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Developing an effective instructional environment by understanding what the urban student brings to the physics class¹

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Physics Education Research (PER) has provided the physics community with (1) tools to assess student learning, (2) details on the state of student knowledge, and (3) instructional materials and learning environments that have proven to be effective in promoting understanding. Often, implicit in the dissemination of this work is a claim that these assessment tools, education research results and instructional materials are valid and appropriate regardless of the student population. As instructors begin to implement and assess different types of innovative instructional materials with diverse populations we begin to find complex differences in how different students come to understand physics and develop knowledge. Instructional materials that address the needs of one group of students may not address the needs of other groups. In addition, assessment and evaluation techniques that provide valid results for one group of students may not yield valid or complete results when used with other groups. If one is not careful, the use of traditional PER tools with students in non-traditional learning environments can lead to a very limited or even inaccurate picture of student development. Often, this limited view highlights student deficiencies and fails to reveal the strengths and resources of this population. In this talk we discuss our work at Chicago State University, which has focused on the specific issues of the urban student at the comprehensive university and the two year college. The refinement of our research tools and research agenda have helped us identify a rich set of resources that our students bring to the classroom and continue to cultivate as the semester progresses. These resources have played a major role in how our instructional environment has evolved.

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