Learning engagement vis-à-vis psycho-physiological measures: Formal and informal learning environments

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Engagement has become an increasingly important aspect of the learning process in education (D'Mello, Dieterle, & Duckworth, 2017). This complex and multidimensional construct involves emotional, cognitive, and behavioral aspects of student learning (Fredricks, Blumenfeld, & Paris, 2004; Sinatra et al., 2015). Scholars view engagement as a continuous cycle that involves fluctuations between engagement, disengagement, and re-engagement (O'Brien, Roll, Kampen, & Davoudi, 2021), emphasizing the need for comprehensive and objective measures to better understand the learning process. One possible approach to achieving this is to adopt a multimodal methodology that incorporates both objective psycho-physiological measures and subjective data channels into educational research. In this talk, I will discuss the benefits and challenges of using automated real-time psycho-physiological data streams from facial expression recognition, eye-tracking, and electrodermal activity (EDA) sensors, as well as subjective self-reports to measure learning engagement. Additionally, I will present research from diverse formal and informal learning contexts, including medical and health-related education, to demonstrate how psycho-physiological measures can provide valuable insights into the learning process.