

Moving Away from Lectures: Engaging Students Using the SCALE-UP Active-Learning Pedagogy

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The time-honored conventional lecture (“teaching by telling”) has been shown to be an ineffective mode of instruction for science classes. For enhancing critical thinking skills and developing problem-solving abilities, collaborative group-learning environments have proven to be far more effective. The introductory physics classes at George Washington University (GWU) have been using a collaborative group-learning pedagogical approach known as SCALE-UP for the past 15 years, and the “standard” lecture format has essentially been eliminated. In this approach, students work together on various pencil/paper exercises using small whiteboards and perform hands-on activities like demos and labs during class. Formal lecture is reduced to a minimum and the instructor serves more as a “coach” to facilitate the academic “drills” that the students perform.

This innovative pedagogy often arouses the curiosity of STEM faculty who wonder how the small-group format is organized and what activities constitute a typical class session. This workshop will answer these questions and provide examples that can be implemented in your own classrooms.

This workshop is intended to be an active-engagement experience for all participants. I will first describe our adoption of the collaborative approach at GWU, and then we will participate together in a series of hands-on (and minds-on) exercises to illustrate the range of activities in this group-learning environment. The focus will be on the in-class delivery of the exercises and the pedagogical value of the collaborative activities. The primary objective is to have participants experience the activities from the student perspective, since that is the best way to perceive the benefits of interactive engagement.

The workshop is flexible, and the emphasis can vary depending upon the preferences of the participants. In the end, the aim of the workshop is to provide a clear and impactful example of the dynamic atmosphere that can prevail in a classroom that is conducted using a collaborative group-learning approach.

