



Teacher Beliefs and Change

What Leaders Should Know

USP PI/PD Meeting
November 4, 2005



Teacher Beliefs and Change

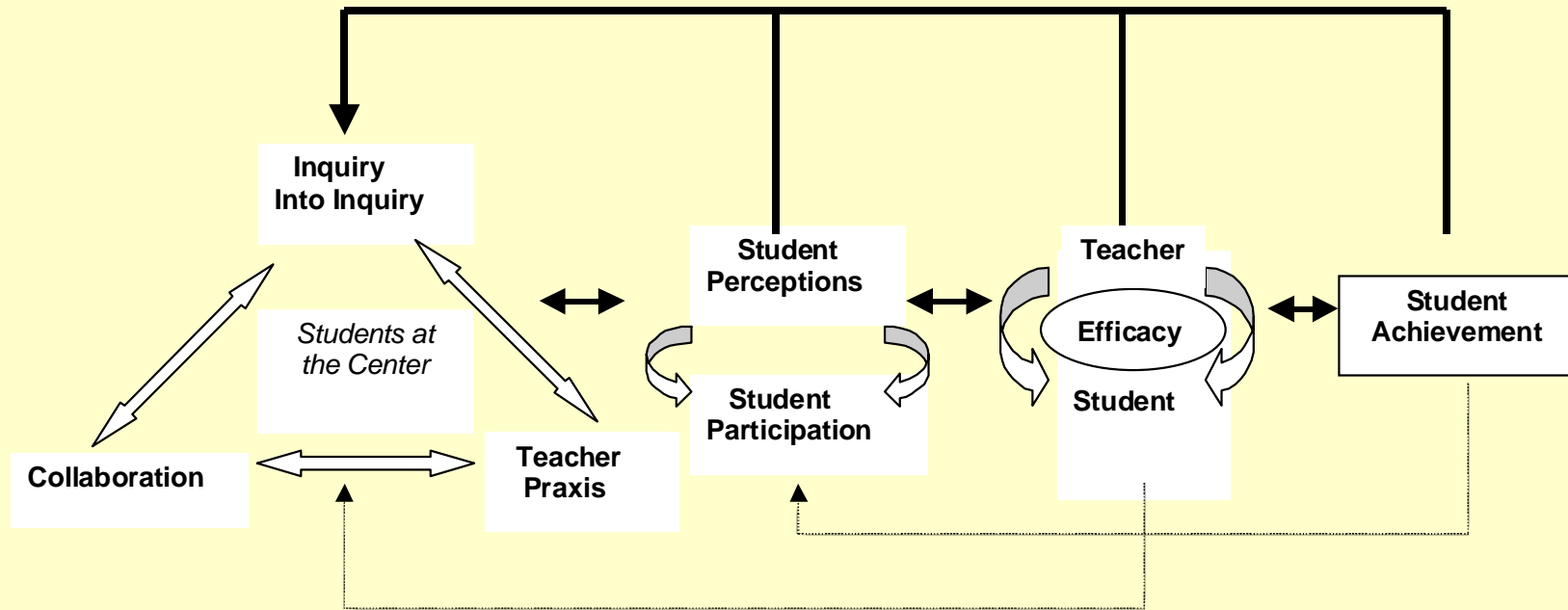
The Plumb Line

Why We Focused on Beliefs

- Suggested in the change literature
- Supported by research on district action research during the CPMSA

The Importance of Critical Reflection to Change Practice

Teacher Change to Promote Learning Communities A Model of Impact of Action Research on Teacher Change

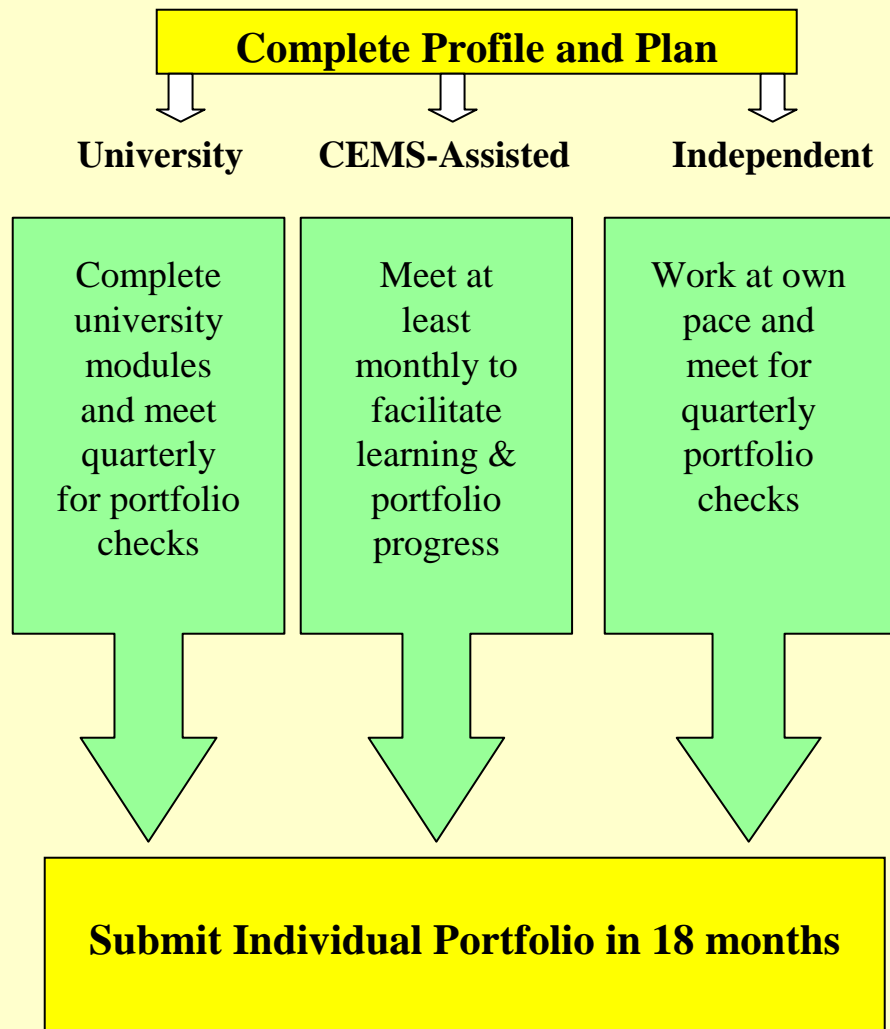


Individual Portfolio Development

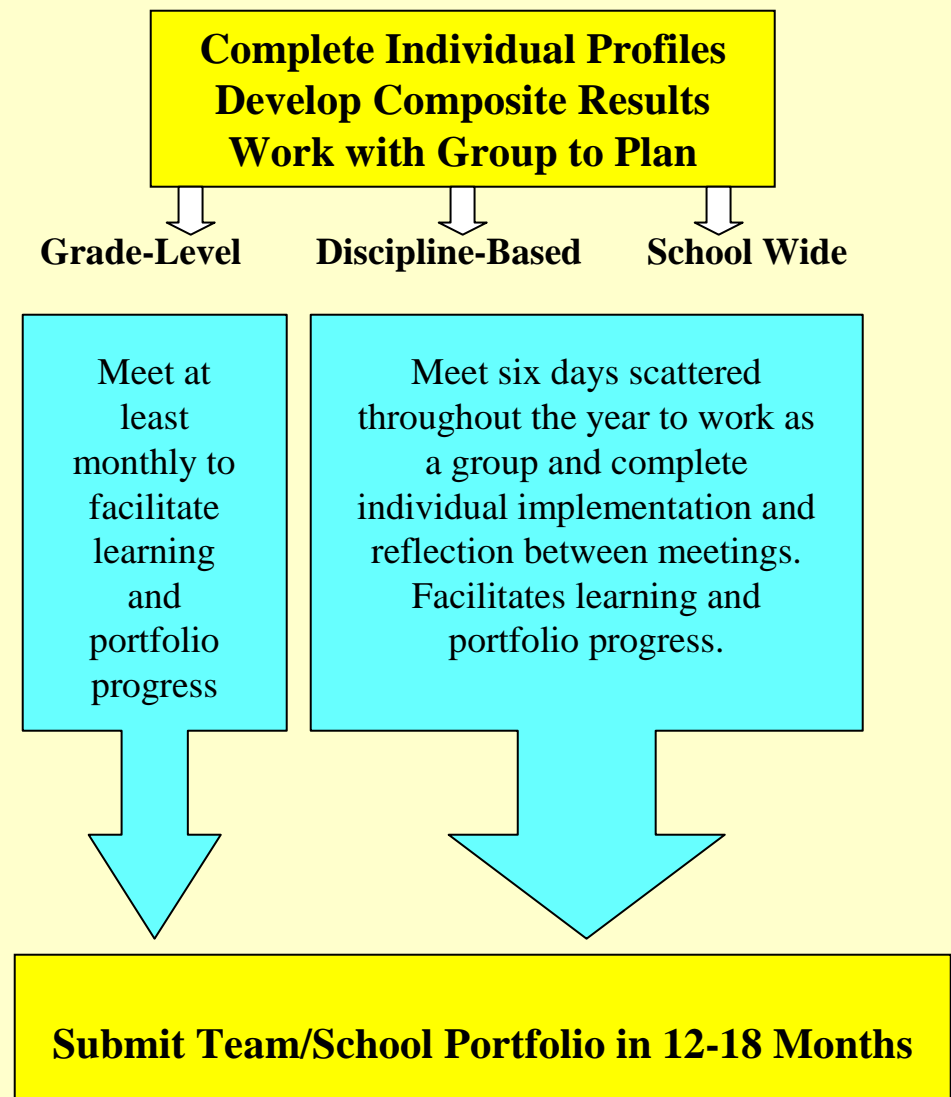
Beliefs	Content	C & I	Impact on Student Achievement
<ul style="list-style-type: none"> •Complete profiler •Completed Profile is used to develop a plan •Participant selects, reads and discusses 15 resources •Participant completes three essays 	<ul style="list-style-type: none"> •Participant uses the profile results and student achievement needs to determine content learning goals •Participant completes workshops, on-line experiences, etc., •Participant maintains content learning record 	<ul style="list-style-type: none"> •Participant identifies a research-based practice aligned with identified learning needs •Participant develops a unit of study that includes the use of the research-based practice and addresses one of their grade level content standards •Individuals implement unit and videotape instruction 	<ul style="list-style-type: none"> •Participant completes action research, based on needs indicated in school data and focusing on effectiveness of research-based practice •May use African-American Plan student achievement data •Use EXCELS-Plus data

Flexible Paths Provide Choice

Individual Paths



Group Paths



Team Portfolio Development

Beliefs	Content	C & I	Impact on Student Achievement
<ul style="list-style-type: none"> •Individuals complete profiler •Composite team profiles are used to develop a team plan •Team members can select, read and discuss same resources •Individuals complete their own essays 	<ul style="list-style-type: none"> •Team uses the composite profile results and student achievement needs to determine content goals •Individuals also look at individual needs •Team/individual completes workshops, on-line experiences, etc., •Individual maintains content learning record 	<ul style="list-style-type: none"> •Team identifies a research-based practice aligned with identified learning needs •Team develops a unit of study that includes the use of the research-based practice and addresses one of their grade level content standards •Individuals implement unit and videotape instruction 	<ul style="list-style-type: none"> •Team completes action research, based on needs indicated in school data and focusing on effectiveness of research-based practice •May use African-American Plan student achievement data •Use EXCELS-Plus data

How We Addressed Beliefs

Profiled
teacher
beliefs

USER: Karen Humphrey

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p. When selecting the next topic to be taught, one must conform to the logical organization of science.	3	2.6
q. Teachers should allow children to figure out their own ways to approach scientific problems.	3	2.8

SUMMARY

	You	Exemplars
Constructivism Standards Best Practices	3.0	3.0
Expectations/Equity Standards Best Practices	2.9	3.1
Inquiry/Problem-solving Standards Best Practices	1.5 *	2.6

* This may be an area that you will want to concentrate on.

How We Addressed Beliefs

Planned to focus on beliefs

CEMS Demo Portfolios - Microsoft Internet Explorer

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If you encounter any technical problems, contact Jeff Eske

Online Plan
Main Page

Section 1: Beliefs

Goals	Begin
Plan of Action	Begin
Resources Needed	Begin

Section 2: Content Knowledge

Goals	Begin
Plan of Action	Begin
Resources Needed	Begin

Section 3: Knowledge and Skills in Curriculum and Instruction

Goals	Begin
Plan of Action	Begin

Internet

How We Addressed Beliefs

- Chose their learning focus
- Analyzed selected readings focused on philosophy and beliefs
- Reflected critically on teaching practice
- Dialogued with university and CEMS staff, as well as colleagues



How We Addressed Beliefs

Teacher portfolio, both hard copy and electronic, designed to demonstrate beliefs



USER: Betsy Barbary

PROFILES
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[Combined](#)

[Team Composite](#)

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Portfolio Development Handbook

Main Page

Section 1: Beliefs

Resources	View/Edit
Essay Question One	View/Edit
Essay Question Two	View/Edit
Essay Question Three	View/Edit
Introspection Essay	View/Edit

Section 2: Content Knowledge

Specialty Areas	View/Edit
High School Courses	View/Edit
College/University Courses	View/Edit

How We Measured Changes in Beliefs

- Measures of change in beliefs
 - ✓ Pre- and post-profile results
 - ✓ Retrospective pre- and post survey on beliefs
 - ✓ Voices of teachers
 - ✓ Portfolio essays
 - ✓ Action research

What do I believe about...

Profiled Data Source

USER: Karen Humphrey

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Community of Excellence in Math and Science

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q. Teachers should allow children to figure out their own ways to approach scientific problems.	3	3	2.8

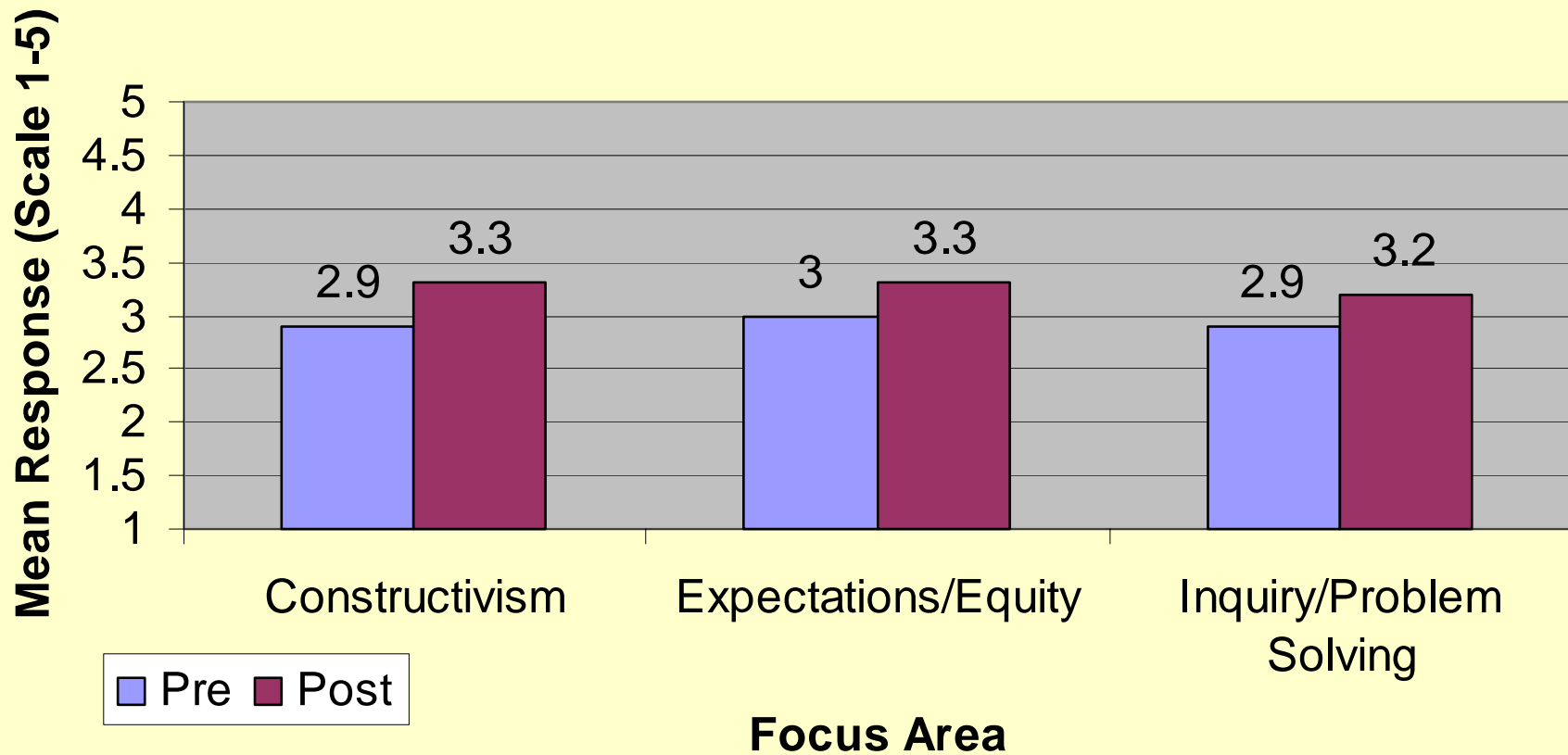
SUMMARY

	Profile1	Profile2	Exemplars
Constructivism Standards Best Practices	3.0	2.9	3.0
Expectations/Equity Standards Best Practices	2.9	3.2	3.1
Inquiry/Problem-solving Standards Best Practices	1.5 *	2.9	2.6

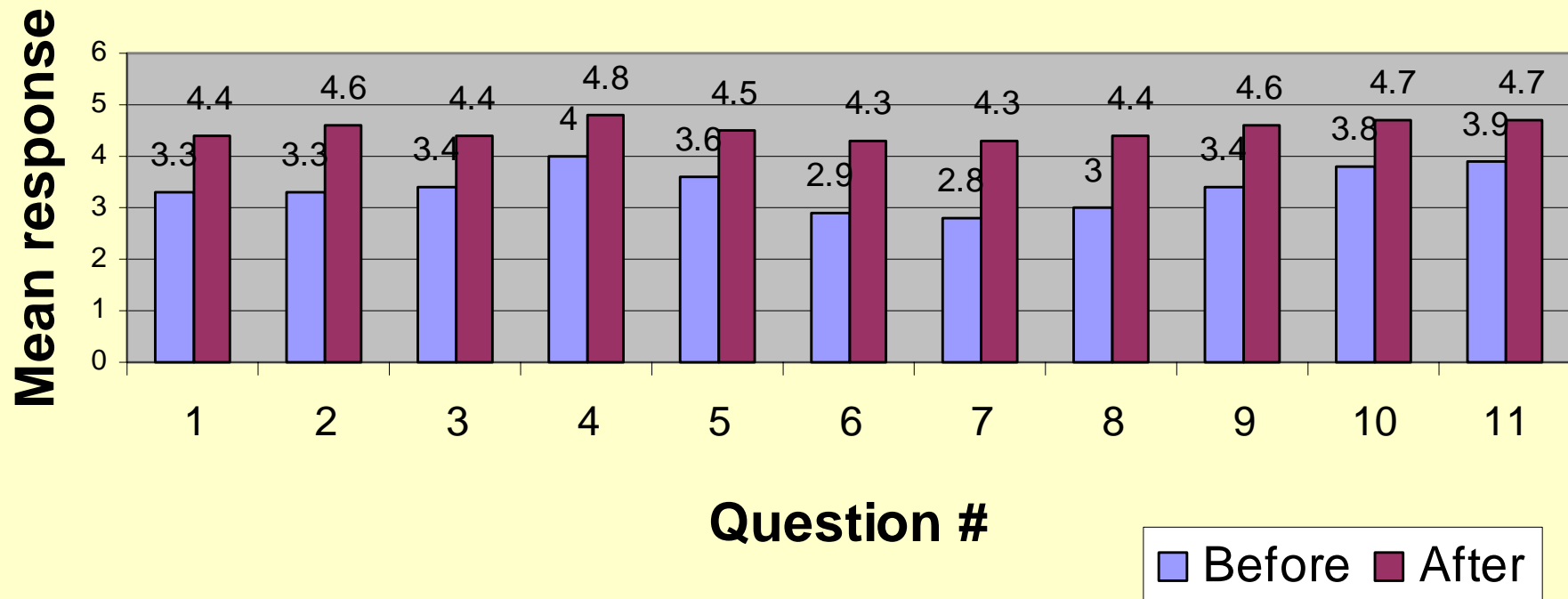
* This may be an area that you will want to concentrate on.

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Profiler Results - Beliefs



Retrospective Survey Results - Beliefs



Qualitative Data on Change

Voices of Teachers

Case Study Assertions

- Assertion #1: The teachers' early perspectives on science and mathematics curriculum emphasized technical and practical interests. The style of teaching and beliefs about teaching and learning science and mathematics were traditional, didactic and teacher centered.
- Assertion #2: The teachers were interested in changing their curriculum in ways that would emphasize emancipatory interests, but they felt constrained by their own teaching style and the perceived norms of the school culture.

Assertions Continued

- Assertion #3: The teachers began using a more emancipatory approach. Their goal was to find a balance between the technical interests of the administration and the learning needs of their students.
- Assertion #4: The teachers were encouraged to develop curriculum that was inquiry based. Students were encouraged to design and execute experiments to demonstrate science and mathematics concepts.

Assertions & Conclusions

- Assertion #5: Curricular changes in science and mathematics were initiated and sustained by the teachers' concerns over student achievement and by the norms and values of the school cultures.
- Conclusions: There is a connection between teacher practice, curriculum, and student participation and learning. In these case studies the common point of interest was student learning and participation. This issue of student learning encouraged the reflection process and lead to teachers making change in their curriculum via changes in their beliefs and practice. More research into the nature of these relationships is currently being completed.

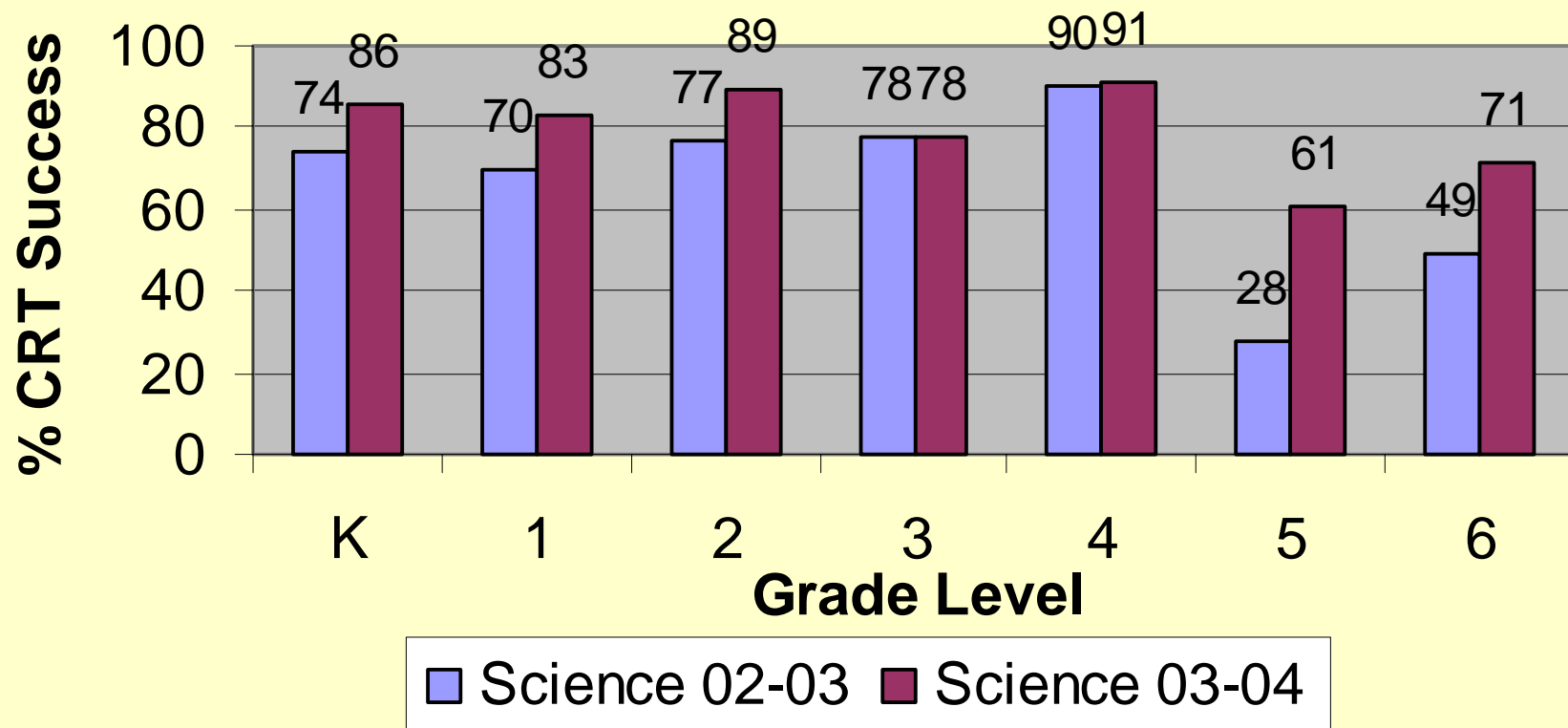
Our Current Research

- Finalizing case study
- Follow-up with survey respondents
 - 15 teacher participants
 - 3 Observations
 - 1 Interview
 - 10 principals
 - 1 Interview
- Further work with profiler data

What Were Our Successes?

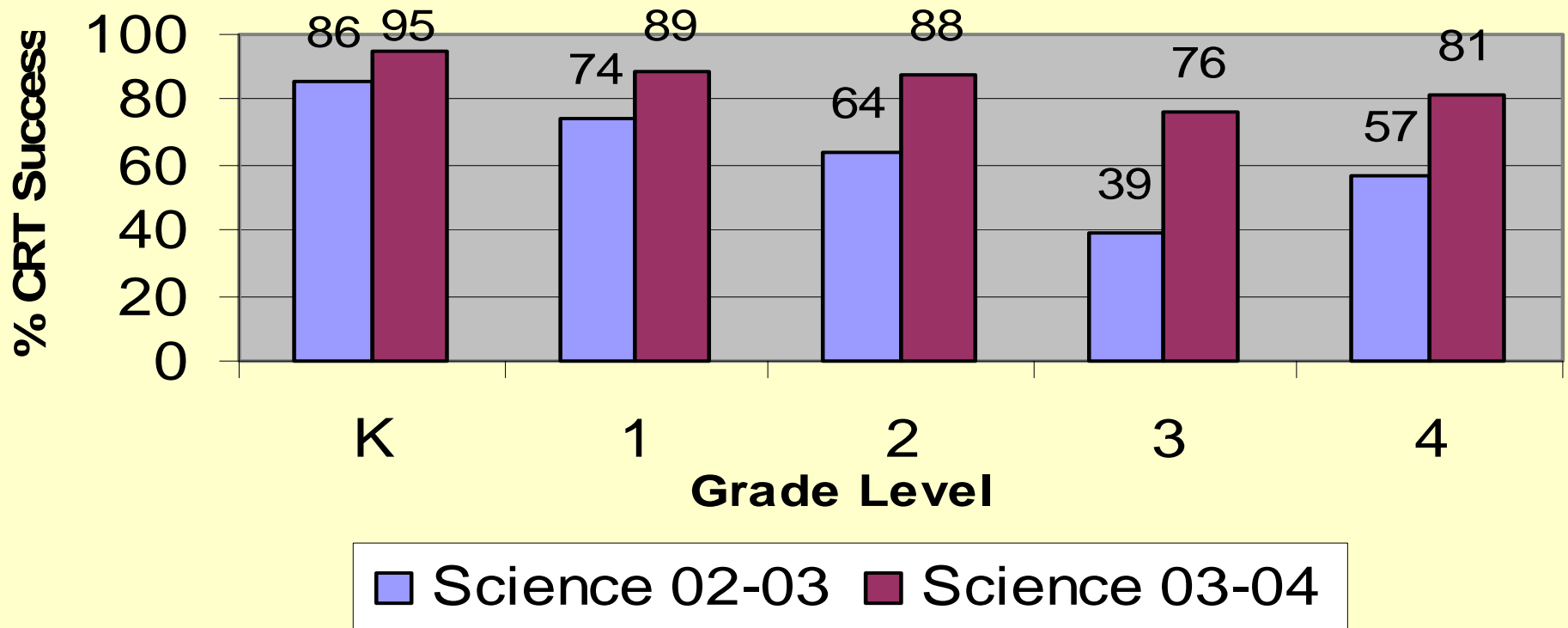
- Seventeen Exemplary Schools
- Increased achievement on state reporting measures
- Decreased gap
- Increased success in pipeline
- Teacher leaders developed

Liberty Elementary



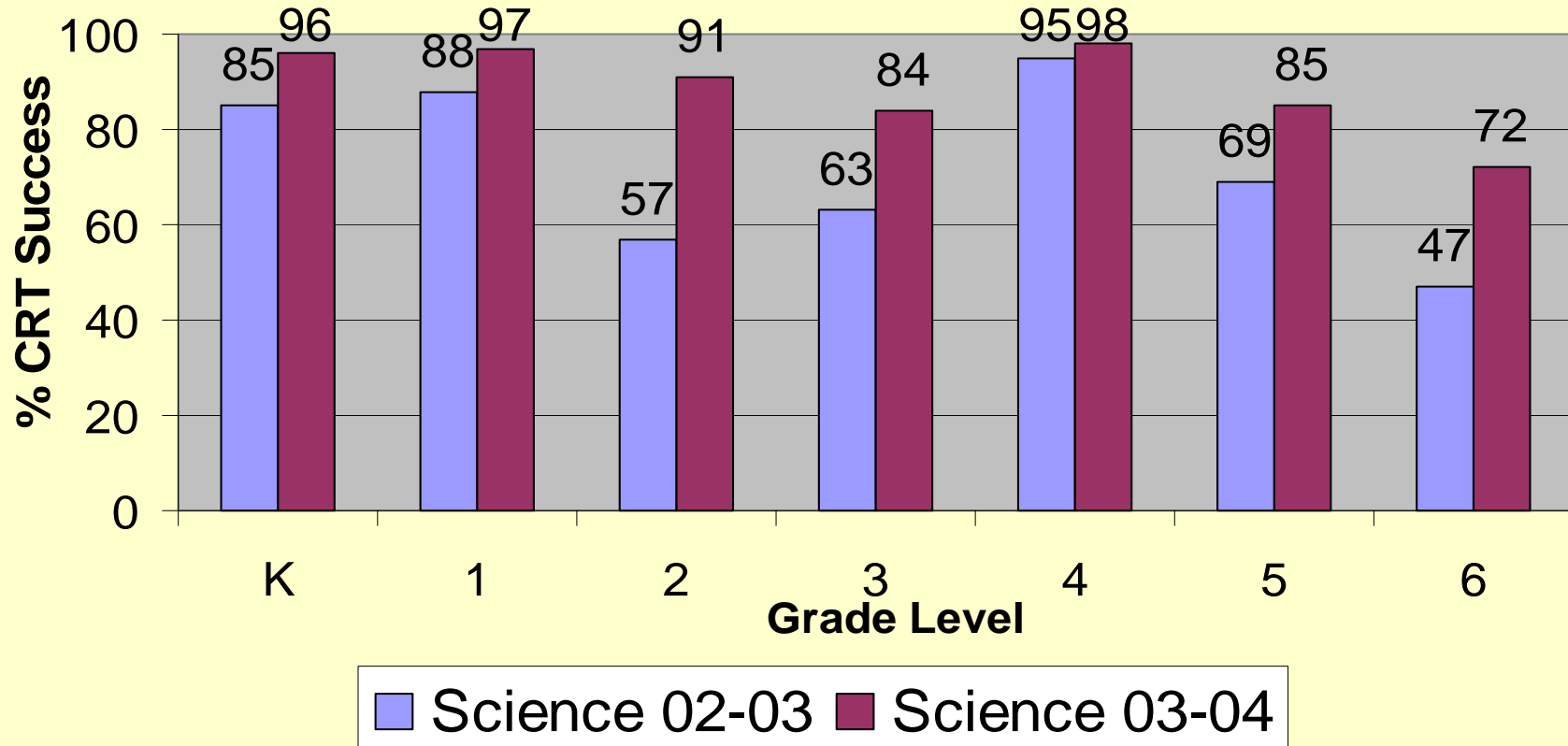
Liberty, a downtown school (73% low-income; 58% ELL) completed a school-wide portfolio in science.

Lothrop Magnet School



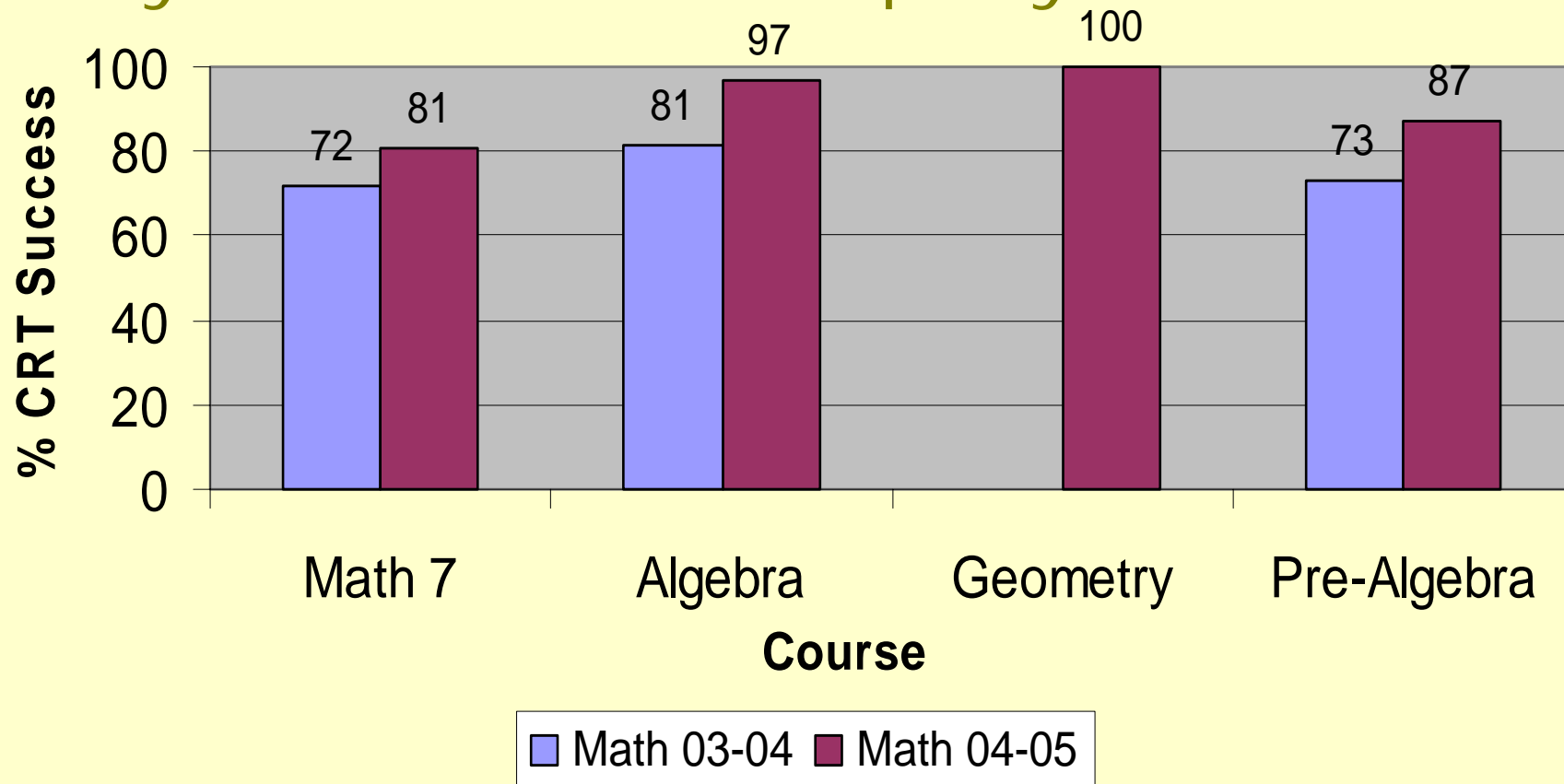
Lothrop (79% low-income; 87% African American) completed a school-wide science effort.

Minne Lusa Elementary



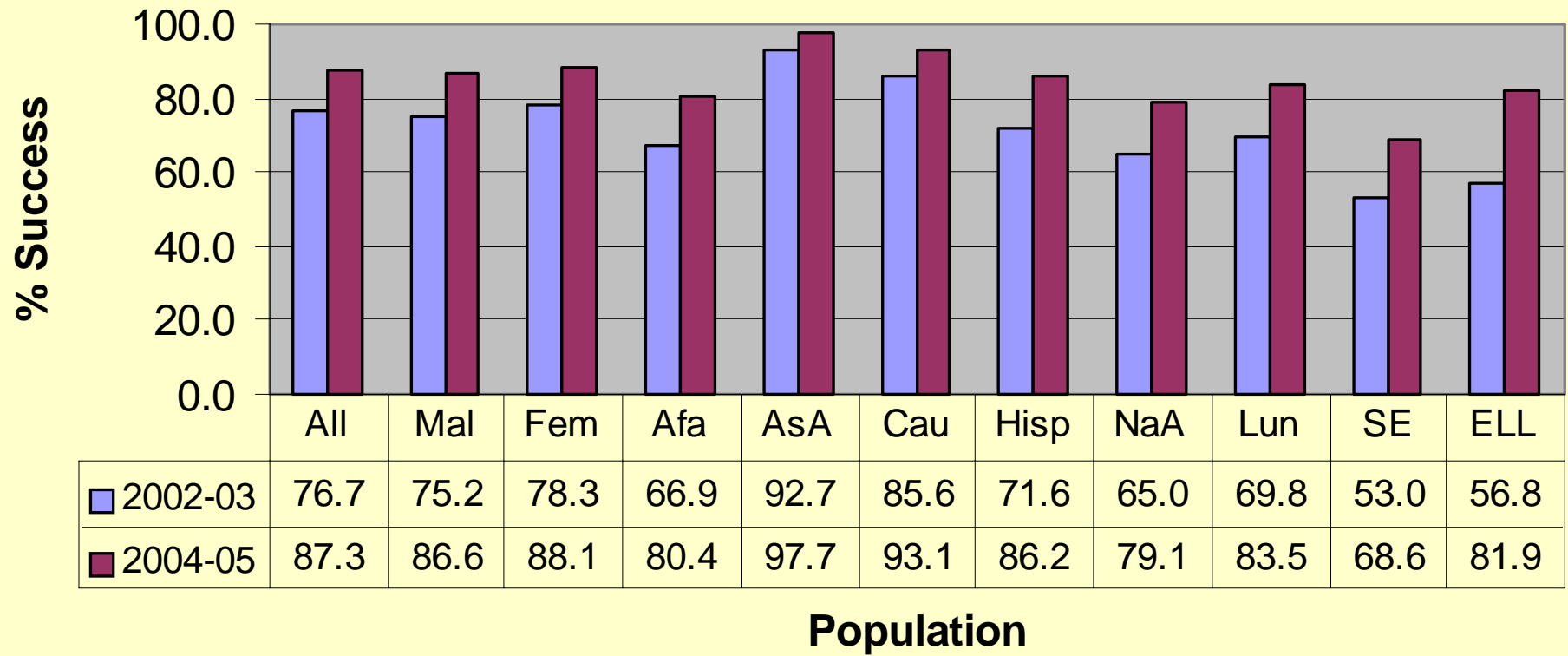
Minne Lusa (66% low-income; 50% African American) completed a school-wide effort in science.

Bryan Middle - Exemplary Mathematics

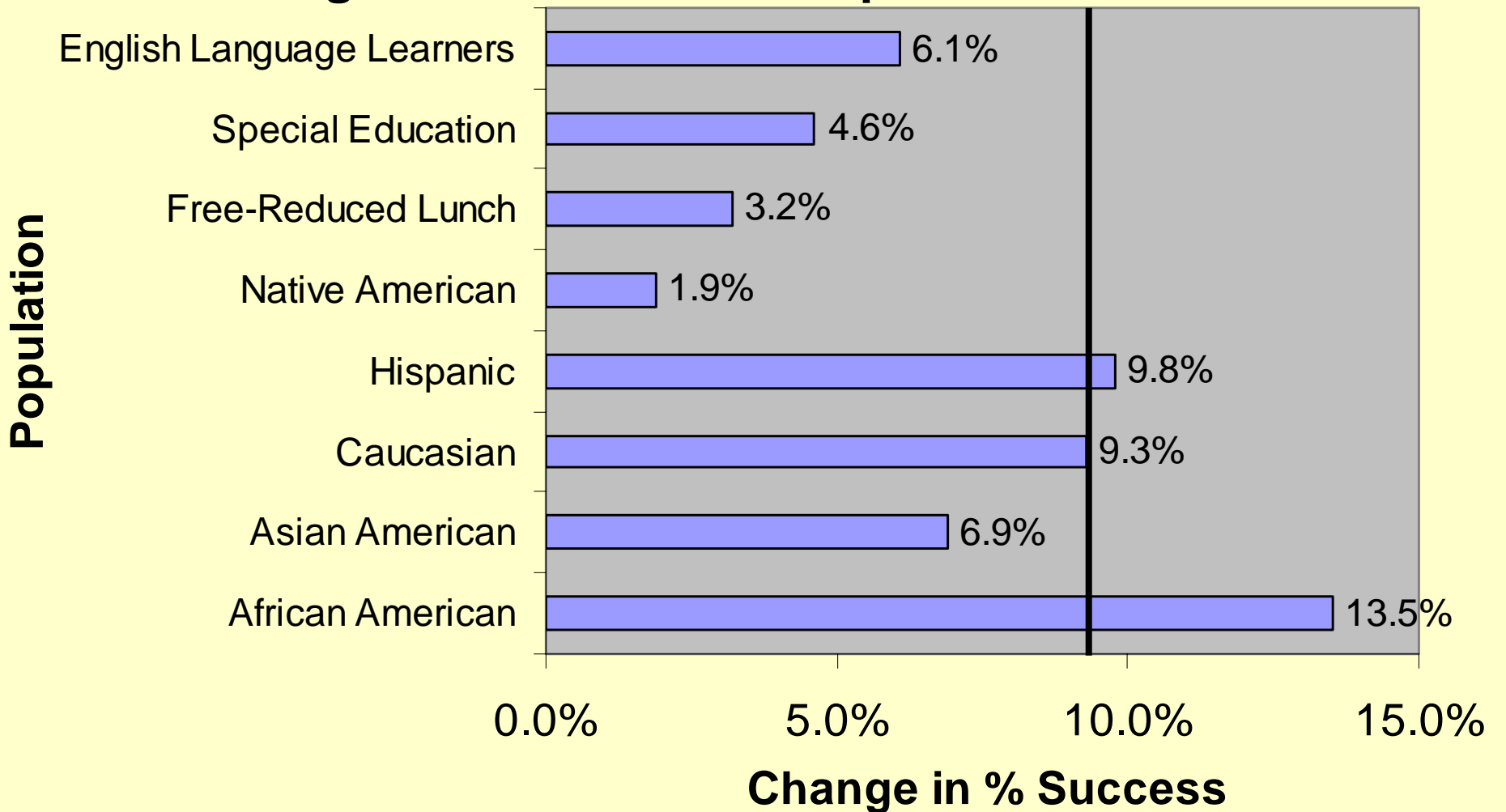


Bryan Middle School (54% low-income; 11% African American; 39% Hispanic) fulfilled math participation and achievement.

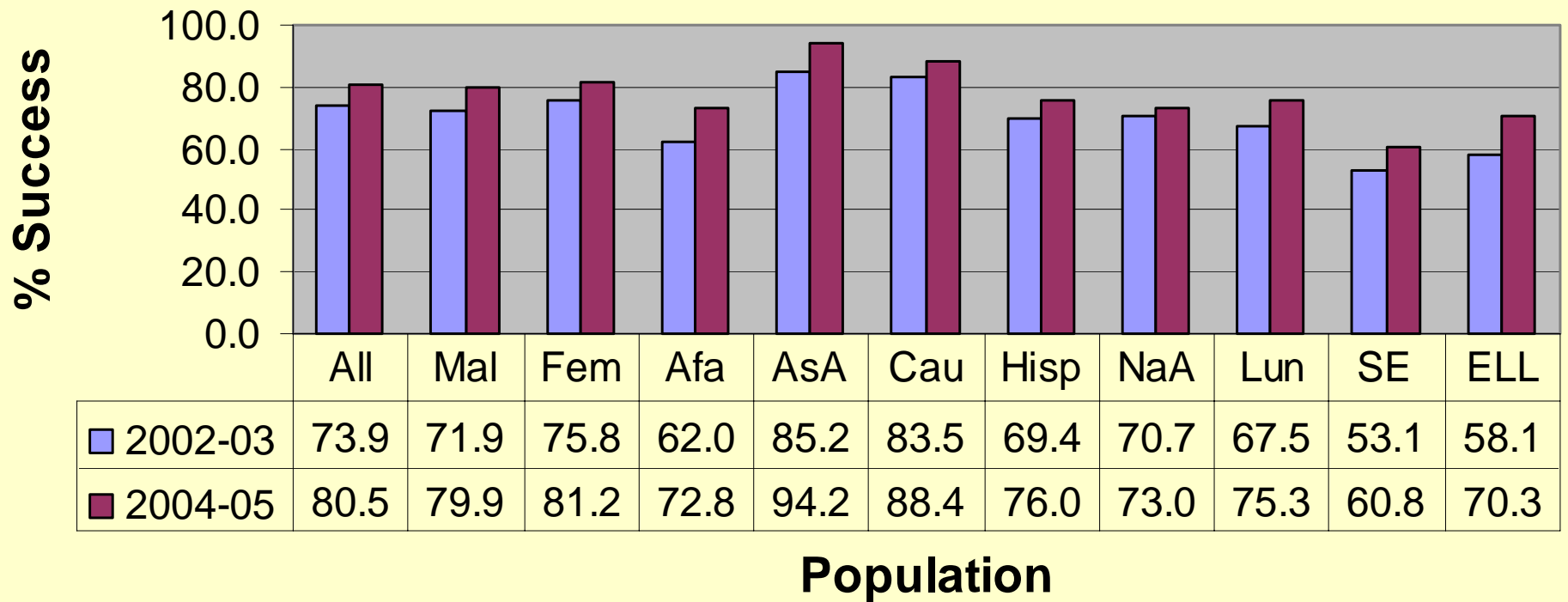
4th Grade Math CRT - Change in Success



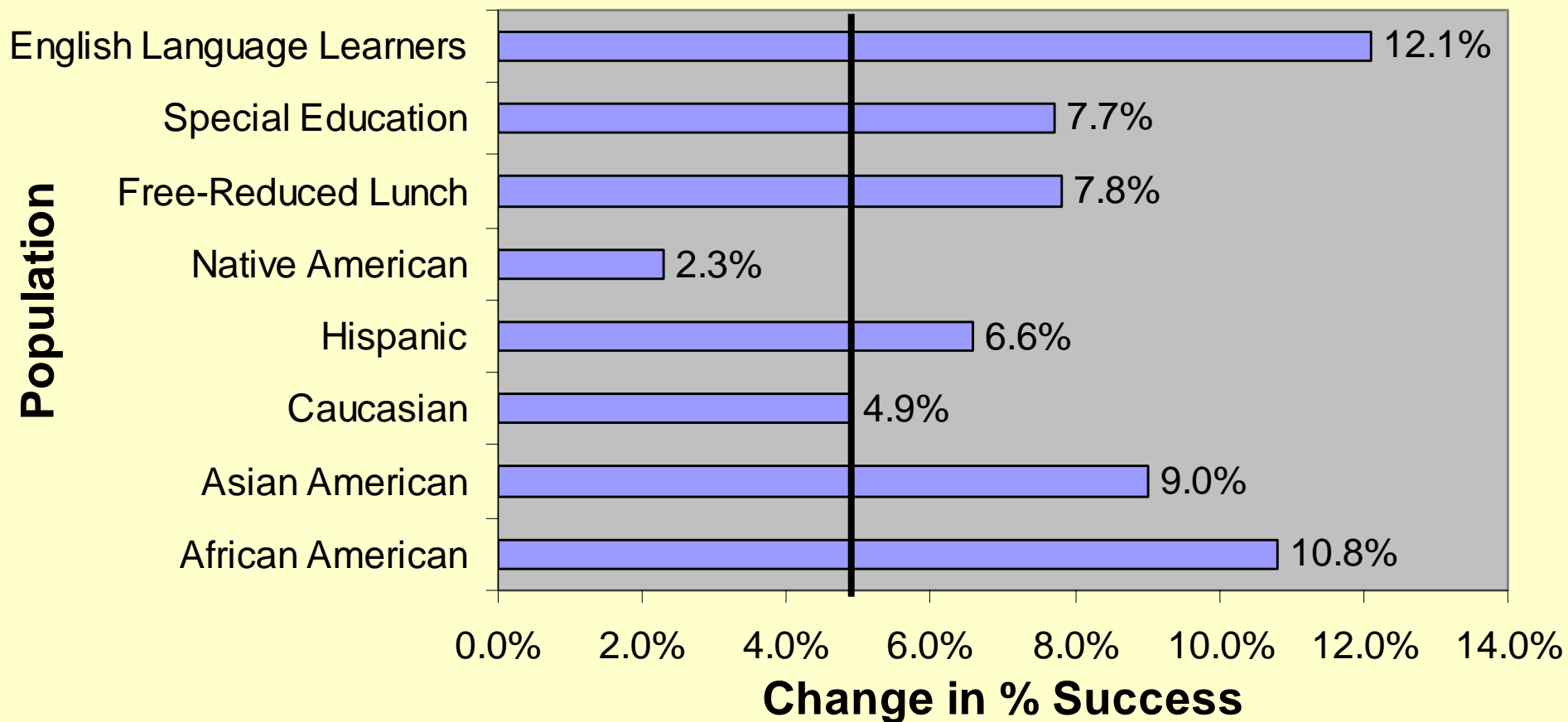
Closing the Achievement Gap in 4th Grade Math



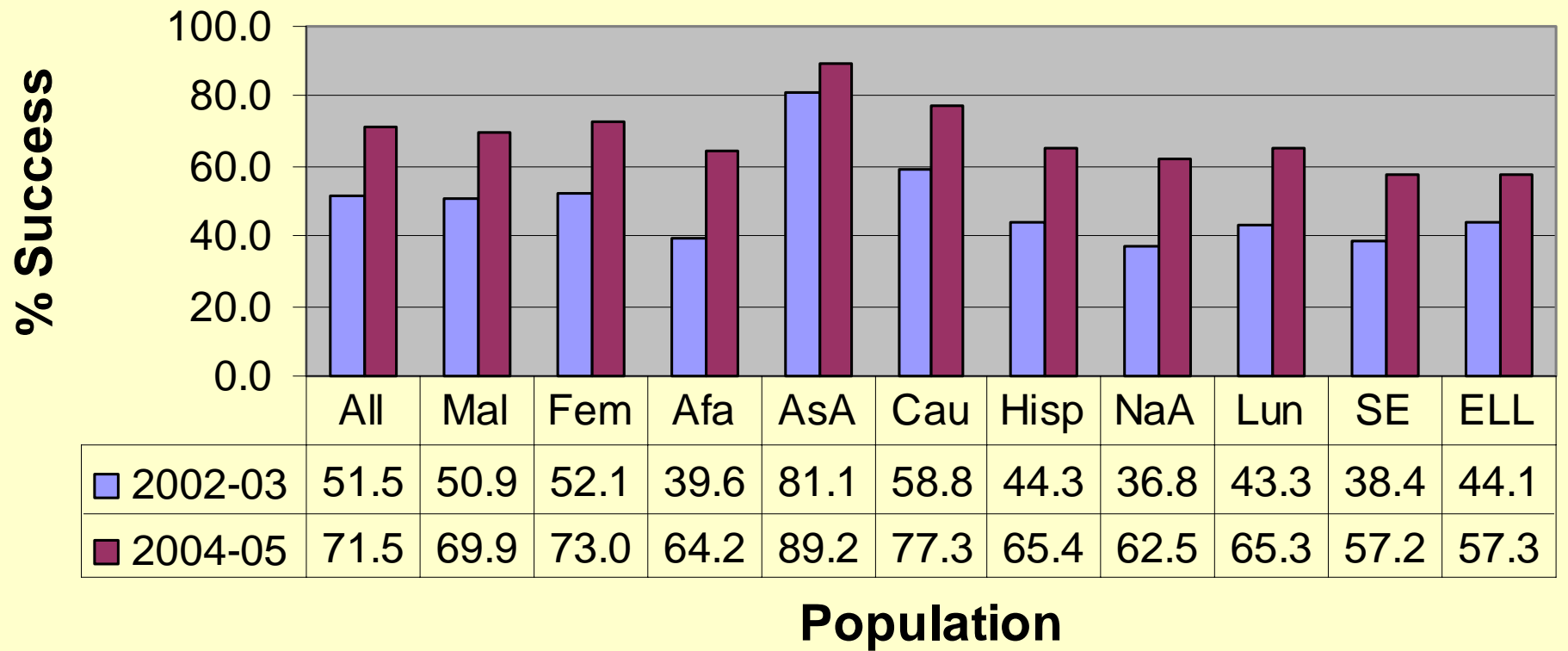
4th Grade Science CRT - Change in Success



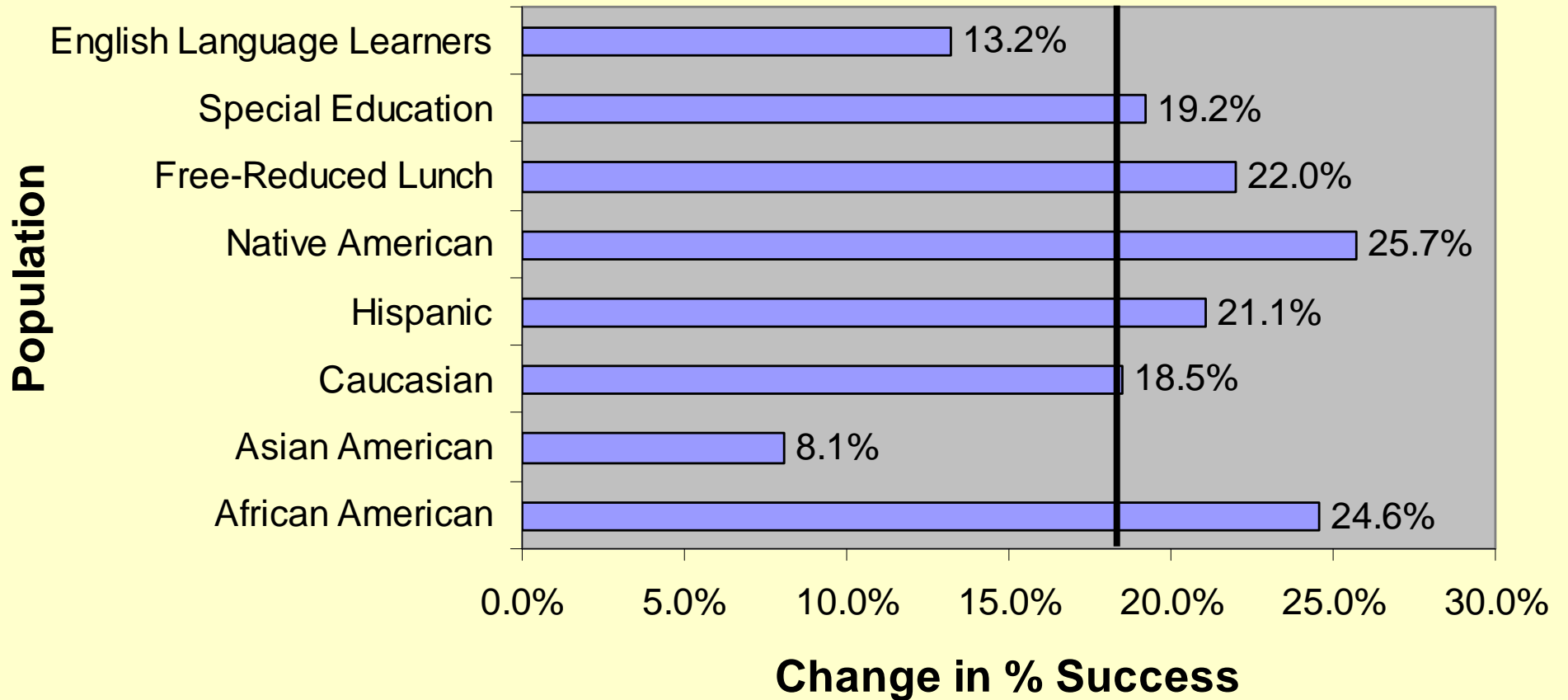
Closing the Achievement Gap in 4th Grade Science



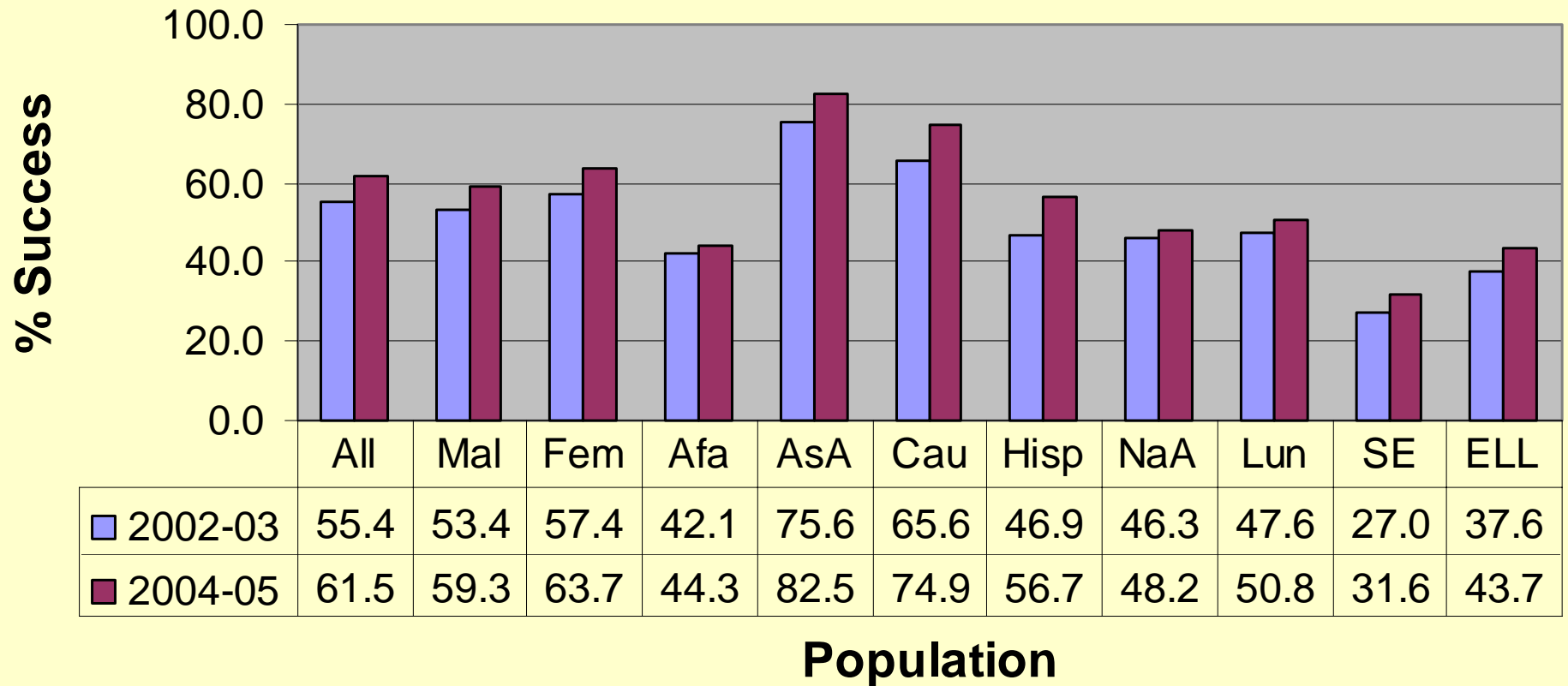
Algebra CRT - Change in Success



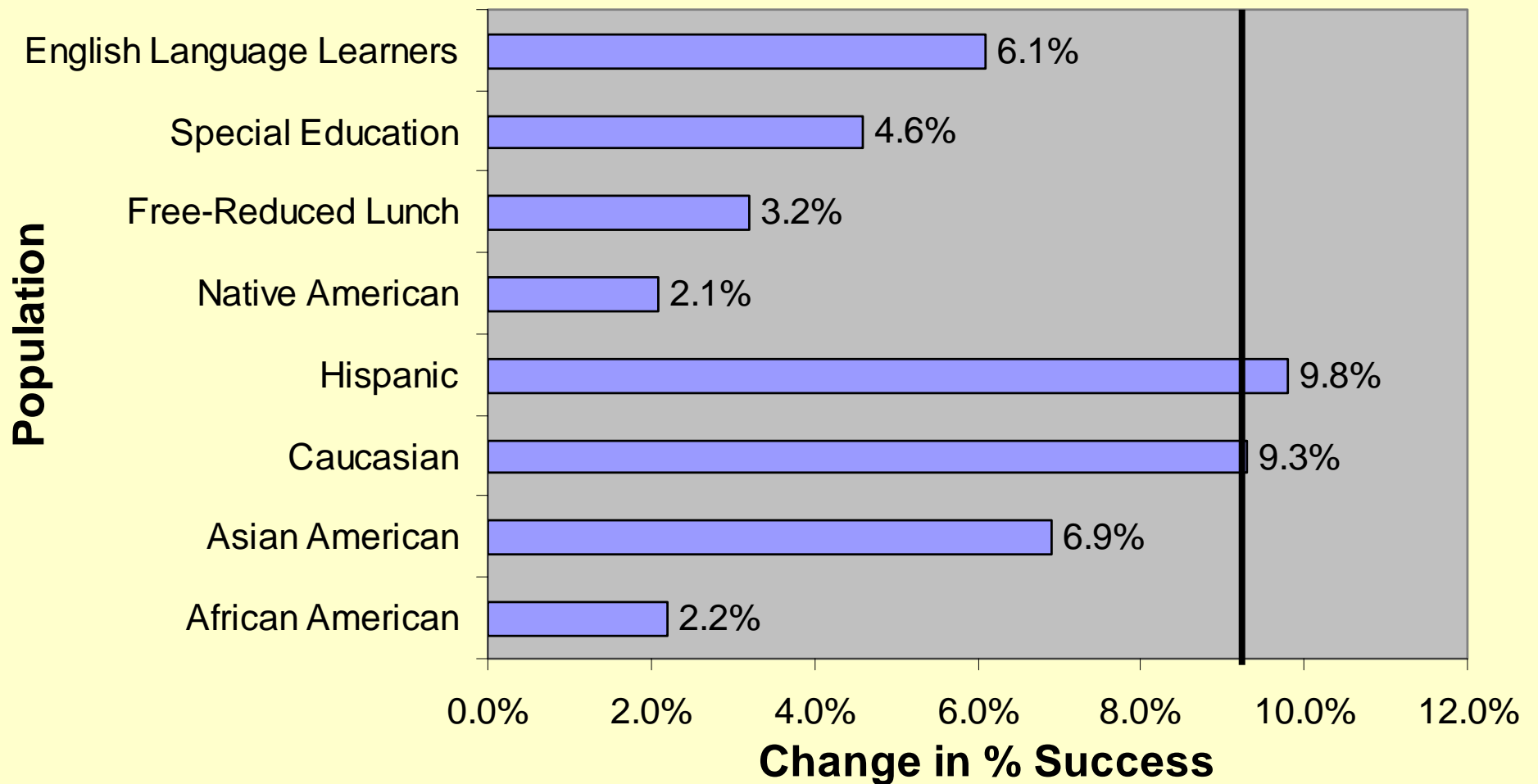
Closing the Achievement Gap in Algebra



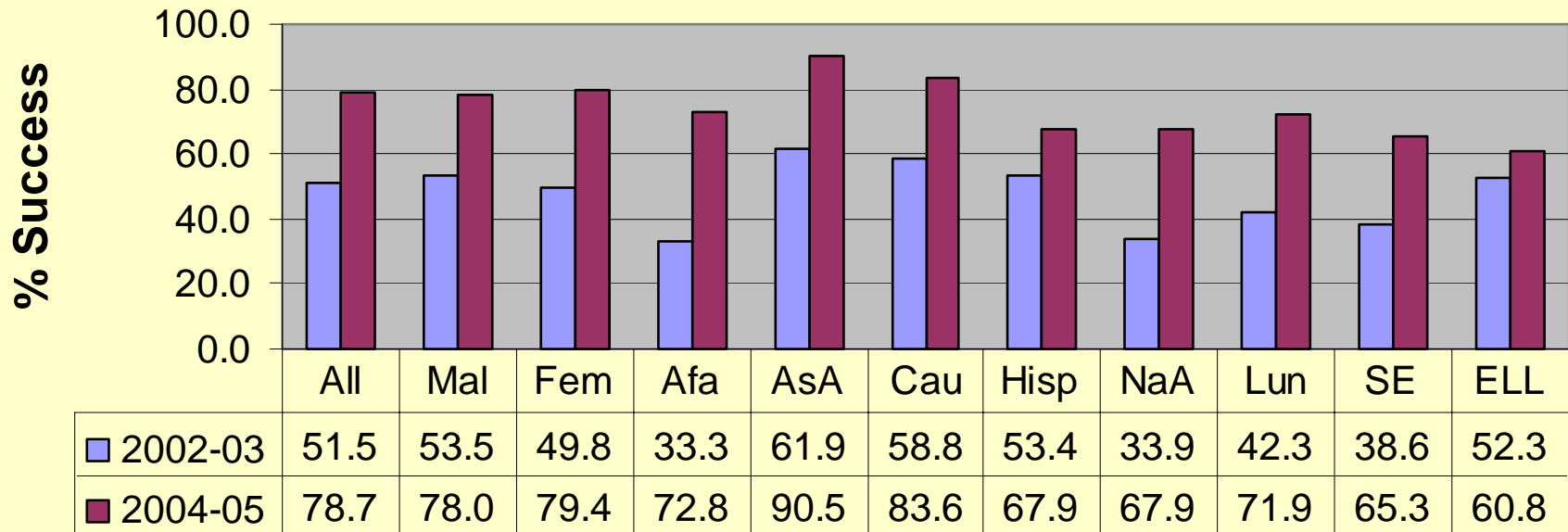
8th Grade Science CRT - Change in Success



Closing the Achievement Gap in 8th Grade Science

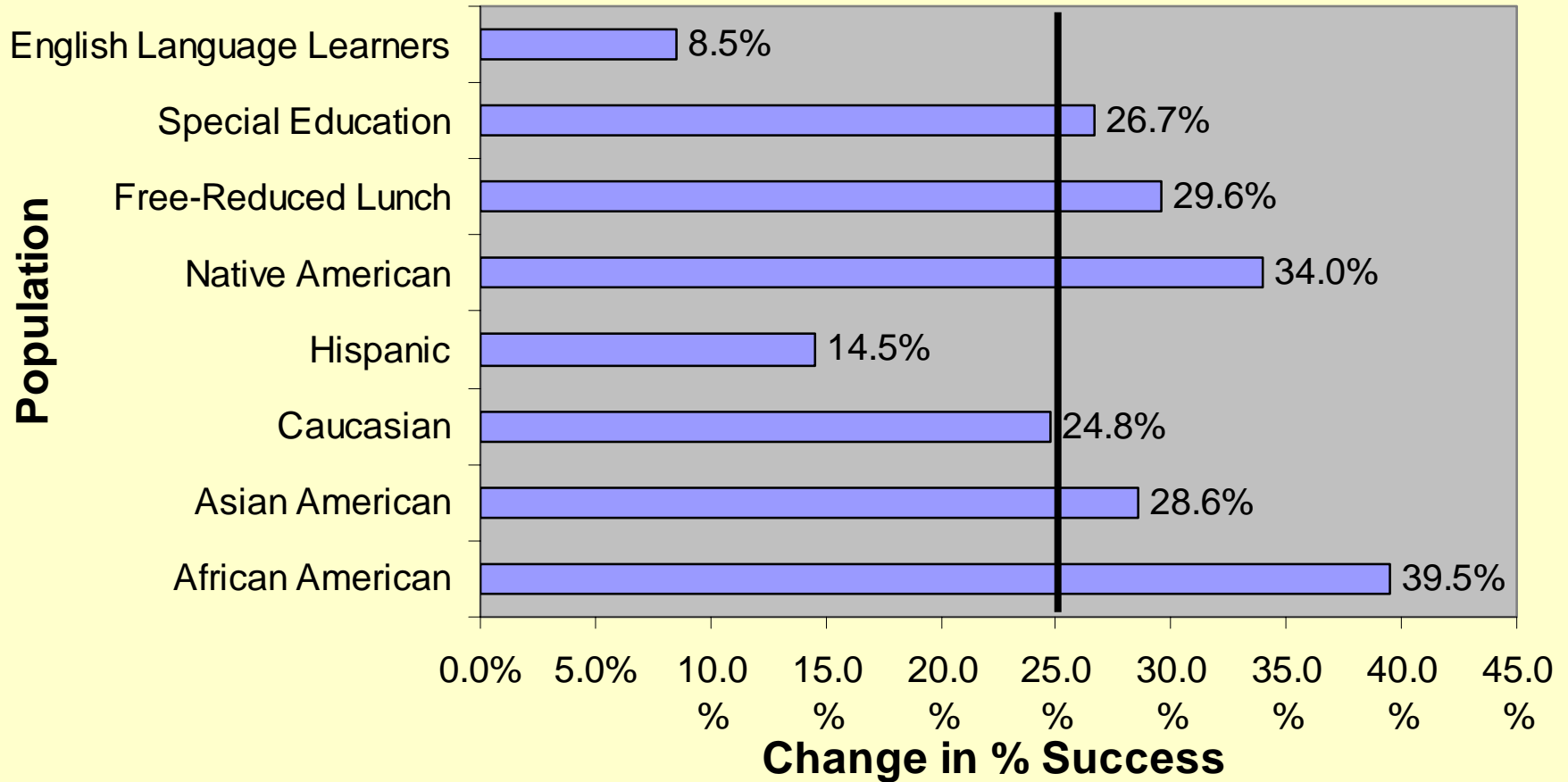


Geometry CRT - Change in Success

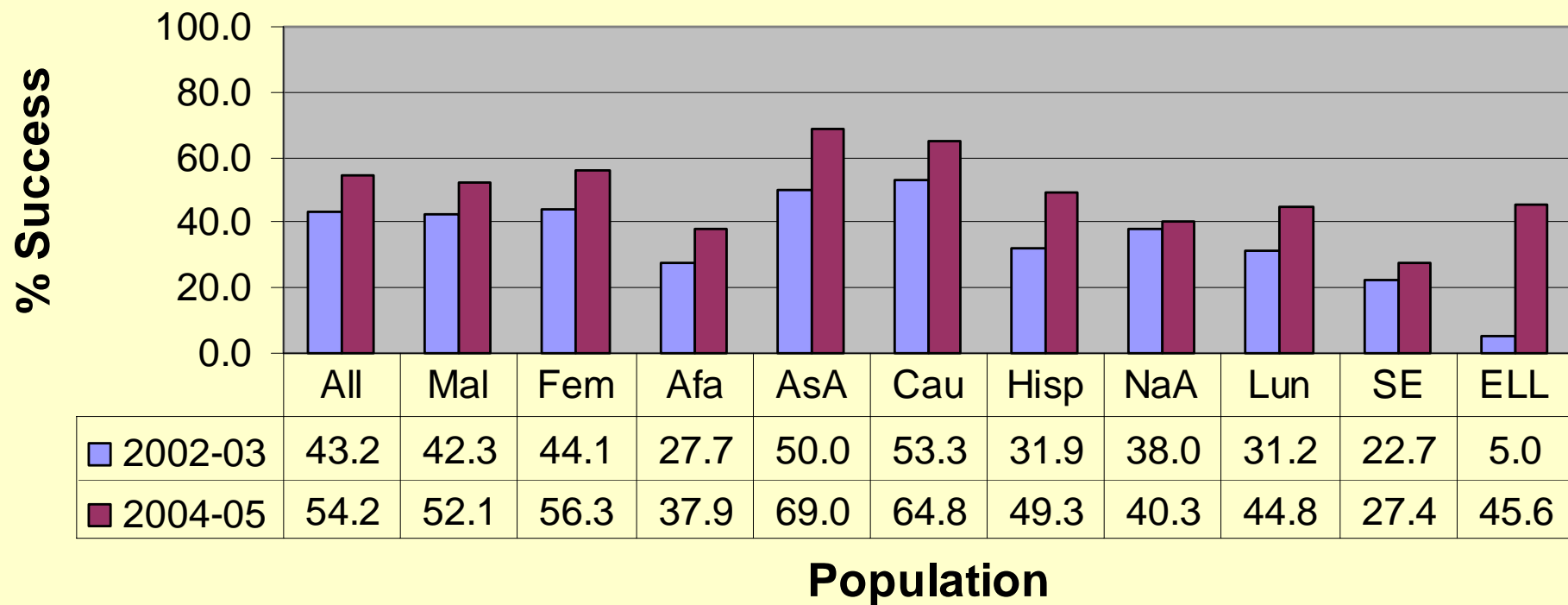


Population

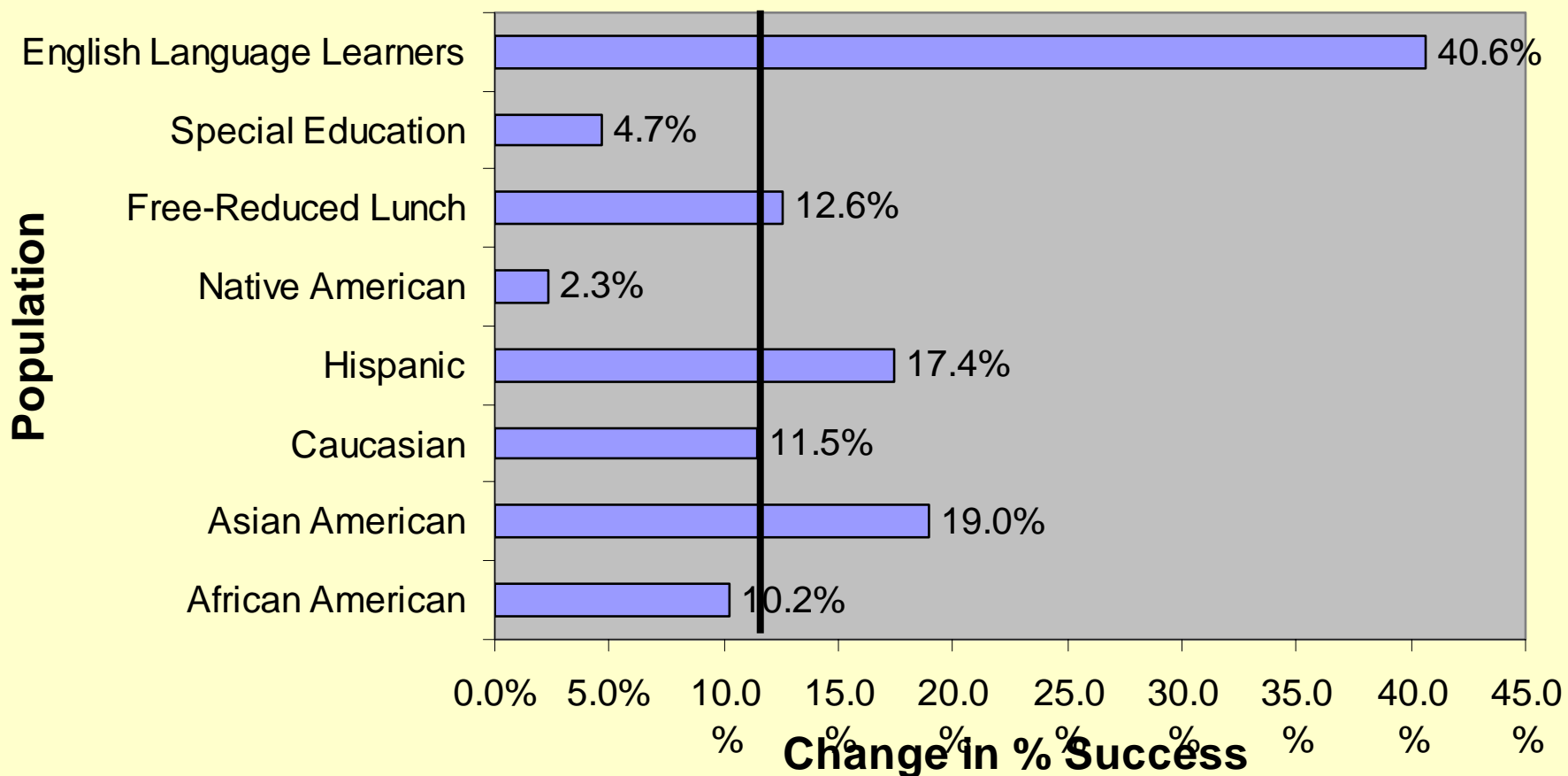
Closing the Achievement Gap in Geometry



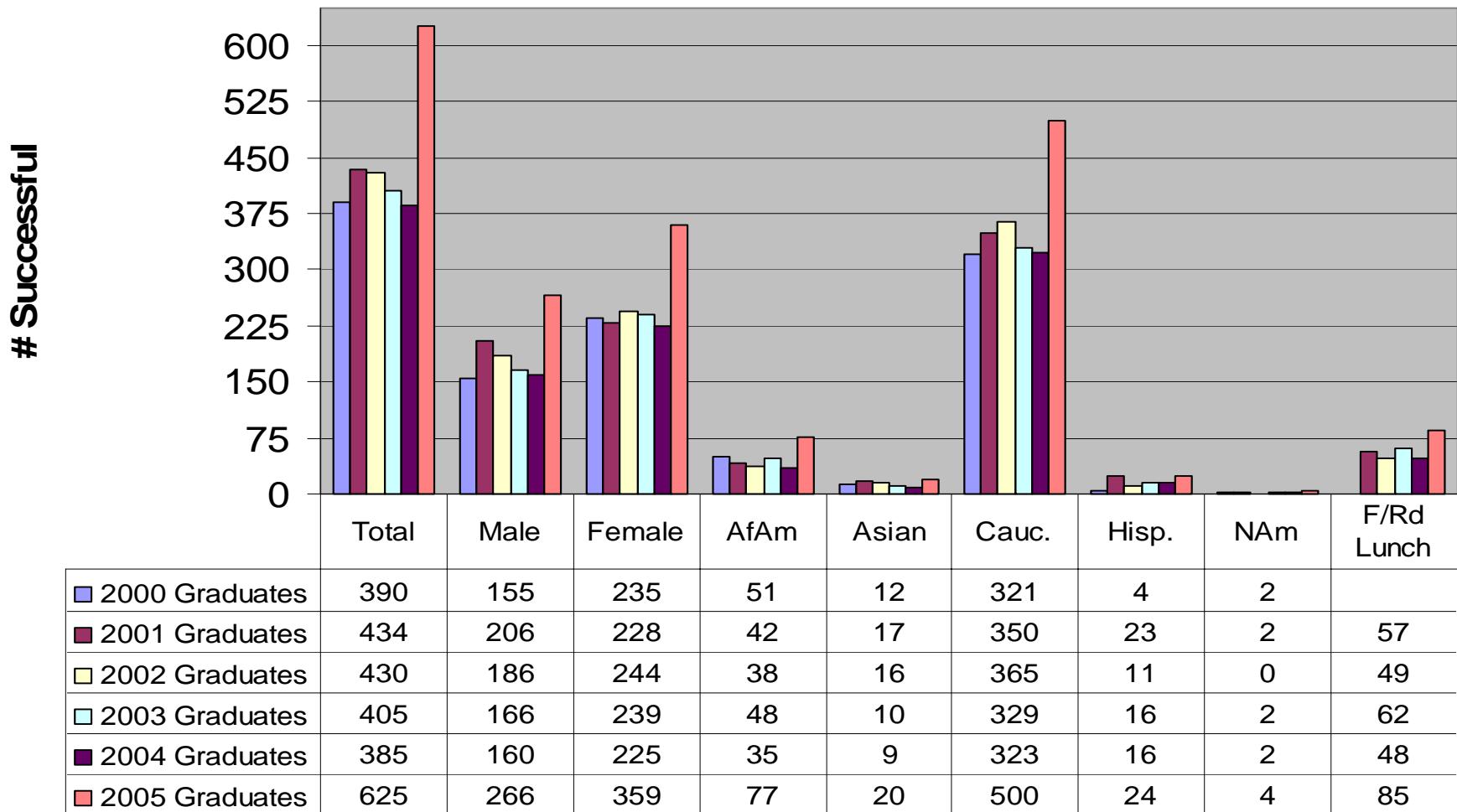
Chemistry CRT - Change in Success



Closing the Achievement Gap in Chemistry



Graduates Successful in Pipeline



Remaining Challenges

- Attending to the issue of enrollment and achievement of under-represented students
 - Student support
 - Teacher learning
- Sustaining the CEMS professional development model after the USP
 - Continued focus on teachers' beliefs about all students in mathematics and science
 - Sustained and embedded work