

Bridging Geotechnical Engineering Education and Research on Education

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Abstract

This talk is about the use of tools and results from research on education in geotechnical engineering education. The incentive for doing this is to go past the level of individual faculty each improving their own courses to producing educational gains as a community. A first step for doing this is to become familiar with some key concepts from the domain of education – this is the first part of the talk. Pedagogical content knowledge is a concept reminding us that as teachers we need to consider content from a combined teaching and learning point of view. An important component of pedagogical content knowledge is how students perceive key topics and can be obtained by asking them suitable probing questions. Such knowledge of geotechnical engineering can be articulated, recorded and shared. To achieve this, we can find guidance in the literature of discipline-based education research (DBER) and examples of how other disciplines, mainly from the sciences, have started this kind of work. The second and bigger part of the talk considers the following three geotechnical engineering topics: soil classification, shear strength and bearing capacity, and discusses them from the teaching and learning points of view. Among the three topics discussed, shear strength emerges as a priority focus. Through examples, proposals are sketched for systematic study of student perceptions and the development of targeted educational material. Accordingly, the aim of the talk is to both enrich the teaching toolbox of current and future geotechnical engineering educators and solicit contributions following the talk and at a later time.

Bio



Marina Pantazidou is an associate professor at the National Technical University of Athens, Greece. Apart from university appointments in the US and Greece, her professional experience also includes work in hazardous waste consulting. Her research topics are drawn from environmental geotechnics and engineering education.