Abstract
Teaching candidates often enter teacher education with well-developed conceptions of learning at odds with meaningful learning (Fives & Buehl, 2012). While adaptive in many contexts (e.g., where rote memorization is promoted), if left unchecked, they may pass on this conception of learning to the next generation of learners. As a result, the onus is on instructors and programs to design courses congruent with principles of learning. One way to achieve this may be to "flip" the classroom. Rather than using class time to introduce topics, in a flipped classroom, students apply concepts they are exposed to before class. The rationale is that the introduction of new material is often accompanied by lower-level forms of cognitive processing that can occur outside of the classroom, whereas flipped classes allow instructors to work directly with students at the point of learning. While research on flipped classrooms offers some direction, much remains unknown. The purpose of the present study was to examine differences in learning and motivational outcomes between flipped and traditional classrooms.

Participants were 162 students enrolled in one of two sections of an introductory educational psychology course. Each term, one section was taught as a traditional lecture; the other as a flipped classroom. Data were collected from the instructor's gradebook and an online student perceptions survey.

Learning outcomes (LOs) included concepts pertaining to: Information processing (LO 1), meaningful learning (LO 2), cognitive development (LO 3), and motivation (LO 4). End-of-course evaluations included student assessment of learning gains (SALG) related to: The skills of planning instruction with consideration of information processing (SALG 1), planning instruction taking into account cognitive development (SALG 2), understanding how to initiate and maintain student engagement (SALG 3), and creating an assessment that aligns with learning objectives (SALG 4). The student perceptions survey measured three different constructs related to students’ experiences: Learning climate, motivation for learning, and perceived knowledge transfer. Online viewing of video lectures was tracked via control options of the program allowing for the comparison of three groups: Traditional, flipped higher engagement (FHE), and flipped lower engagement (FLE).

Results indicated generally no significant difference across groups for the learning outcomes other than a significant interaction effect for GLO 4. An independent-sample t-tests indicated that GLO 4 was significantly higher in the first semester than the second for the FHE section (t=2.94, p=.01, d=1.04). However, there were significant group effects for the motivation variables (perceptions of the learning climate, F=3.00, p=.05, partial-?=2=.04; perceived knowledge transfer, F=3.24, p<.05, partial-?=2=.04; motivation for learning, F=8.44, p<.001, partial-?=2=.10). Post-hoc tests indicated that traditional was significantly higher than FLE, but not FHE for all motivation variables.

In summary, participants generally had negative perceptions of the flipped classroom. However, they actually experienced no decrease in learning and those who were highly engaged
experienced increased scores on one of the learning outcomes. Second, participants who did not engage with the flipped course had significantly less positive views of the course than those highly engaged with the flipped class or in the traditional class.