Registry of Efficacy and Effectiveness Studies

Study Title:
188 - A Randomized Controlled Study of the Efficacy of Reading Apprenticeship Professional Development for High School History and Science Teaching and Learning - 9th/10th

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Version History

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Section I: General Study Information

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Other registration number: 

Study start date: 2005-01-01
Study end date: 2010-01-01

Intervention start date: 2005-07-01
Timing of entry: Retrospective registration

Brief abstract:
The multiple measures of teacher implementation provided a robust corroboration of statistically significant, teacher level outcomes with large effect sizes between intervention and control groups. We conclude that intervention teachers were more able to integrate science and history literacy learning in classroom instruction. Student Opportunity to Learn (OTL) surveys partially corroborated teacher reports of increased integration of literacy and content instruction and some sub-groups reported increased levels of motivation and effort in class as well as an increased sense of academic identity. Results for the Degrees of Reading Power (DRP) test and comprehension questions from the Integrated Learning Assessments did not provide evidence that these differences in teaching resulted in differences for students. However, Integrated Learning Assessments show evidence that students in treatment classes approached reading differently than their counterparts in control classes. Further, the results for state-mandated criterion-referenced test scores offer some evidence that differences in teacher practice resulted in improvements in https://www.sreereg.org/pages/index.php#close-modalstudent academic performance. In cross-sectional test data, both history and biology students in the treatment schools performed better than their counterparts in control schools on the state standardized assessments. We found increases across all demographic groups in ELA for students in history intervention classes. The impacts in biology intervention classes were most robust for Latino students and for students whose home language was not English. The results of the study thus present a positive picture with regards to the effectiveness of the Reading Apprenticeship framework for integrating academic literacy content with biology and history coursework and instructional practices.

Keywords: secondary disciplinary literacy academic literacy professional development

Comments:

Section II: Description of Study

Type of intervention:
Professional Development

Topic area of intervention:
Mathematics and Science Education, Reading and Writing, Social and Behavioral Context for Academic Learning

Number of intervention arms:
1

Target school level of intervention:
9, 10

Target school type:
Rural, Urban, Suburban

Location of implementation:
United States: West

Further description of location:
high schools from school districts in California and Arizona

Brief description of intervention arm:
The treatment for this study was 10 days of professional development in Reading Apprenticeship specific to science and history prior to the study’s data collection year (Greenleaf & Schoenbach, 2004; Greenleaf, et al., 2011). The professional development curriculum was designed to involve teachers in inquiry into their own science or history literacy practices and in close analysis of text and task demands, as well as inquiries into student literacy performances through videotapes of class and individual student reading activities, written case studies, and ongoing student assessment. Professional development was also designed to model target instructional approaches, engaging teachers in practicing metacognitive routines, modeling reading and reasoning processes, conducting small group work, engaging and supporting students in extended reading opportunities, and facilitating discussions that focus on how and why to read science or history texts as well as the content of these texts. During the professional development these instructional approaches were tightly integrated with core units of study in biology or US history to illustrate the integration of literacy and science and history learning. The days of professional development were spread throughout the year, with 5 days in the summer of one year, 2 days of follow-up in mid-year, and three days in the summer of the second year. Trained consultants who were certified through formal training and performance assessment, and have demonstrated expertise in science or history, conducted the professional development. There was ongoing support for treatment teachers via a list serve moderated by professional development coaches. In addition, both intervention and control teachers were provided with a subsidy to purchase classroom libraries linked to their curricula.

**Brief description of comparison condition:**
Participants in the control condition were exposed to existing teacher professional development opportunities (practice-as-usual).

In addition, both intervention and control teachers were provided with a subsidy to purchase classroom libraries linked to their curricula.

**Comparison condition:** Business-as-usual

**Comments:**

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**Section III: Research Questions**

**Confirmatory research questions:**

*Question 1*
What effect does the Reading Apprenticeship pd have on 9th and 10th grade student achievement in biology compared to students with teachers that received a practice-as-usual pd?

*Question 2*
What effect does the Reading Apprenticeship pd have on 9th and 10th grade student achievement in ELA compared to students with teachers that received a practice-as-usual pd?

*Question 3*
What effect does the Reading Apprenticeship pd have on 9th and 10th grade student achievement in reading comprehension compared to students with teachers that received a practice-as-usual pd?

*Question 4*
What effect does the Reading Apprenticeship pd have on 9th and 10th grade student opportunity to learn in biology courses compared to students with teachers that received a practice-as-usual pd?

*Question 5*
What effect does the Reading Apprenticeship pd have on 9th and 10th grade student learning and engagement in biology courses compared to students with teachers that received a practice-as-usual pd?
Exploratory research questions:

Question 1
What effect does the Reading Apprenticeship pd have on teacher knowledge compared to teachers not receiving the PD?

Question 2
What effect does the Reading Apprenticeship pd have on teacher practice compared to teachers not receiving the PD?

Comments:

Section IV-A: Study Design (Selection)

Study Design:
Randomized Trial (RT)

Comments:

Section IV-B: Study Design (Input)

Unit of random assignment of intervention:
School

Assignment within blocks or selected strata:
Yes

Define the natural blocks or purposefully selected strata:
similar districts/school demographics and prior achievement

Probability of assignment to treatment the same across blocks or strata:
Yes

Probability of assignment to treatment:
.5

Unit outcome data measured:
Student

Intermediate clusters between unit of random assignment and unit of measurement:
Yes

Description:
Teacher

Design Classification:
RT: Multisite (Blocked) Cluster Randomized Trial

Comments
Section V: Sample Characteristics

Approximate number of students per intermediate cluster: 30

Approximate number of intermediate clusters per school: 2

Approximate number of schools in the comparison condition within each block:

Number of blocks:

Certain students that were targeted for the study:
Yes - populations of high school students historically underrepresented in post secondary education settings, including African-American and Latino students

Certain students that were excluded from the study:
No

Certain intermediate clusters that were targeted for the study:
Yes - teachers of high school biological science

Certain intermediate clusters that were excluded from the study:
No

Certain schools that were targeted for the study:
Yes - high schools that served populations of students historically underrepresented in post secondary education settings

Certain schools that were excluded from the study:
Yes - Private schools excluded, schools with limiting enrollment requirements excluded

Certain blocks that were targeted for the study:
Yes - Prior to randomization, participating high schools were pair-matched with similar schools based on academic performance and demographic factors. A two-stage strategy was used for matching. First, similar schools were matched based on 3 factors: (1) academic performance, African-American enrollment, and (3) Latino enrollment. Participating schools were located in multidimensional space defined by these factors, and matched with one other school. Schools and the participating teachers within them were randomly assigned to intervention and control conditions within each pair

Certain blocks that were excluded from the study:
No

Comments

Section VI-A starts on the next page.
Section VI-A: Outcomes (Selection)

Confirmatory question 1 - number of outcome measures: 1
Confirmatory question 2 - number of outcome measures: 1
Confirmatory question 3 - number of outcome measures: 1
Confirmatory question 4 - number of outcome measures: 1
Confirmatory question 5 - number of outcome measures: 1

Comments:

Confirmatory Question 1, Outcome Measure 1

Outcome domain: Student Achievement - Science

Minimum detectable effect size:

Outcome measure: State Standardized Test - Science

Scale of outcome measure: Continuous

Normed or state test: Yes

Same outcome measure in treatment and comparison groups: Yes

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Confirmatory Question 2, Outcome Measure 1

Outcome domain: Student Achievement - Literacy

Minimum detectable effect size: .15

Outcome measure: State Standardized Tests - ELA and Reading Comprehension

Scale of outcome measure: Continuous

Normed or state test: Yes

Same outcome measure in treatment and comparison groups: Yes

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Confirmatory Question 3, Outcome Measure 1

Outcome domain: Student Achievement - Literacy

Minimum detectable effect size:

Outcome measure: Degrees of Reading Power - Reading Comprehension
Scale of outcome measure: Continuous
Normed or state test: Yes
Same outcome measure in treatment and comparison groups: Yes

Confirmatory Question 4, Outcome Measure 1
Outcome domain: Student Social, Emotional, & Behavior - Opportunity to Learn
Minimum detectable effect size:
Outcome measure: Opportunity to Learn Survey
Scale of outcome measure: Continuous
Normed or state test: No
Test-retest reliability:
Internal consistency:
Inter-rater reliability:
Same outcome measure in treatment and comparison groups: Yes

Confirmatory Question 5, Outcome Measure 1
Outcome domain: Student Achievement - Literacy
Minimum detectable effect size:
Outcome measure: Integrated Learning Assessments
Scale of outcome measure: Continuous
Normed or state test: No
Test-retest reliability:
Internal consistency:
Inter-rater reliability:
Same outcome measure in treatment and comparison groups: Yes

Comments:
Section VII: Analysis Plan

Baseline data collected prior to start of intervention: Yes

Description of baseline data:

Covariates to include at the student level in the model:
Gender, Free/reduced lunch status, Race, English Language Learner Status, Student Pretest

Covariates to include at the intermediate cluster level in the model:
Aggregate of Individual Characteristics, Aggregate of Baseline Scores

Covariates to include at the school level in the model:
Aggregate of Individual Characteristics, Aggregate of Baseline Scores

Analytic model:

Plan to handle cases with missing outcome data:
Impute missing outcome data

Process description:

Comments:

Section VIII: Additional Materials
Right click to open links and files in a new window.

Links
URL:
Description: Final report to Institute for Education Sciences
National Center for Education Research
Teacher Quality/Reading and Writing

Files
File Name: 188.pdf
Description: What Works Clearinghouse registry entry

File Name: IES-history-biology-final-report.pdf
Description:

Comments