NMPED Science Curriculum Review of Evidence

Curriculum Name: Holt Science Spectrum

Publisher: Houghton Mifflin Harcourt, publishing as Holt McDougal
Number of Studies Submitted: 1
Number of Studies Reviewed: 1
Grade(s) of Studies Reviewed: 9-10

Average Rubric Ratings:

Criteria	Average Rating Across All Studies
Experimental Design	1
Sample	1.5
Methodology	2
Measures	0
Reporting Results	1
Studies	0
Investigators	2
Total Score	7.5
Average Subscale Score	1.07

Narrative:
Holt, Rinehart and Winston contracted with Educational Research Institute of America (ERIA) to conduct a second year-long study during 2005-2006 academic year on the instructional effectiveness of *Holt Science Spectrum*, a high school level introductory science program integrating physics, chemistry, earth science, space science, and mathematics through a thematically organized program. Participants in the study were using the 2004 or 2006 copyright versions, but the 2008 edition has essentially the same core content and concepts. ERIA used a pretest/posttest design on 202 students, primarily 9th and 10th graders, in five states with seven different teachers (12 distinct classes). The 40 item assessment aligned with program content to focus on the students' knowledge and understanding of information and concepts. Analyses of pretest and posttest scores used a paired comparison *t*-test under three different conditions resulting in no differences. Researchers used Cohen's *d* statistic to determine the effect size under four separate analyses: whole group, achievement level group, minority group, and socio-economic status group. The result from each analysis showed statistically significant improvement (<.0001) and large effect size (>1) for groups within the analyses.

Overall Quantity and Quality of Evidence:
The only study submitted for review provides some evidence for the effectiveness of the science program. Only one measure was used to obtain the outcome of the study. No information was given on the pretest/posttest items selection as well as the use of the Kuder-Richardson reliability index on the posttest. The sample size for the low socio-economic group is too small to conduct a valid statistical analysis. Identification of ethnicity was categorized as minority or non-minority with no further delineation. Based on this study, there is promising evidence of positive results with large effect sizes consistently across populations.

References of Submitted Studies:
Educational Research Institute of America (August 2006). A Study of the Instructional Effectiveness of *Holt Science Spectrum ©2008*, Report Number 253.