Experiencing student understanding of fundamental concepts in 

electric circuits

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C. MCDERMOTT, University of Washington, Seattle — As part of an ongoing in-
vestigation, the Physics Education Group at the University of Washington is contin-
uing to examine student understanding of fundamental concepts in electric circuits. 
Several new research questions have been designed and administered to a variety 
of different populations, including undergraduates in introductory calculus-based 
courses, preservice teachers, and inservice K-12 teachers. In particular, we have 
been examining the relationship between the ability of students to incorporate an 
electrical element into a complete circuit and their understanding of the require-
ments for the elements internal construction. The results reinforce our findings from 
previous investigations that many students lack a functional understanding of a com-
plete circuit. The insights we have gained from this research will be discussed in the 
context of specific examples.

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