixed reality learning environment was designed to direct these negotiations towards understandings of concepts in physics. Qualitative analysis focused on how the socio-technical system was enacted and how social processes that were promoted by the system in turn facilitated learning. *“The Future of Social Learning: A Novel Approach to Connectivism”*, by Holm Smidt, Matsu Thornton and Kaveh Abhari, takes a theory that has been applied primarily in postsecondary education, particularly in cMOOCs, and brings it to the secondary school in the form of a contextual problem-based learning model. A case example integrates the mathematics curriculum with energy education by applying data science and visualization to hands-on work with “Internet of Things” hardware. In *“Information Uses and Learning Outcomes During Guided Discovery in a Blended E-Learning Game Design Program for Secondary*

Computer Science Education”, Rebecca Reynolds and Christopher Leeder examine the extent to which use of resources by student teams in a Learning Management System vary by resource type and other factors, and how students’ uses of different types of information resources across time appear to be related to learning outcomes.

The second set of papers begins with two studies of affordances for LDSM in online or media settings. In *“Learning with Digital Media: Investigating the Relationship Between Student Citation Networks, Assignment Structures, and Learning Outcomes”*, Regina Collins and Anatoliy Gruzd explore student citation networks created when students use and share digital media resources in a two-part assignment that requires them to conduct individual research on the Internet and cite relevant digital content, and subsequently share their digital media with group members to create a group response to the same topic. The study took place in multiple settings, enabling examination of how assignment characteristics affect citation networks and learning outcomes. *“Students’ Comprehension of Scientific Discussion: Using Eye-tracking Technique to Investigate the Effects of Social-media Messages on Television”*, by Miwa Inuzuka, Yuko Tanaka and Mio Tsubakimoto, examines informal learning in a broadcast television setting where scientists are discussing a pseudoscience theory of “Effective Microorganisms”. Motivated by theories of individual cognitive and attentional processes and attitude change, the experiment displays social media messages expressing attitudes towards the speakers and their claims on the screen. Results indicate that attending to social media messages leads to lower retention of factual information, although effects on attitude change were unclear. Finally, in *“Computer-Supported Collaborative Learning in STEM Domains: Towards a Meta-synthesis”*, Cindy Hmelo-Silver, Heisawn Jeong, Kylie Hartley and Roosevelt Faulkner help us tie together different factors in learning within digital and social media. They conducted a systematic meta-review of CSCL literature coded along dimensions of the nature of collaboration, technologies employed, and pedagogical designs, identifying common moderators that affect the collaborative meaning making process and learning outcomes.