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Walking the Walk: Using Evidence-Based Teaching and Learning to Improve Teaching Training

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Walking the Walk: Using Evidence-Based Teaching and Learning to Improve Teaching Training

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Introduction

Over two years, we explored whether a novel graduate teaching course could weave together three programs that would simultaneously:



1. Enhance graduate TAs' teaching skills,
2. Investigate undergraduates' learning and educational experiences, and
3. Develop research in teaching and learning sciences.

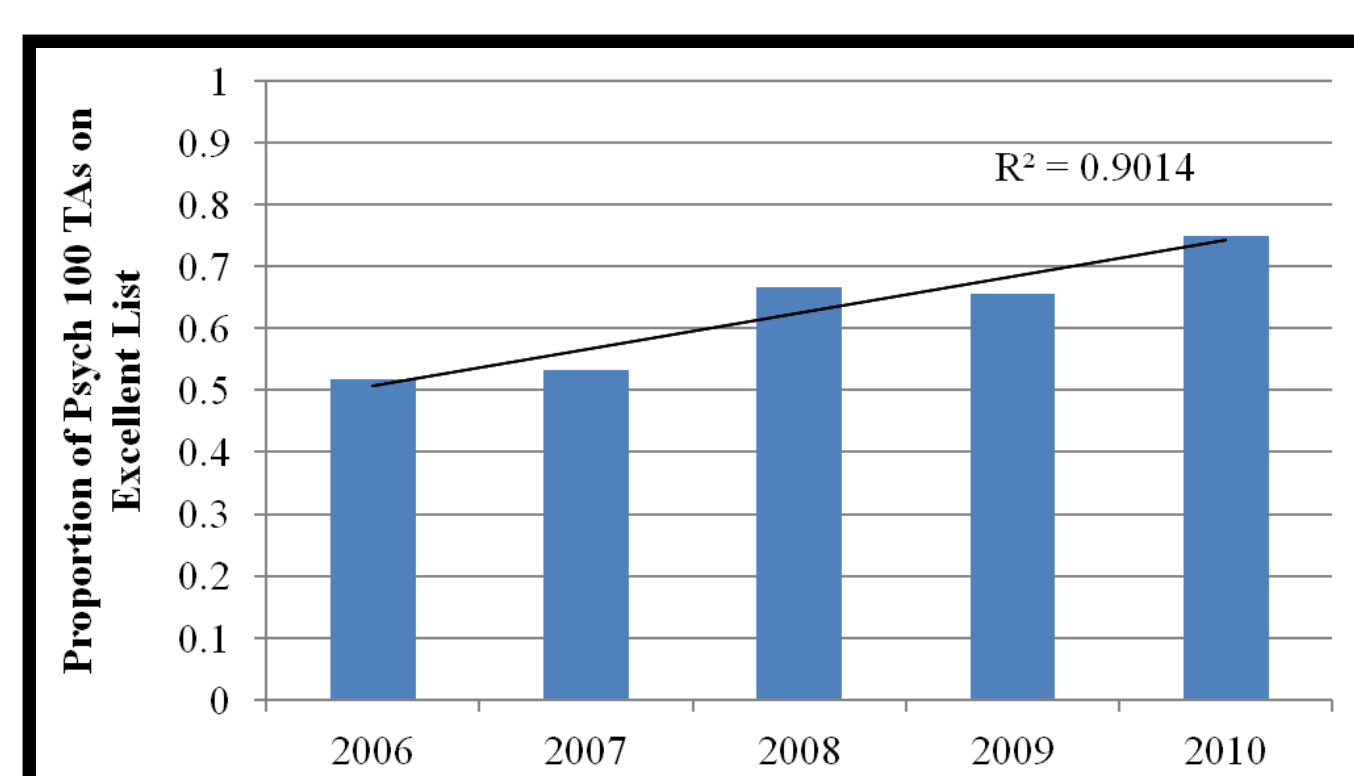
1. Enhance TAs' Teaching Skills?



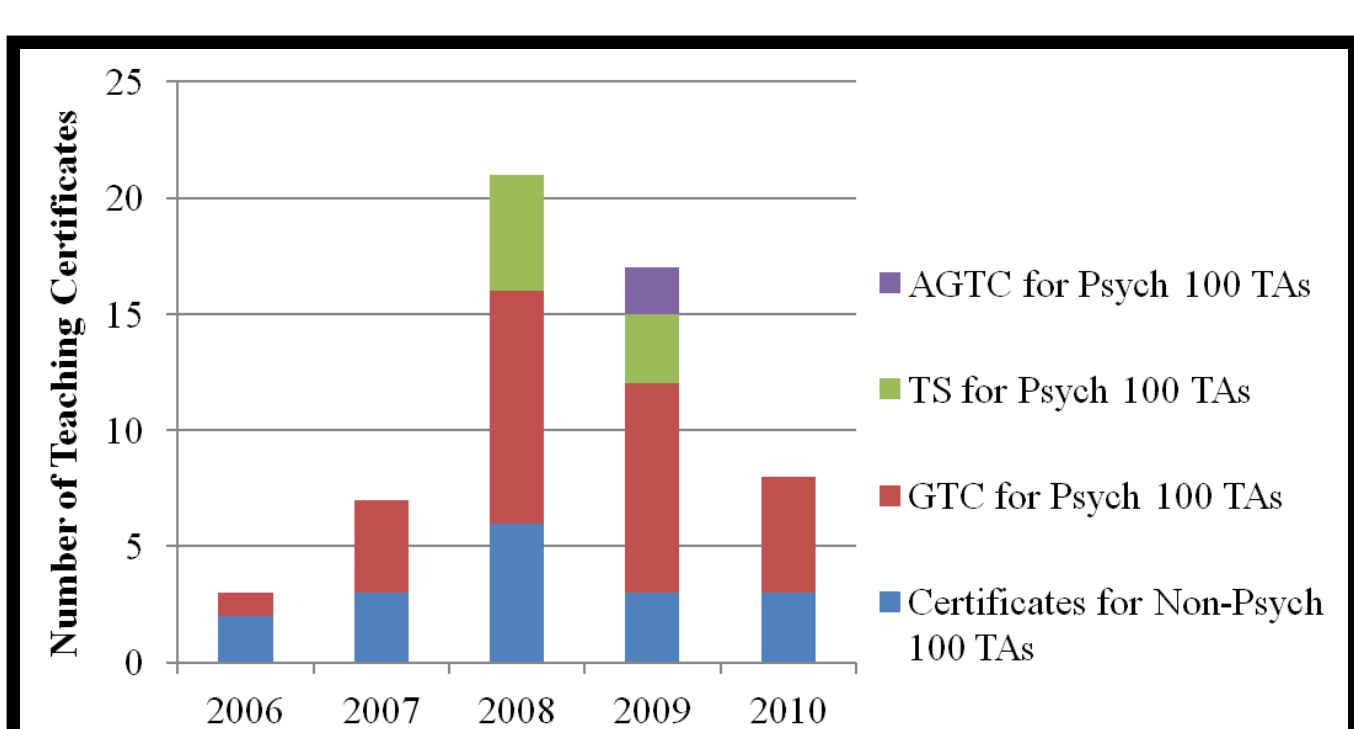
First, we aimed to improve the teaching competence of Psych 100 TAs by re-designing a graduate course to focus on teaching skills, pedagogy, and assessment. We also developed TAs' autonomy and relatedness by helping them earn teaching certifications, asking veteran TAs to mentor new TAs, and developing a wiki with teaching and learning resources.

1. Changes in Teaching Skills

Proportion of Psych 100 TAs on Excellent List Increased

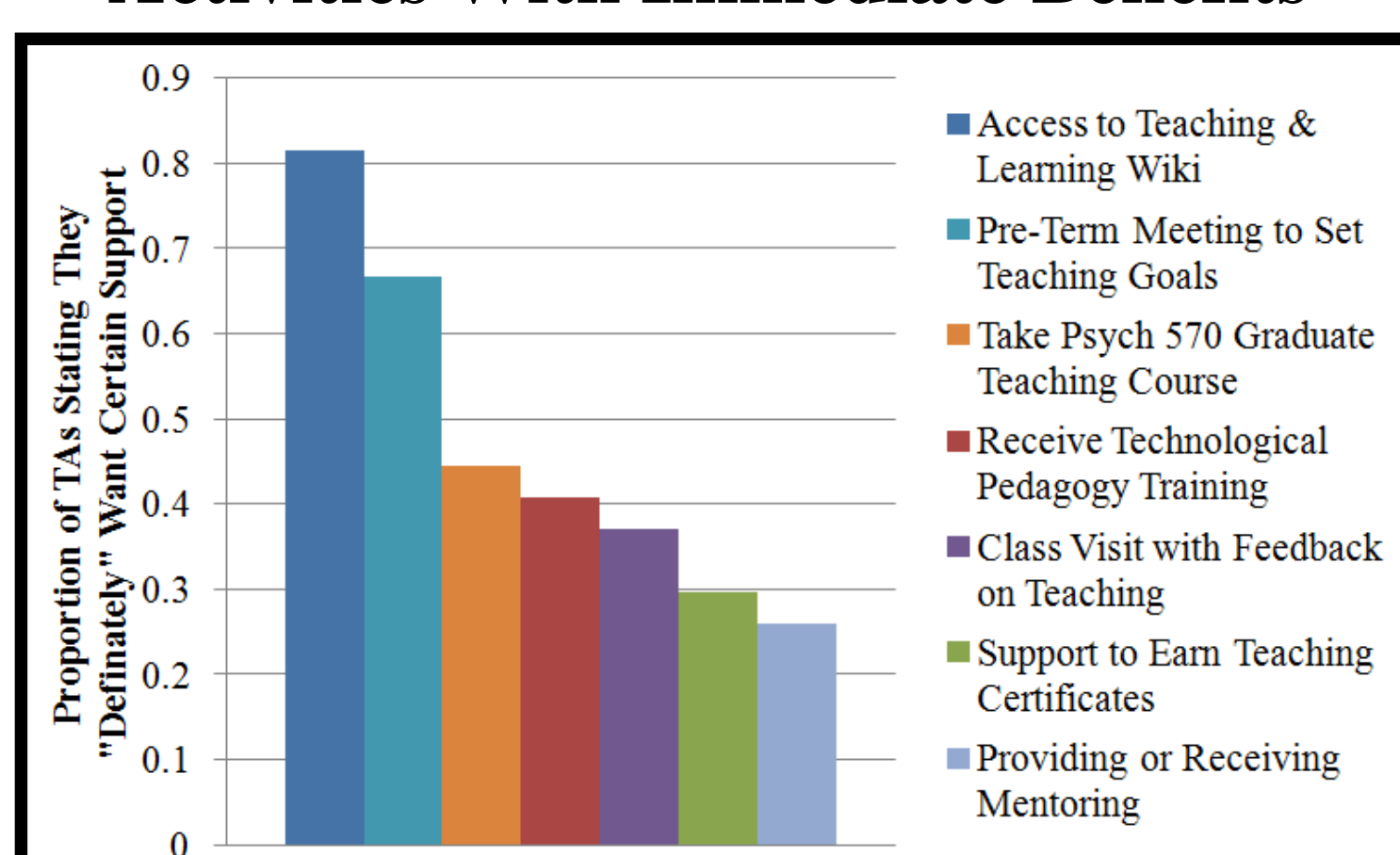


Increase in Teaching Certifications for Psych 100 TAs



1. TAs Attitudes About Training

TAs' Attitudes Were Most Positive Towards Training Activities With Immediate Benefits



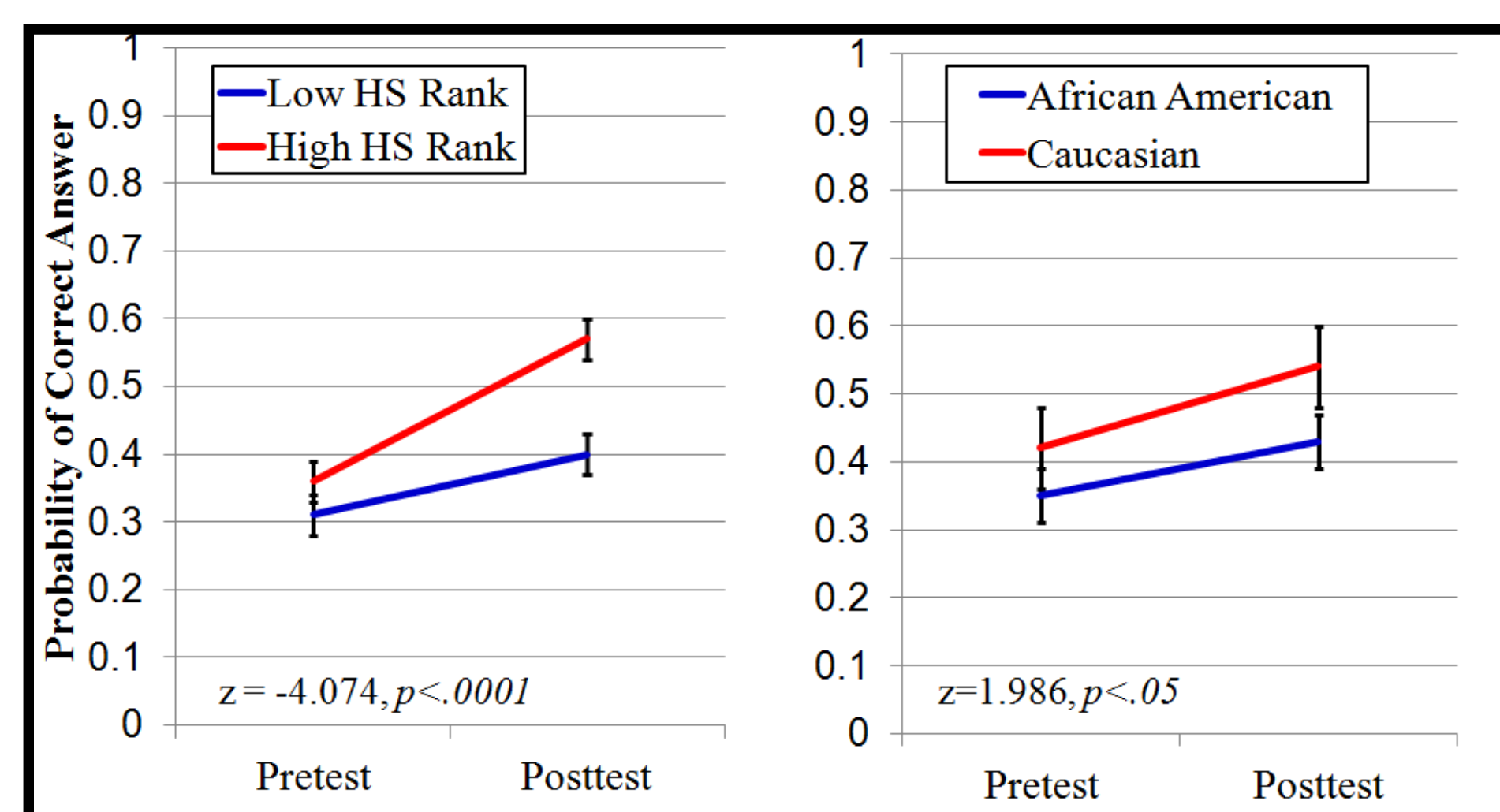
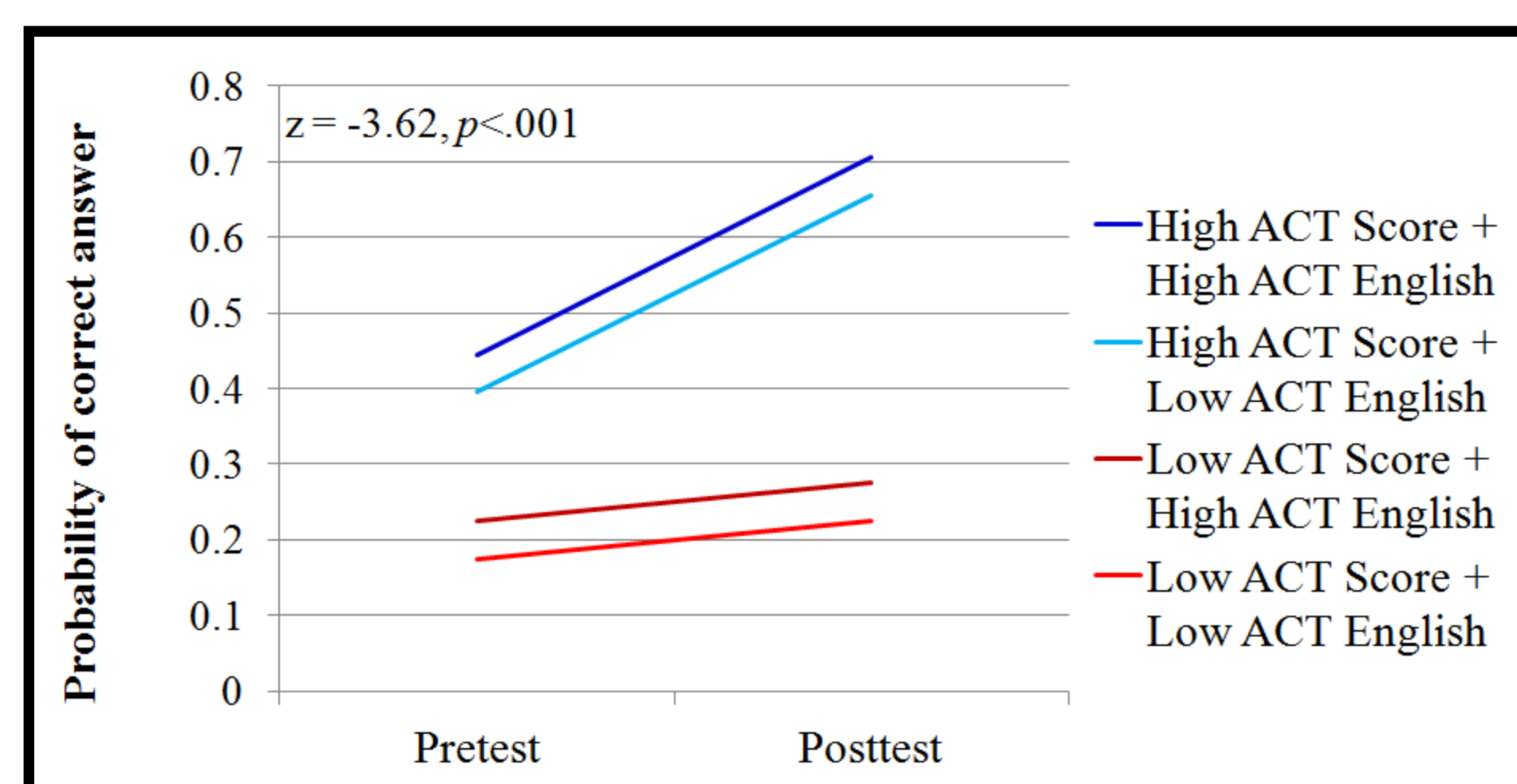
2. Investigate Learning in Psych 100?

Second, interested TAs used their new training in assessment to develop direct measures of student learning in Psych 100, which we embedded into Compass. They also redesigned Early Informal Feedback and ICES tools to collect indirect measures of attitudes about educational experiences, the former of which was also embedded into Compass.



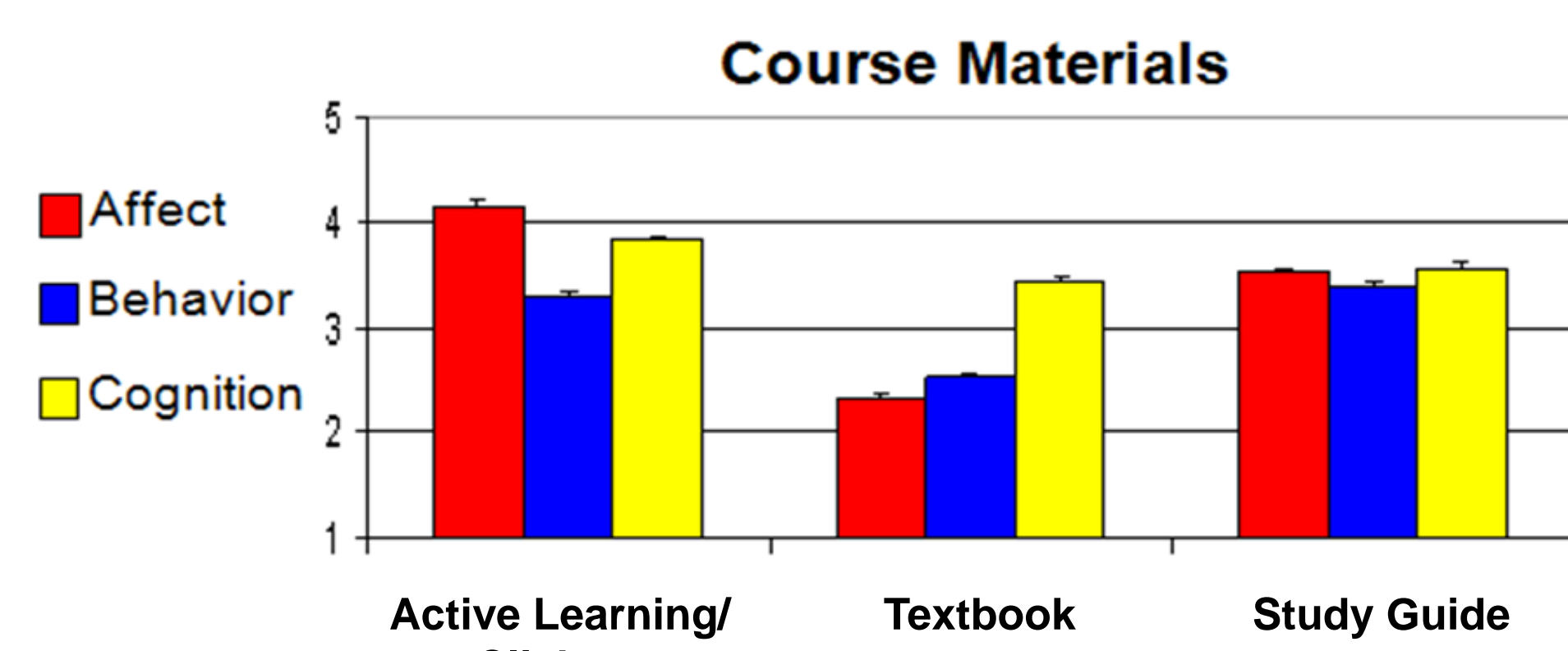
2. Student Learning in Psych 100

Learning from Pre-Test to Post-Test Is Mediated By ACT score, High-School Rank, & Race



2. Student Attitudes About Psych 100

Students' Attitudes Were Less Positive About the Text and More Positive About Active Learning/Clickers



Ratings Were on a Scale of 5 (Excellent) to 1 (Poor)

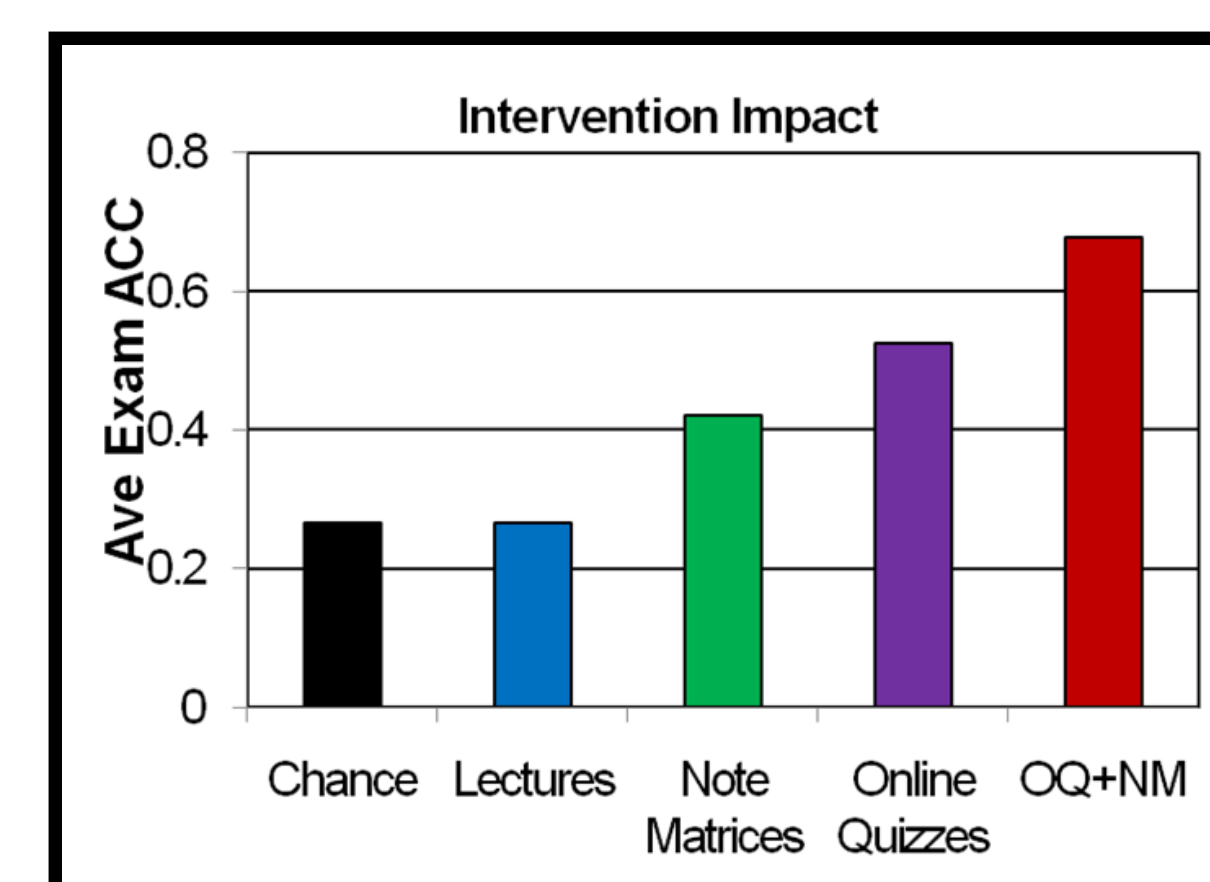
3. Aid Teaching & Learning Research?

Third, we provided training and support to Psych 100 TAs interested in conducting research in teaching and learning sciences. These TAs developed empirical research in association with undergraduate and graduate courses, conducted the research and analyzed findings. Finally, the TAs have been disseminating the results via conference posters, presentations, and publications.



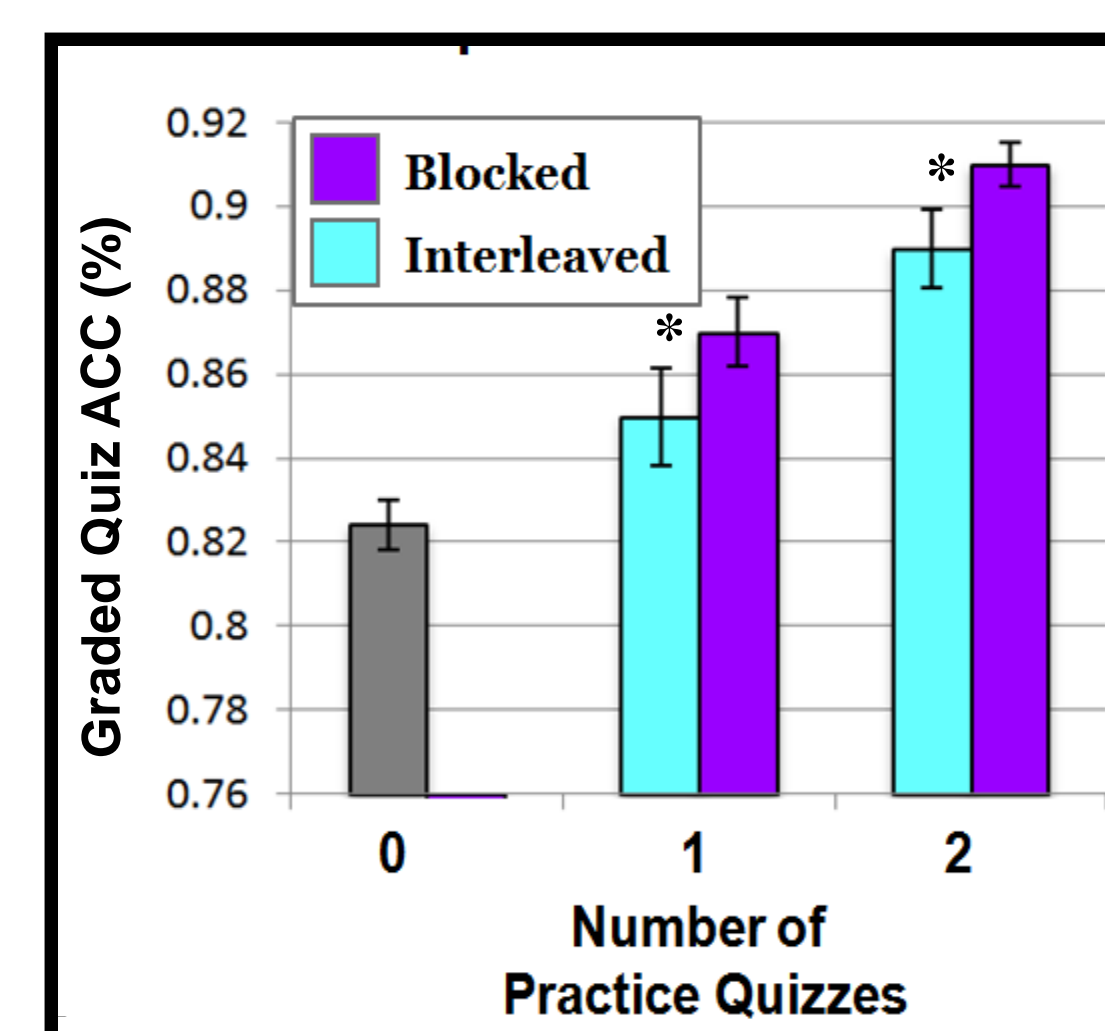
3. Interventions to Increase Learning

Interventions in EOP Sections Showed Online Practice Quizzes Had Greatest Effect on Exam Performance

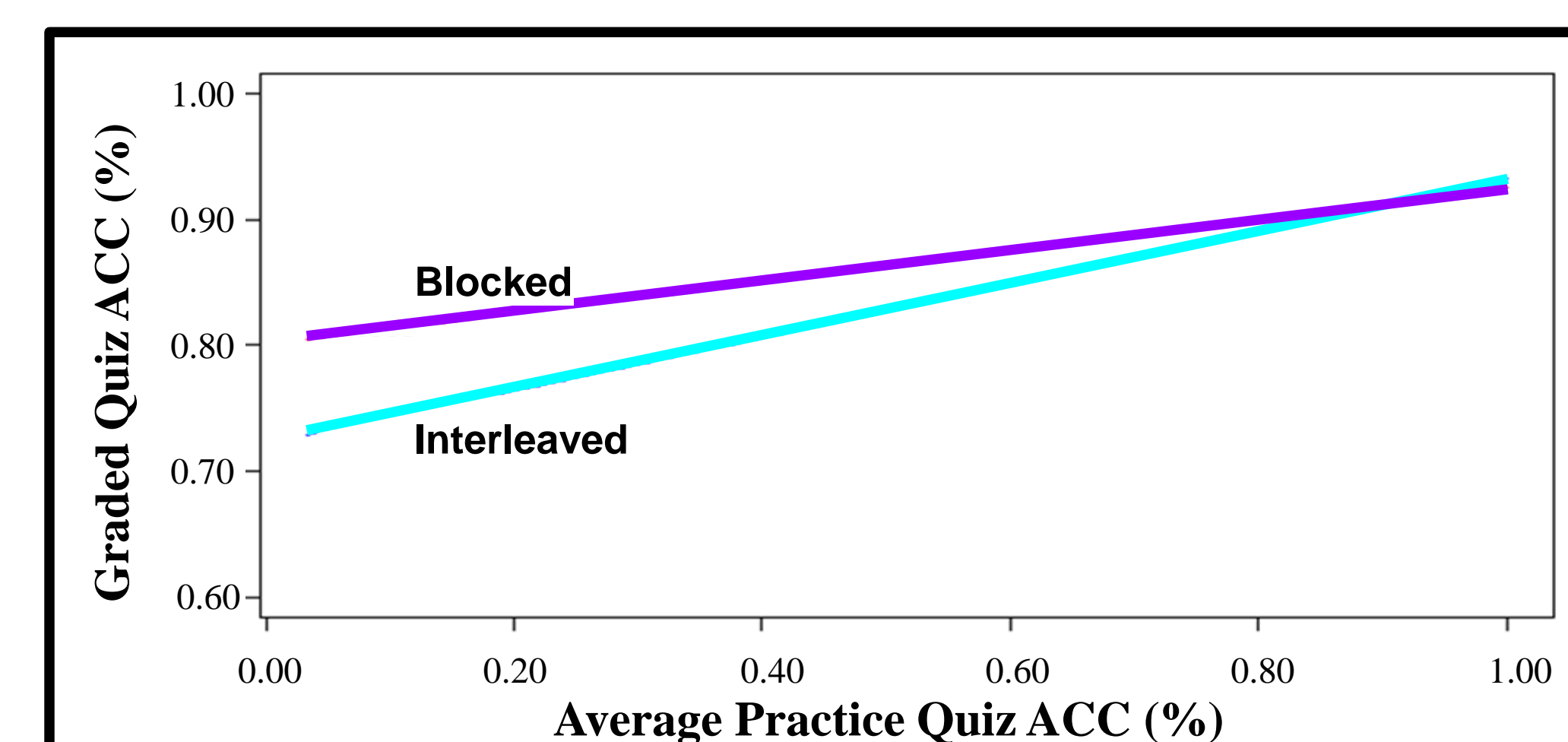


3. Optimizing Online Practice Quizzes

Number of Online Practice Quizzes in Large Sections Affected Performance 2 Weeks Later
Greatest effect if similar concepts were blocked ($t=2.9, p<0.05$)



Greatest Advantage of Blocked Practice Is For Students Earning the Lowest Practice Quiz Grades ($t=-2.76, p<0.01$)

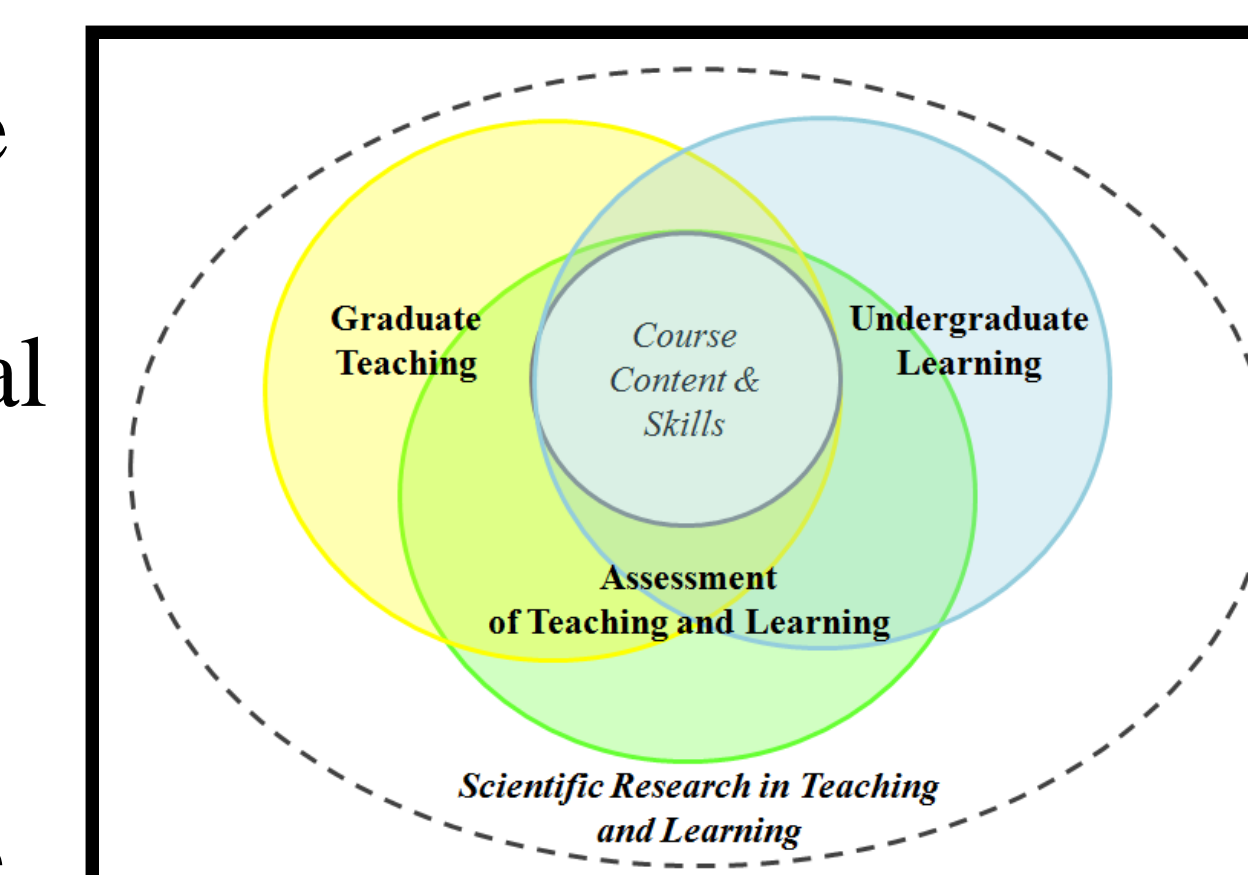


Discussion

There were several positive outcomes from this project. The changes to the teaching course were associated with more TAs being on the Excellent List and earning teaching certifications (for two years). TAs preferred training activities that would support immediate needs over more time-consuming or longer-term activities, which may explain the decline in teaching certificates in 2010. The TAs' assessment work revealed differences in learning across Psych 100 students and showed students' biases in the course materials. Thus, we decided to use students' love of active learning to encourage them to read the text. When one section of EOP students took online practice quizzes to understand the text material, they also earned higher exam grades. Lastly, the TAs' empirical research revealed that blocking concepts in online practice quizzes further augmented student learning, including in vulnerable populations.

Implications

This project shows the potential benefit of re-conceptualizing several traditionally separate academic endeavors into one integrated program with multiple goals. A graduate program like this enhances teaching skills, application of pedagogy and assessment information, and develops research in the teaching and learning sciences. In turn, such a program has a larger impact by creating a continuous cycle for augmenting undergraduate learning. Furthermore, we are finding that programs like this one can attract a wide variety of external funding, from both public and private sources. In sum, programs like this one allow us to "walk the walk" of integrating our research and teaching missions in such a way that everyone can benefit.



Acknowledgments

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