**Session 2 Considering Collaborations**

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| **Faculty Presenter** | **Abstract Title** | **Abstract** |
|  | Moderators: Jean McKendry and Melinda Fischer (co-moderators) |  |
|  | Lighting Rounds “Collaboration, Technology and Learning Across Educational Environments” (*5 talks where faculty will pitch key ideas for their project*)  Advances in computer science and technology have created new approaches to teaching and learning that many Educational researchers are now investigating. Formal and informal educational settings provide STEM researchers with real-world opportunities to innovate in computer science, AI, and related technologies while supporting teacher and student success. Collaborations among Education and STEM researchers will likely influence the preparation of students for careers of the future. Examples of such collaborations will be shared in these lightening rounds. | |
| C.C. Bates, Dani Herro (CoE) Carl Ehrett (Watt) | Leveraging AI to improve literacy in elementary-aged students in-person |  |
| Jeff Marshall, Michelle Cook, Leigh Martin, Luke Rapa (CoE) Nathan McNeese,\* Bart Knijnenburg\* (CECAS) | STEM teacher learning progressions using a recommender system In-person |  |
| Golnaz Arastoopour Irgens (CoE) | Modeling and measuring critical data literacies in informal learning environments |  |
| Dani Herro, Shanna Hirsch, Golnaz Arastoopour Irgens (CoE) | Computational Thinking-STEM Pop-Ups for All: A Research-Practice Partnership for agile learning in elementary schools |  |
| Kris Frady (CoE) Karen High\* (CECAS) | Developing engineering experiences and pathways in engineering technology career formation |  |
| Laine Mears | THINKER: NSF NRT for Collaboration between Humans and New Manufacturing Technologies | A five-year education program in Technology-Human INtegrated Knowledge, Education and Research (THINKER) is underway at Clemson to bring graduate students in Engineering, Computer Science, Learning Sciences and Psychology together with Greenville Tech Advanced Manufacturing students to explore how humans and future manufacturing technologies will interface, and how such interfaces will affect roles and attitudes. Teams work together to prototype assistive technology examples and measure the effect on human acceptance and performance. The convergent faculty team is investigating connecting the human element with the emerging digital manufacturing enterprise, particularly the effect of human-integrated digital technologies as information generators and feedback mechanisms, while studying how aligned interinstitutional curricula (graduate, undergraduate, and technical college) enhance cross-functional team performance. |
| Jennifer Ogle | Training Teachers to Incorporate Inclusive Collaboration Opportunities into Courses | We've all heard that teamwork is one of the top skills that our students must have upon graduation, but do we ever really learn to teach teamwork and collaboration skills? Do we know what activities, assignments, and tools encourage the interdependency of members on a team? We've been told that inclusivity and heterogeneity of ideas is critical to innovation and creativity, but how do we help resolve and effectively mitigate conflicts that often occur within diverse teams? We've been studying what works and want to create a multidisciplinary and multilevel hub of teaching and learning called: Gearing Up for Inclusive Teamwork. |
| Marissa Shuffler | Training to Team: Evaluating the Impact of Team Development Interventions on Inclusive Teamwork Behaviors Across Collaborative Spaces | Although course instructors often create group or team assignments with the goal of expanding undergraduates' competencies in collaboration, communication, and teamwork, more often than not these experiences end poorly, creating distrust, detracting from the student’s sense of belonging, and leaving students generally dreading their next team experience. Given this disconnect between what team projects should teach students and what is actually experienced, and in light of the need to rapidly transition interventions from in-person to technology supported delivery, a set of teamwork training modules were designed as an proactive intervention to shape engineering students’ transportable teamwork skills prior to an intensive team-based course project. Utilizing a mixed-method approach to evaluating pre- and post-training teamwork behaviors, learning, and reactions in a sample of undergraduate engineering teams, we found that teamwork training exposure significantly predicted performance on learning outcomes (10% higher scores for training vs. control), and that students were very receptive to structured teamwork training and feedback, expressing a desire for additional interactive, technology supported tools and resources to help improve their learning. In the full presentation we will discuss these findings in greater detail, along with lessons learned regarding next steps for advancing the content, delivery, and timing of such training, and the implications for the development of virtual teamwork skills that will inevitably remain in demand for the foreseeable future. |