Teacher Professional Development Results in Significant Improvements in Student Achievement in Geography

National Study

A nationwide study by Mid-continent Research for Education and Learning (McREL) compared student achievement in geography, as measured by the 2001 National Assessment of Educational Progress (NAEP), between intervention and comparison groups of eighth-grade students.

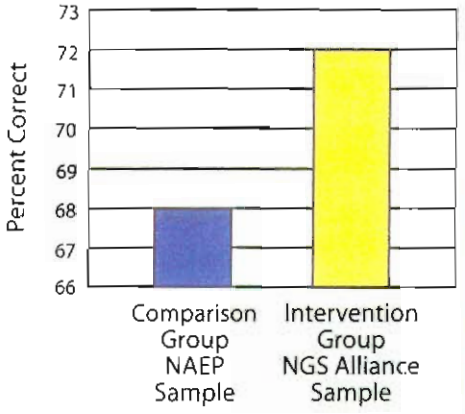
The intervention group consisted of 878 students whose sixty-two teachers were actively involved in several types of National Geographic Society Alliance Network professional development training that increases teachers' geography subject matter knowledge (content knowledge) and specific geography-related teaching strategies (pedagogical content knowledge). These students were tested on their geography knowledge using a set of items released from the 2001 NAEP geography assessment.

The comparison group contained a sample of 986 students from 100 classrooms that was drawn from the NAEP 2001 geography assessment database and whose demographics were closely matched to the intervention group in respect to school location (urban, rural, suburban), type of school (public and private), and a range of socioeconomic indicators (e.g., ethnicity, free and reduced student lunch).

Mean scores of students in the intervention group were significantly higher than those in the comparison group (Figure). In addition, student scores were combined with a calculation of effect size and produced results indicating an **eight-point percentile difference** between the two groups. In other words, the average intervention group student score would be the equivalent of the 58th percentile of the comparison group sample.

Background information for intervention group teachers was merged with their students' scores in a regression analysis. Findings revealed that **teacher involvement in Alliance Network activities was the only variable that was a statistically significant predictor of increased student achievement.**

Achievement of students whose teachers participated in geography professional development versus comparison group



	NAEP	NGS	Significance
Mean	0.68	0.72	
Standard Deviation	0.19	0.19	
Sample Size	986	878	
t Statistic			3.63
Significance			$p<0.001$
Effect Size*			0.21

** This effect size converts into an eight-point percentile difference between the two groups, so the average NGS student would be equivalent to the 58th percentile of the NAEP sample.*

▶ Knowledge of geography is needed in all economic sectors including agricultural, resource, industrial, and service.

References:

Mid-continent Research for Education and Learning. 2002. *National Geographic Society Alliance Study*. Aurora CO: Mid-continent Research for Education and Learning.

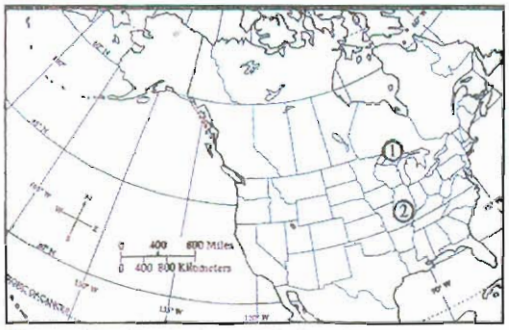
Englert, Kerry and Zoe Barley. 2003. National Geographic Society Alliance Study. *Journal of Geography* 102 (2): 80–9.

Sample test items, student average scores, and difference between Alliance sample (comparison group) and NAEP sample (intervention group)

Test Items (as numbered on the Mid-continent Research for Education and Learning test)		NGS	NAEP	Difference
2. The number 1 on the map shows (Use Map A)	A. Hudson Bay B. The Great Salt Lake C. Lake Superior D. The Gulf of California	85.3	80.3	+5.0
3. The number 2 on the map is on the (Use Map A)	A. Colorado River B. Columbia River C. Mississippi River D. Delaware River	90.1	85.0	+5.1
4. About how much of South America has a growing season of over 240 days? (Use Map B)	A. 10% B. 25% C. 75% D. 100%	90.7	90.8	-0.1
5. The information on the map shows that (Use Map B)	A. Brazil has a shorter growing season than Argentina has. B. New York has a longer growing season than Chicago has. C. Alaska can grow a greater variety of crops than Florida can. D. Colombia can grow a greater variety of crops than Canada can.	54.2	52.8	+1.4
8. Which two nations are most likely to have a conflict over resources? (Use Map C)	A. Nation A and Nation B B. Nation A and Nation C C. Nation A and Nation D D. Nation C and Nation D	60.9	58.7	+2.2

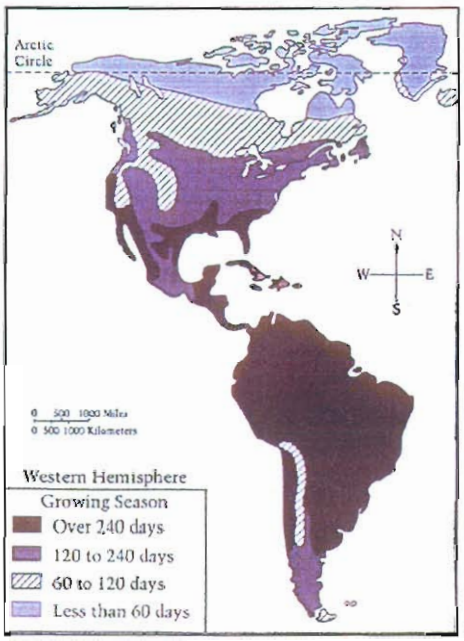
Correct Answers: 2C; 3C; 4C; 5D; 8C

A



(Maps reduced in size from original test)

B



C