Combined Years 2 (2012-13) and 3 (2013-14) Secondary VISTA Student Level Impact Analysis
Secondary science SOL achievements with earlier science SOL covariates
Students nested within teachers

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Executive Summary

Analysis Set 1: Combined years include Cohort 1 teachers in their second year (2012-13), Cohort 2 teachers in their first (2012-13) and second (2013-14) years, and Cohort 3 teachers in their first year (2013-14).

Teacher Level Attrition

Two-hundred fifty-eight teachers were randomly assigned to participate in the treatment (N = 174) and the remaining teachers were placed in the control (N = 84) condition. At the conclusion of their first year, N = 27 participants taught 8th grade Physical Science (11 control, 16 treatment), N = 22 participants taught H.S. Earth Science (10 control, 12 treatment), and N = 38 participants taught H.S. Biology (13 control, 25 treatment). Overall (1- 27/41=) 34% and differential attrition (= 48%) for 8th grade Physical Science, overall (1-22/61 =) 64% and differential attrition (=21%) for Earth Science teachers, and overall (1-38/75) 49% and differential attrition (= 16%) for Biology teachers did not meet WWC v2.0 overall and differential attrition allowances.

Baseline balance testing resulted in a working sample of 25 8th grade Physical Science teachers that were linked to 2,554 student 8th grade science SOL scaled test scores, 20 Earth Science teachers that were linked to 2,313 student Earth Science SOL scaled test scores, 36 Biology teachers that were linked to 3,886 student Biology SOL scaled test scores, and 21 Chemistry teachers that were linked to 2,409 student Chemistry SOL scaled test scores.

Impact Analysis

Evaluation of the impact of VISTA on student level Grade 8 Science SOL scaled test scores, Earth Science end of course scaled test scores, Biology end of course scaled test scores, and Chemistry end of course scaled test scores were examined through a two level model in which students were nested within teachers, where random assignment occurred at the teacher level. Given the results of baseline equivalence testing, for Grade 8 Science SOL impacts, Grade 5 Science SOL scaled test scores were retained throughout all impact analyses; for all end of course (i.e. Earth Science, Biology, Chemistry) impacts, Grade 8 Science SOL scaled test scores were retained.

Results of the impact analysis for Grade 8 Science, Earth Science, Biology, and Chemistry did not reveal a statistically significant difference between treatment and control conditions in any case. For Grade 8 Science, controlling for model covariates, the average SOL score of students exposed to control teachers was 9.7 points greater than that of students exposed to treatment teachers. For Earth Science, controlling for model covariates, the average SOL scaled test score of students exposed to control teachers was 2.55 points greater than that of students exposed to treatment teachers. For Biology, controlling for model covariates, the average SOL test scaled score of students exposed to control teachers was 12 points greater than that of students exposed to treatment teachers. For Chemistry, controlling for model covariates, the average SOL scaled test score of students exposed to treatment teachers was 3 points greater than that of students exposed to control teachers.

Subgroup Analysis

The impacts of VISTA on science SOL scaled test scores (Grade 8, Earth Science, Biology, and Chemistry) for at-risk subgroups (i.e., ELL, special education students, and economically disadvantaged students) were evaluated. No significant interactions existed between treatment and control condition for ELL status, disability status, and economically disadvantaged students for Grade 8, Earth Science, or Biology. Additionally, a significant difference did not exist between treatment and control condition for Grade 8 reading achievement.

Analysis Set 2: Combined years include Cohort 2 teachers in their first (2012-13) and Cohort 3 teachers in their first year (2013-14).

Teacher Level Attrition

Two-hundred and nine teachers were randomly selected to participate in the treatment (N = 140) and the remaining teachers were placed in the control (N = 69) condition. At the conclusion of their first year, N = 25 participants taught 8th grade Physical Science (9 control, 16 treatment), N = 18 participants taught H.S. Earth Science (8 control, 10 treatment), and N = 35 participants taught H.S. Biology (11 control, 24 treatment). Overall (1- 25/36=) 31% and differential attrition (= 43%) for 8th grade Physical Science, overall (1-18/44 =) 59% and differential attrition (= 19%) for Earth Science teachers, and overall (1-35/60 =) 42% and differential attrition (= 26%) for Biology teachers did not meet WWC v2.0 overall and differential attrition allowances.

Baseline Balance Testing resulted in a working sample of 23 8th grade Physical Science teachers that were linked to 1,825 student 8th grade science SOL scaled test scores, 16 Earth Science teachers that were linked to 1,544 student Earth Science SOL end of course scaled test scores, 34 Biology teachers that were linked to 3,035 student Biology SOL end of course scaled test scores.

Impact Analysis

Evaluation of the impact of VISTA on student level Grade 8 Science SOL scaled test scores, Earth Science end of course scaled test scores, and Biology end of course scaled test scores were examined through a two level model in which students were nested within teachers, where random assignment occurred at the teacher level. Given the results of baseline equivalence testing, for Grade 8 Science SOL impacts, Grade 5 Science SOL scaled test scores were retained throughout all impact analyses; for all end of course (i.e. Earth Science, Biology) impacts, Grade 8 Science SOL scaled test scores were retained.

Results of the impact analysis for Grade 8 Science and Earth Science did not reveal a statistically significant difference between treatment and control conditions in any case. For Grade 8 Science, controlling for model covariates, the average SOL score of students exposed to control teachers was 5.64 points greater than that of students exposed to treatment teachers. For Earth Science, controlling for model covariates, the average SOL scaled test score of students exposed to treatment teachers was 1.86 points greater than that of students exposed to control teachers. Results indicated a statistically significant difference between students exposed to treatment and control Biology teachers, $t(28) = -2.62$, $p = .014$. Controlling for model covariates, the average SOL scaled test score of students exposed to control teachers were 15 points greater than those obtained by students exposed to treatment teachers.

Subgroup Analysis

The impacts of VISTA on science SOL scaled test scores (Grade 8, Earth Science, and Biology) for economically disadvantaged students were evaluated. No significant interactions existed between treatment and control condition for economically disadvantaged students for Grade 8 and Earth Science. However, for Biology, results indicated a statistically significant difference between treatment and control conditions, $t(25) = -2.26$, $p = .03$. Controlling for model covariates, the average Biology SOL end of course test scaled score of students exposed to control teachers was 11.5 points greater than that of students exposed to treatment teachers.