

Instructional Content Constructs

❖ **Curricular Coherence**

- **Curricular Structure**

❖ **Curricular Focus**

- **Exposure Time (OTL)**

❖ **Curricular Rigor**

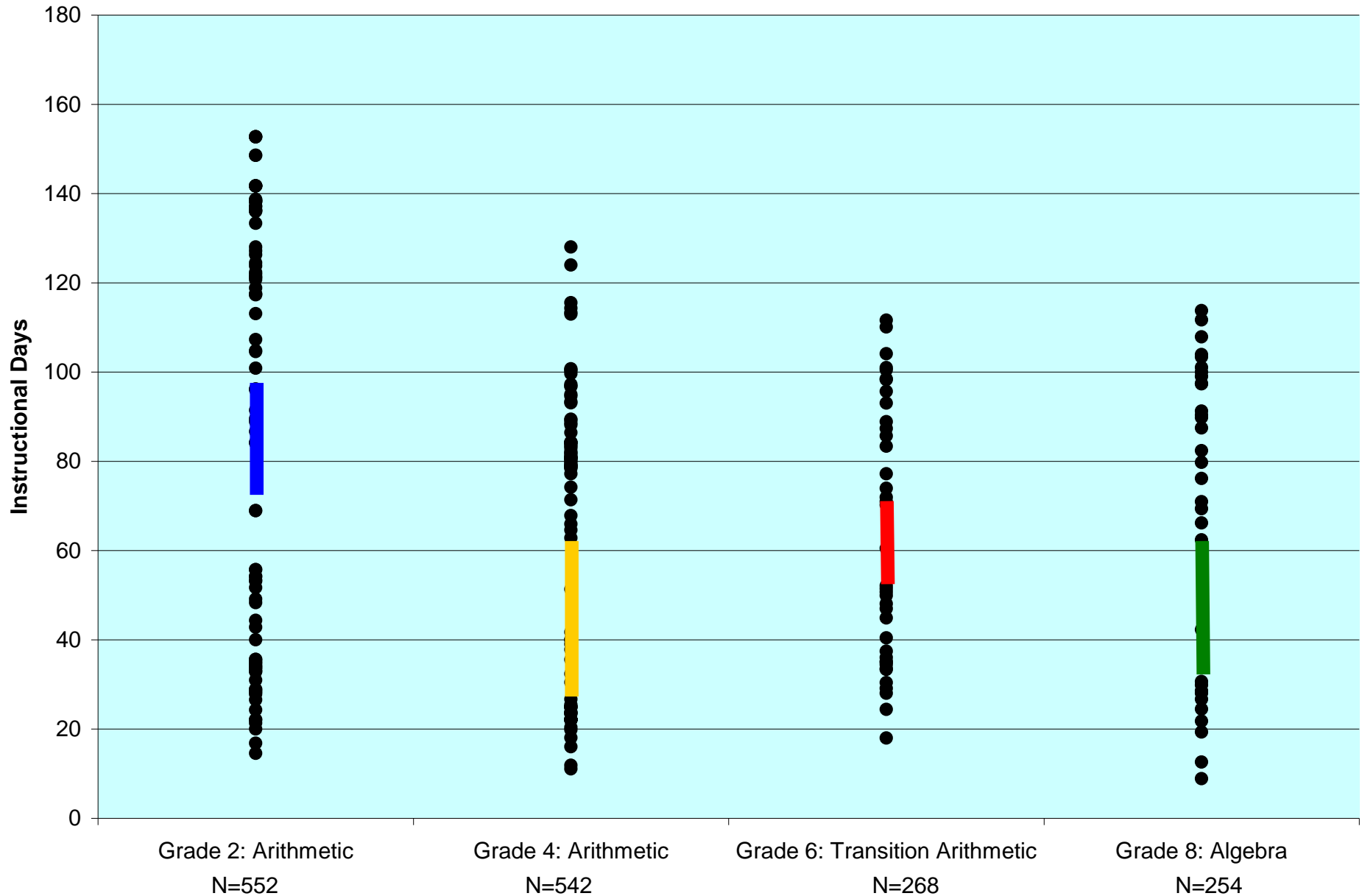
- **Level of Cognitive Complexity**

Top Achieving Countries' Mathematics Curriculum

Topic	Grade							
	1	2	3	4	5	6	7	8
Whole Number: Meaning	■	■	■	●	●			
Whole Number: Operations	■	■	■	■	●			
Measurement Units	◆	■	■	■	■	■	●	
Common Fractions			◆	■	■	●		
Equations & Formulas			◆	●	●	●	■	■
Data Representation & Analysis			◆	◆	●	●		◆
2-D Geometry: Basics			◆	●	●	●	■	■
2-D Geometry: Polygons & Circles				◆	●	●	■	■
Measurement: Perimeter, Area & Volume				●	●	●	●	◆
Rounding & Significant Figures				●	●			
Estimating Computations				●	●	●		
Whole Numbers: Properties of Operations				●	●			
Estimating Quantity & Size				◆	◆			
Decimal Fractions				●	■	●		
Relation of Common & Decimal Fractions				◆	■	●		
Properties of Common & Decimal Fractions					●	●		
Percentages					●	●		
Proportionality Concepts					●	●	●	◆
Proportionality Problems					●	●	■	■
2-D Geometry: Coordinate Geometry					◆	◆	●	●
Geometry: Transformations						●	●	●
Negative Numbers, Integers, & Their Properties						◆	●	
Number Theory							●	◆
Exponents, Roots & Radicals							●	●
Exponents & Orders of Magnitude							◆	◆
Measurement: Estimation & Errors							◆	
Constructions Using Straightedge & Compass							■	◆
3-D Geometry							●	■
Geometry: Congruence & Similarity								■
Rational Numbers & Their Properties								◆
Patterns, Relations & Functions								◆
Proportionality: Slope & Trigonometry								◆

- ◆ Intended by 4 out of the 6 top-achieving countries
- Intended by all but *one* of the top-achieving countries (5 out of 6).
- Intended by *all* of the top-achieving countries.

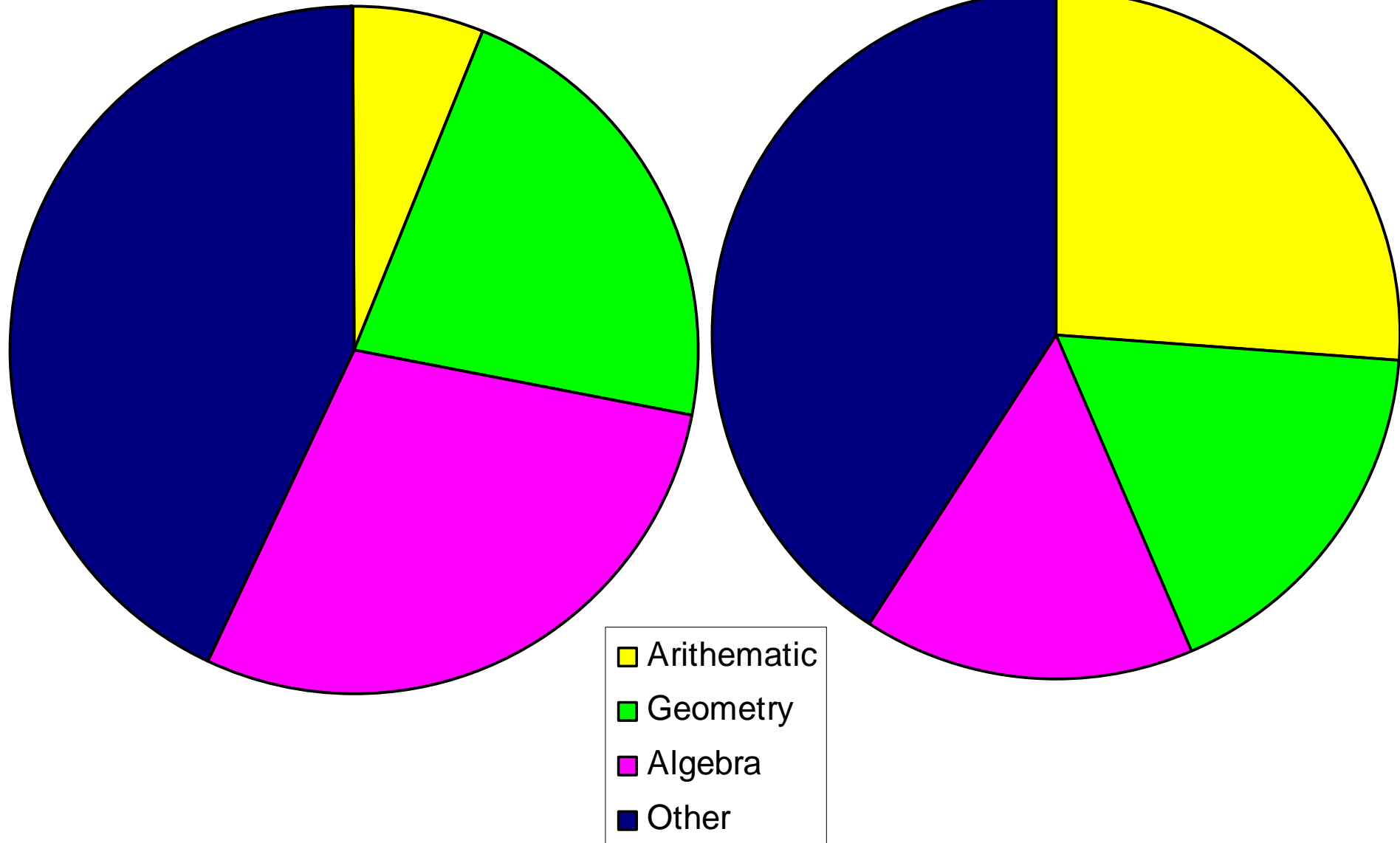
Instructional Days Spent on Selected Areas of Mathematics at Elementary and Middle Grades



Teachers Coverage of Mathematics Topics in Two Types of Schools

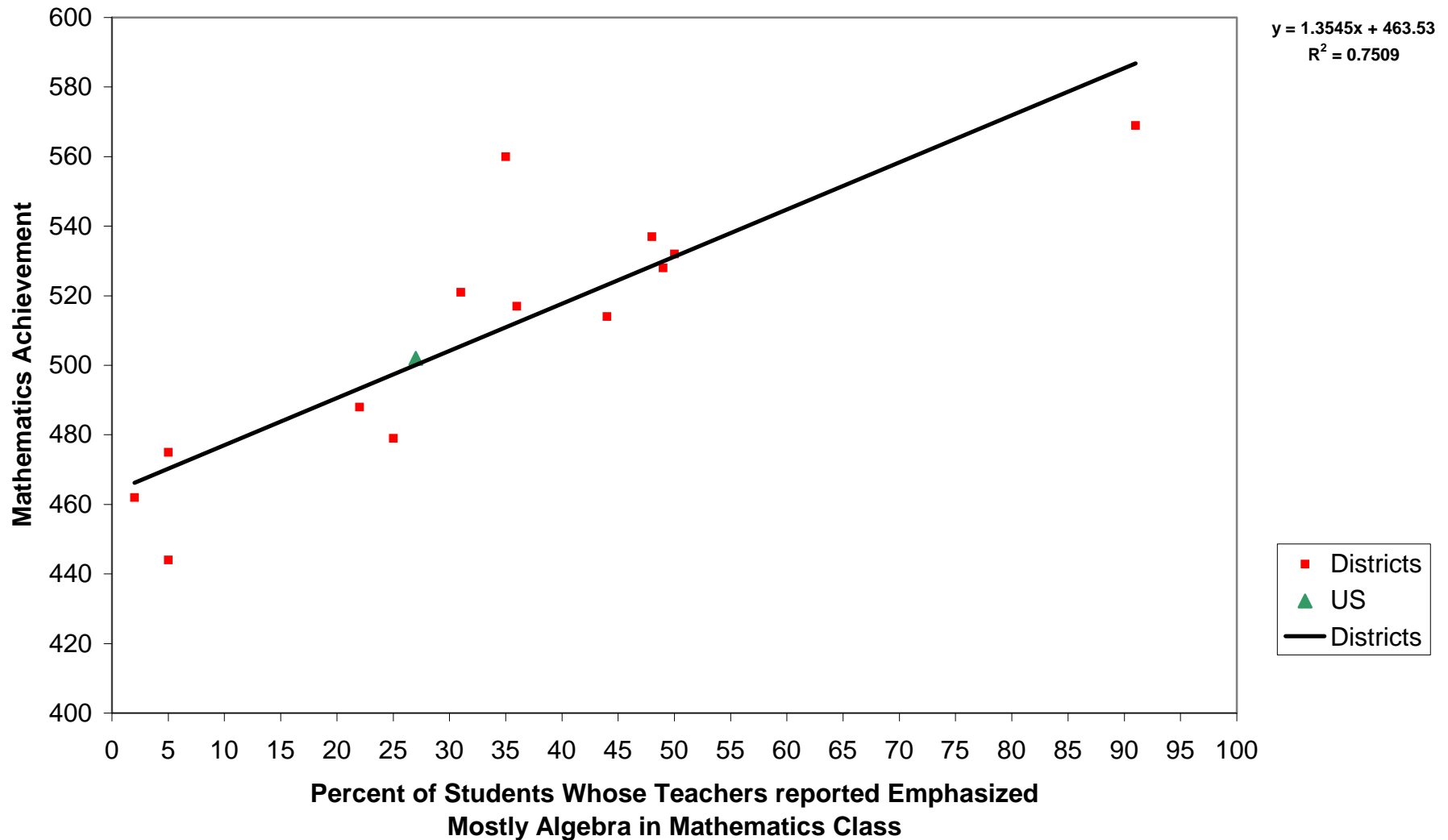
High SES Schools

Low SES Schools



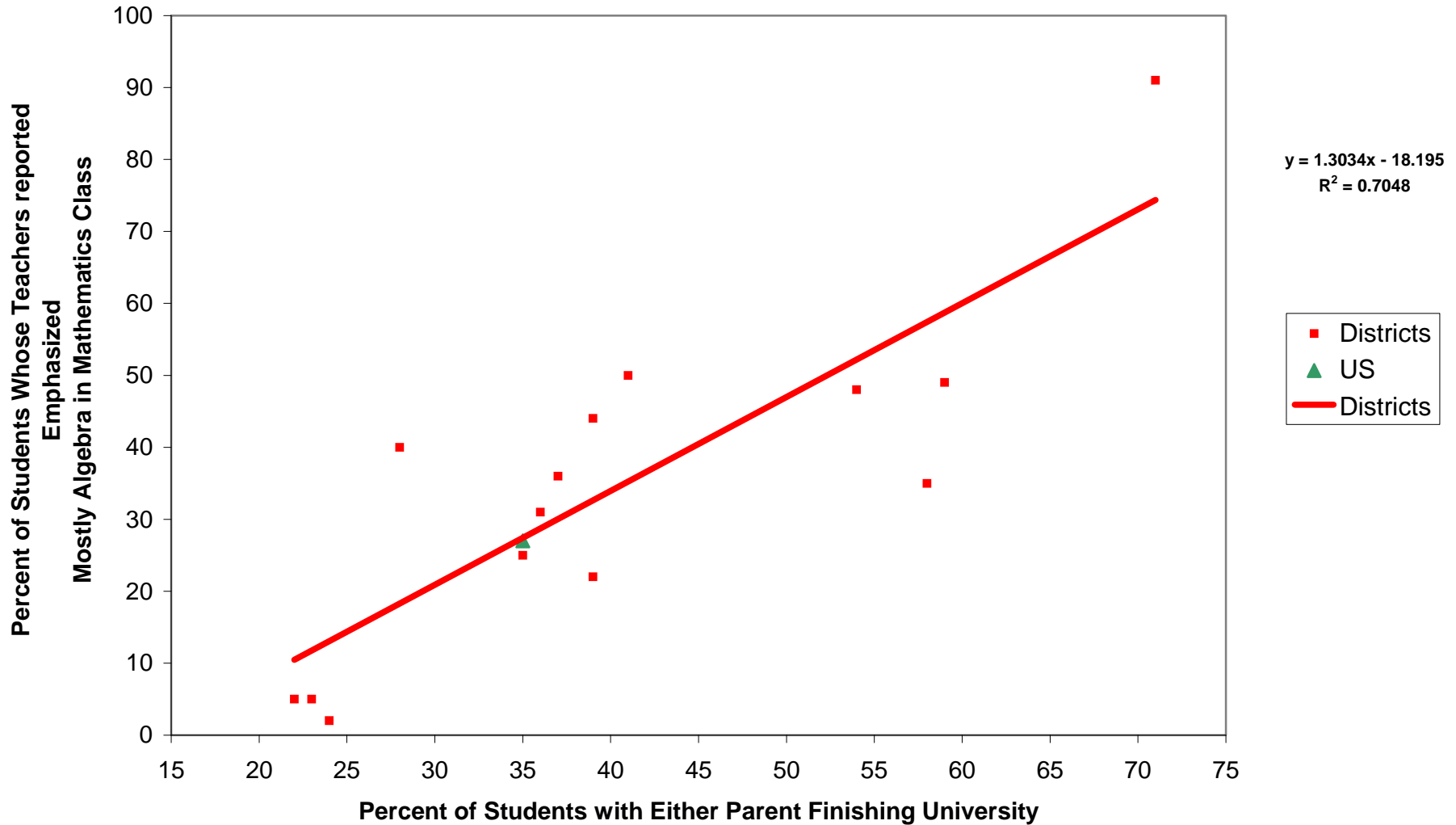
Relationship between Algebra Instruction and Student Achievement

1999 TIMSS-R Districts

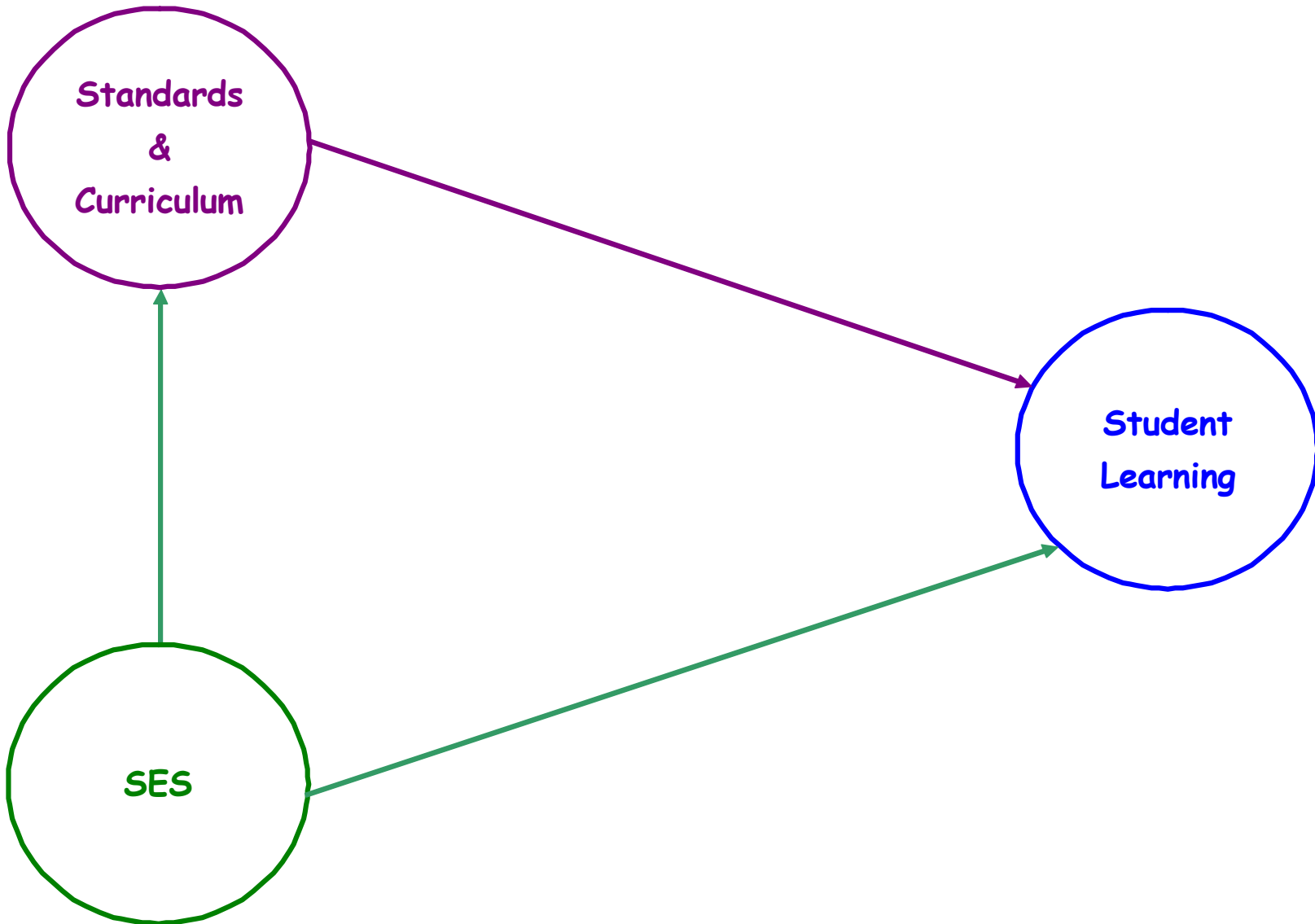


Relationship between Parents' Education and Algebra Instruction

1999 TIMSS-R Districts



Relationship between Curriculum, SES and Student Learning



Percentile Distribution of Function Knowledge of Sampled Future Teachers

