

Symbol Relations/Reasoning Program Cognitive Elective

2018–2019

Students: Grade 6 to 11

Assessment Tools: California Achievement Test (CAT)

Measure of Academic Progress (MAP)

Student Questionnaire

Cognitive Exercise: Arrowsmith Program Symbol Relations Exercise designed to strengthen the cognitive capacity underlying reasoning, conceptual grasp, comprehension, mathematical logic

Structure: Students in grades 6 to 11 at Gateway Christian School in Washington State were given the option to engage in the Arrowsmith Symbol Relations Program as an elective over the 2018–2019 school year. The program ran 8 months (September to May). Students completed 90 minutes every other per day of the cognitive exercise. 21 students participated in the program.

RESULTS

Students showed improvements on the following standardized measures:

California Achievement Test (CAT)

- Vocabulary
- Reading Comprehension
- Math Computation
- Math Concepts and Problem Solving

Measure of Academic Progress (MAP)

- Mathematics
- Reading
- Language

Questionnaire Results

% Student Reporting Improvement	Mathematics
95%	<ul style="list-style-type: none">• Faster at completing math problems• Make fewer careless math errors• Able to grasp new math concepts quicker
81%	<ul style="list-style-type: none">• Able to finish math homework in class• Easier to figure out the steps in math problems
76%	<ul style="list-style-type: none">• Multi-step word problems are easier



Questionnaire Results

% Student Reporting Improvement	English
86%	<ul style="list-style-type: none">• Reading comprehension has improved
81%	<ul style="list-style-type: none">• Can make connections between ideas more easily• Able to read faster
76%	<ul style="list-style-type: none">• Easier to take notes
72%	<ul style="list-style-type: none">• Easier to write clear and complete thoughts



Questionnaire Results

% Student Reporting Improvement	General Learning
91%	<ul style="list-style-type: none">• Better able to follow verbal instructions• More observant• More attentive in class, easier to stay focused• Overall, I am more self-disciplined
86%	<ul style="list-style-type: none">• Faster at completing my homework• More able to recall facts, concepts and conversations
81%	<ul style="list-style-type: none">• Have a greater capacity to memorize information
76%	<ul style="list-style-type: none">• I am more prepared for college
75%	<ul style="list-style-type: none">• Able to hold more information in my head at one time• Better able to organize my thoughts and verbalize them