

## **Group Communication Analysis: Applications for Online Learning Environments**

Nia Dowell, PhD, Postdoctoral Research Fellow  
School of Information & Digital Innovation Greenhouse  
University of Michigan

Tuesday, November 27, 2018  
11:00 – 12:15 pm, Education 2024

**Abstract:** Educational environments have become increasingly reliant on computer-mediated communication, relying on video conferencing, synchronous chats, and asynchronous forums, in both small (5-20 learners) and massive (1000+ learner) learning environments. These platforms, which are designed to support or even supplant traditional instruction, have become commonplace across all levels of education, and as a result created big data in education. In order to move forward, the learning sciences field is in need of new automated approaches that offer deeper insights into the dynamics of learner interaction and discourse across online learning platforms. This talk will present results from recent work that uses language and discourse to capture social and cognitive dynamics during collaborative interactions. I will introduce group communication analysis (GCA), a novel approach for detecting emergent learner roles from the participants' contributions and patterns of interaction. This method makes use of automated computational linguistic analysis of the sequential interactions of participants in online group communication to create distinct interaction profiles. We have applied the GCA to several collaborative learning datasets. Cluster analysis, predictive, and hierarchical linear mixed-effects modeling were used to assess the validity of the GCA approach, and practical influence of learner roles on student and overall group performance. The results indicate that learners' patterns in linguistic coordination and cohesion are representative of the roles that individuals play in collaborative discussions. More broadly, GCA provides a framework for researchers to explore the micro intra-and inter-personal patterns associated with the participants' roles and the sociocognitive processes related to successful collaboration.



**Bio:** Nia Dowell is a postdoctoral research fellow in the School of Information and Digital Innovation Greenhouse at the University of Michigan. She completed her PhD at the Institute for Intelligent Systems in the University of Memphis under the advisement of Professor Arthur Graesser. Her primary interests are in cognitive psychology, discourse processing, group interaction, and learning analytics. In general, Dowell's research focuses on using language and discourse to uncover the dynamics of socially significant, cognitive, and affective processes. She is currently applying computational techniques to model discourse and social dynamics in a variety of environments including small group computer-mediated collaborative learning environments, collaborative design networks, and massive open online courses (MOOCs). Her research has also extended beyond the educational and learning sciences spaces and highlighted the practical applications of computational discourse science in the clinical, political and social sciences areas.