

Institute for Quality Science Teaching 2015-2016 Study on Teacher and Student Outcomes

Research and Evaluation Executive Summary

Goal

The purpose of this study is to measure the impact of MSI's Institute for Quality Science Teaching (IQST) program on science attitudes and content knowledge of teacher participants and their students.

Why

In 2012-2013, researchers at Michigan State University conducted an experimental study of the IQST Get Re-Energized teacher professional development course. This project was an expansion of the MSU study to include more teachers, students and IQST courses, and make a few other changes that would make the results more meaningful to the general community of teacher professional development (PD) programs.

What

We studied the Get Re-Energized (physical science) and Expedition Green (ecological science) courses.

Who

All teachers who applied for enrollment during the 2015-2016 school year were included. Each teacher was asked to also give surveys to students in their first regularly taught science class of the day. A total of 125 teachers and 1,676 students fully participated, representing 93 schools in 50 school districts around the Chicagoland area.

How

- Teachers who had been accepted into the IQST program were randomly placed in a control or treatment group. The treatment group was then enrolled in the IQST program. The control group was guaranteed acceptance into the following year's program, and offered an additional incentive.
- Teachers were given tests online and students did theirs as homework.
- The tests measured scientific content knowledge and attitudes towards science. Teachers were also asked about how they teach science in their class. The tests used questions taken from commonly used standardized tests from across the country.
- Most test items were in multiple choice format, but about a quarter had a "please explain" prompt added to allow for deeper responses.

When

All teachers were given an online survey before the first IQST session and after the last session. They were asked to give the surveys to their students at the same time.

Results

Teachers in the treatment group showed a **7% gain** in subject content knowledge over the control group. Most of this gain was from teachers who scored low on the pre-test. Students of teachers in the treatment group showed a **4% gain** in subject content knowledge over the control group on multiple-choice items and an **11% gain** on the “please explain” items.

We did not find a difference between groups on overall science attitude change, but teachers did report lower anxiety and greater confidence. They also reported doing more student-centered activities in the classroom, compared to the control group.

These results have been published in the International Journal of Science Education, a peer-reviewed science research journal. A copy is available upon request.

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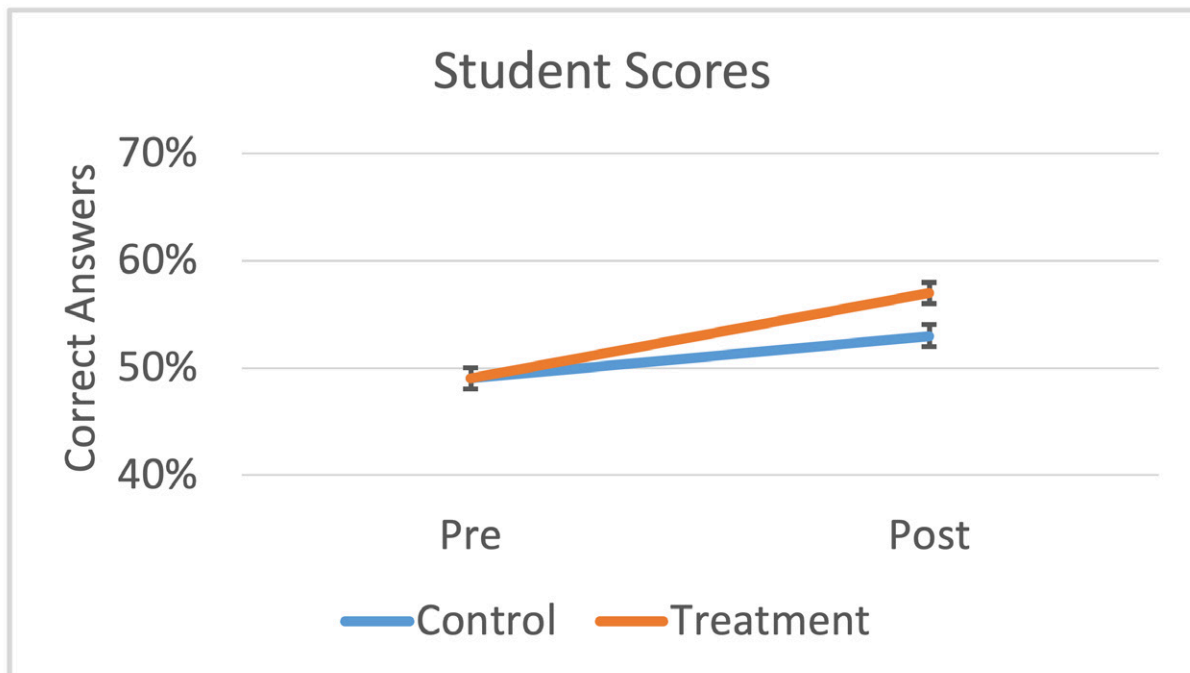


Figure 1. Change in student multiple choice scores on science content test.