The K-12 community has long wrestled with many of the issues we now face in preparing graduate students to teach. Elements of current TA professional development programs such as peer mentoring, supervised early teaching, and use of case studies and lesson study all have their roots in best practices for K-12 teacher preparation. These best practices have a short-term impact on student success and participant satisfaction, and also strengthen teacher identity, the extent to which participants think of themselves as teachers. K-12 education research has established teacher identity as a strong long-term predictor of retention in the field, of reflection on and adaptation of instructional practice, and of student success in mathematics.

Translating research on teacher identity to the graduate student population is complex and challenging. We present models of teacher identity development for secondary mathematics and discuss how these translate - or fail to translate - to graduate students. We discuss implications for designing and assessing professional development for graduate students, and provide recommendations for practice to strengthen teacher identity as a central facet of professional identity as a mathematician. (Received September 12, 2016)