

Constructivist-Compatible Teacher Beliefs and Practices in American Schools: Prevalence and Correlates

Jason L. Ravitz

James H. Snow

University of California, Irvine

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Abstract

American teachers' basic pedagogical beliefs and characteristic teaching practices are disaggregated by subject, grade range, achievement levels of students, school professional culture, and teacher academic background. The study examines how teachers in different venues hold beliefs and engage in practices consistent with a constructivist-compatible approach to teaching.

Methodology

- **Survey -- National probability sample of all U.S. teachers in grades 4-12, (N=2,200)**
- **Over 2,200 teachers from 440 schools completed a 20-page questionnaire (67% of teachers surveyed)**
- **Self-report measures were validated in a prior interview and observational study of 72 teachers**
- **Factor analysis of responses used to help identify different aspects of Constructivism - 2 sets of “Beliefs” and 5 types of “Practice”**
- **Comparison of mean z-scores by sub-groups**

Measures of Constructivism

Beliefs That Learning Is Best Supported By...

Student Freedom vs. Teacher Control

Students Build Knowledge vs. Teacher Explains

“Cognitive Challenge” Practices

Reflective Writing, Divergent Thinking, Probing Questions

Other Constructivist Practices

Project-based Activities - Problem-Solving

Group Work

Examples of Constructivist “Belief” Items

Agreement with the following statements:

- I try to be a facilitator - provide opportunities and resources for my students to discover or construct concepts for themselves.
- The most important part of instruction is that it encourage “sense-making” or thinking among students. Content is secondary.
- It is critical for students to become interested in doing academic work - interest and effort are more important than the particular subject-matter they are working on.
- It is a good idea to have all sorts of activities going on in the classroom.

Disagreement with the following statements:

- Teachers know more than students. They shouldn’t let students muddle around when they can just explain the answers directly.
- A quiet classroom is generally needed for effective learning.
- Students are not ready for “meaningful” learning until they have acquired basic reading and math skills.
- It is better when the teacher - not the students - decides what activities are to be done.
- Instruction should be built around problems with clear, correct answers, and around ideas that most students can grasp quickly.
- How much students learn depends on how much background knowledge they have - that is why teaching facts is so necessary.

Examples of Constructivist “Practices”

Cognitive Challenges

- Hold a debate and argue for a particular point of view which may not be their own.
- Represent the same idea in more than one way (in math by a table and a graph; in English, by a poem and an essay).
- Work on problems for which there is no obvious method of solution.
- Seriously assess their own work.
- Make conjectures about what they will learn or discover in a new unit.

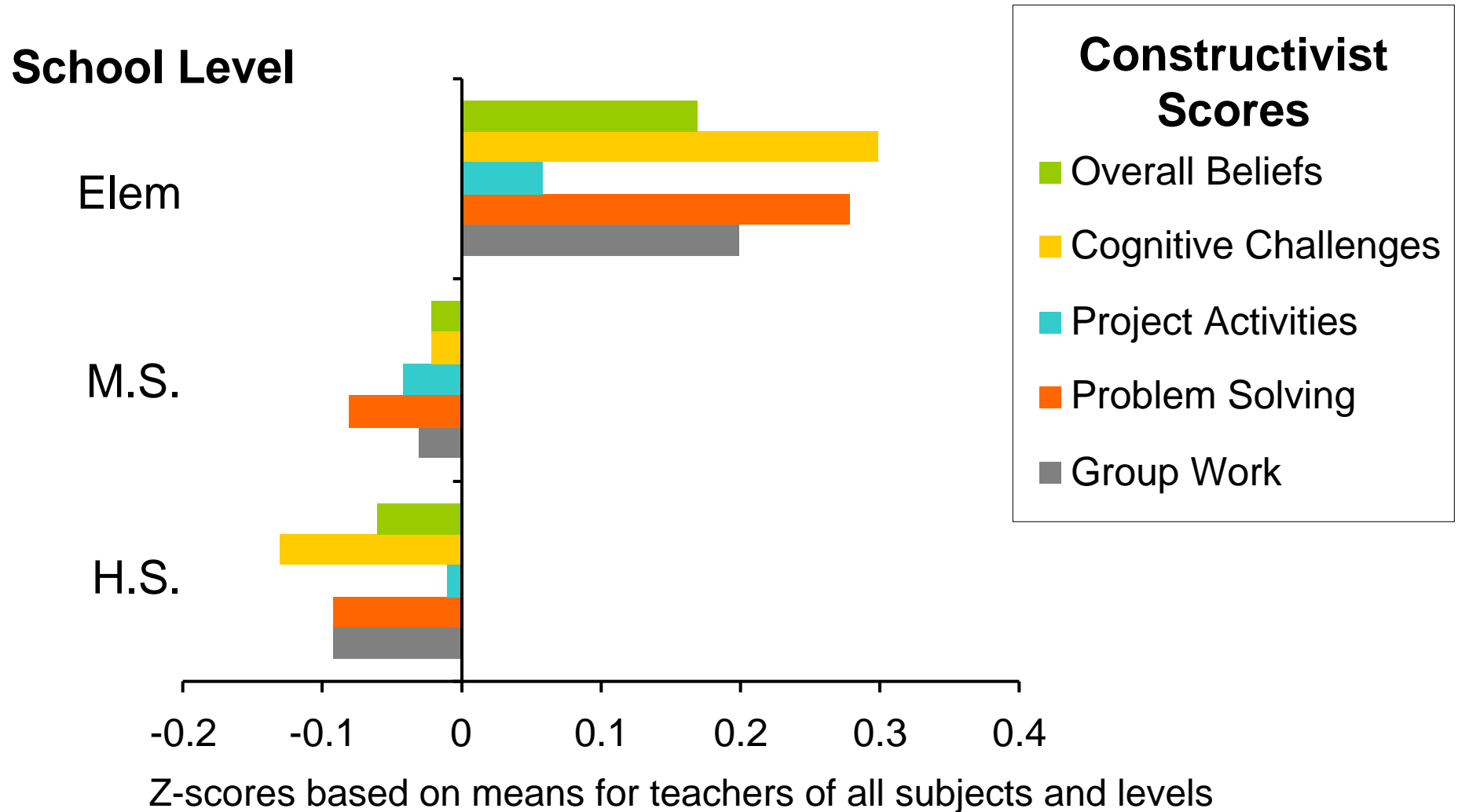
Project-Based Activities

- Make a product that will be used by someone else.
- Do hands on/laboratory activities.
- Work on projects that take a week or more.
- Demonstrate their work to an audience including people other than from the school or their family.

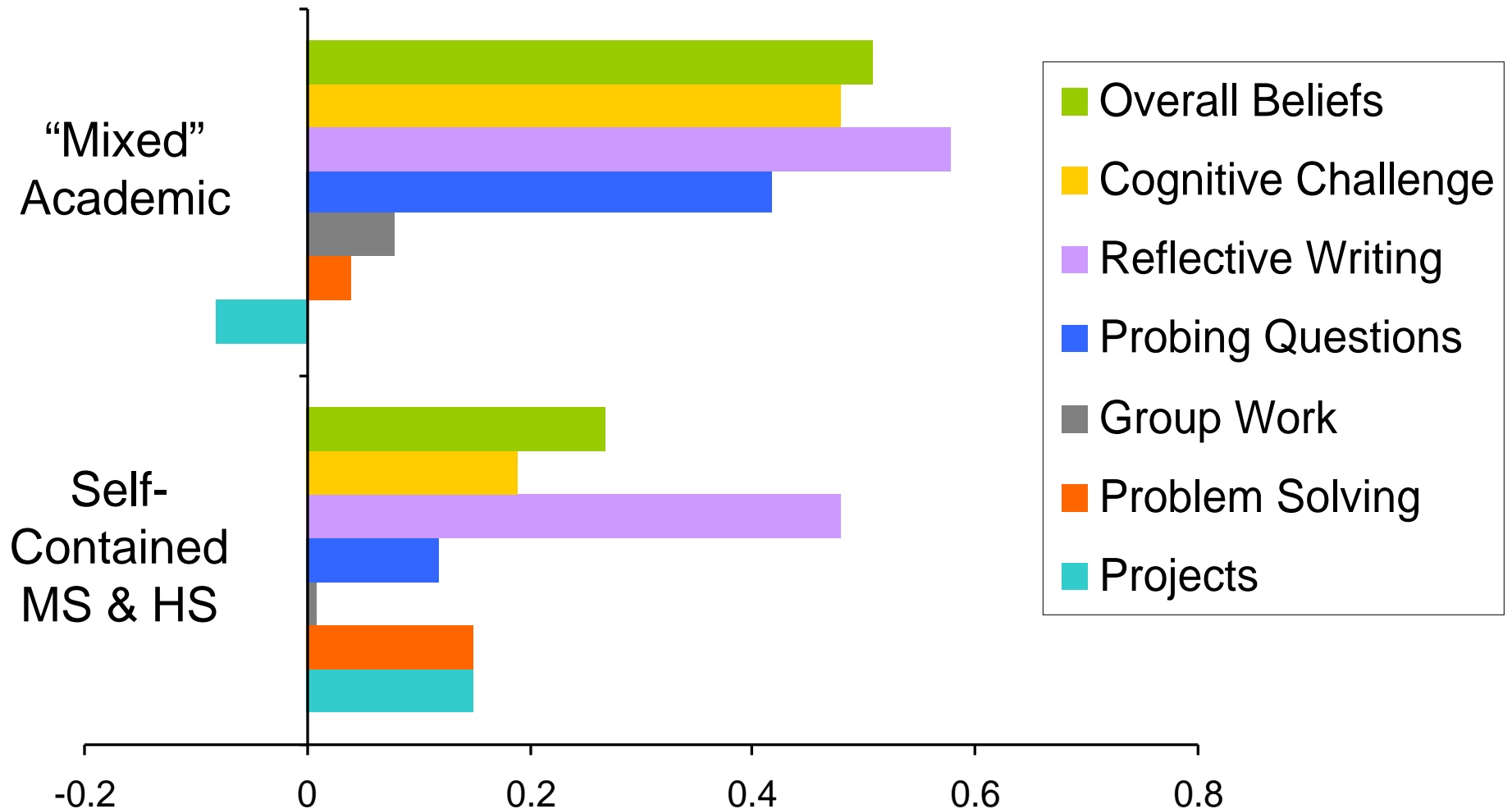
Other Activities

- Relate what they are working on to their own experience.
- Suggest or help plan classroom activities.
- Decide on their own procedures for solving a complex problem and then discuss among themselves their different procedures and results.

Elementary Teachers Are More Constructivist Than Secondary Teachers in Beliefs & Practices

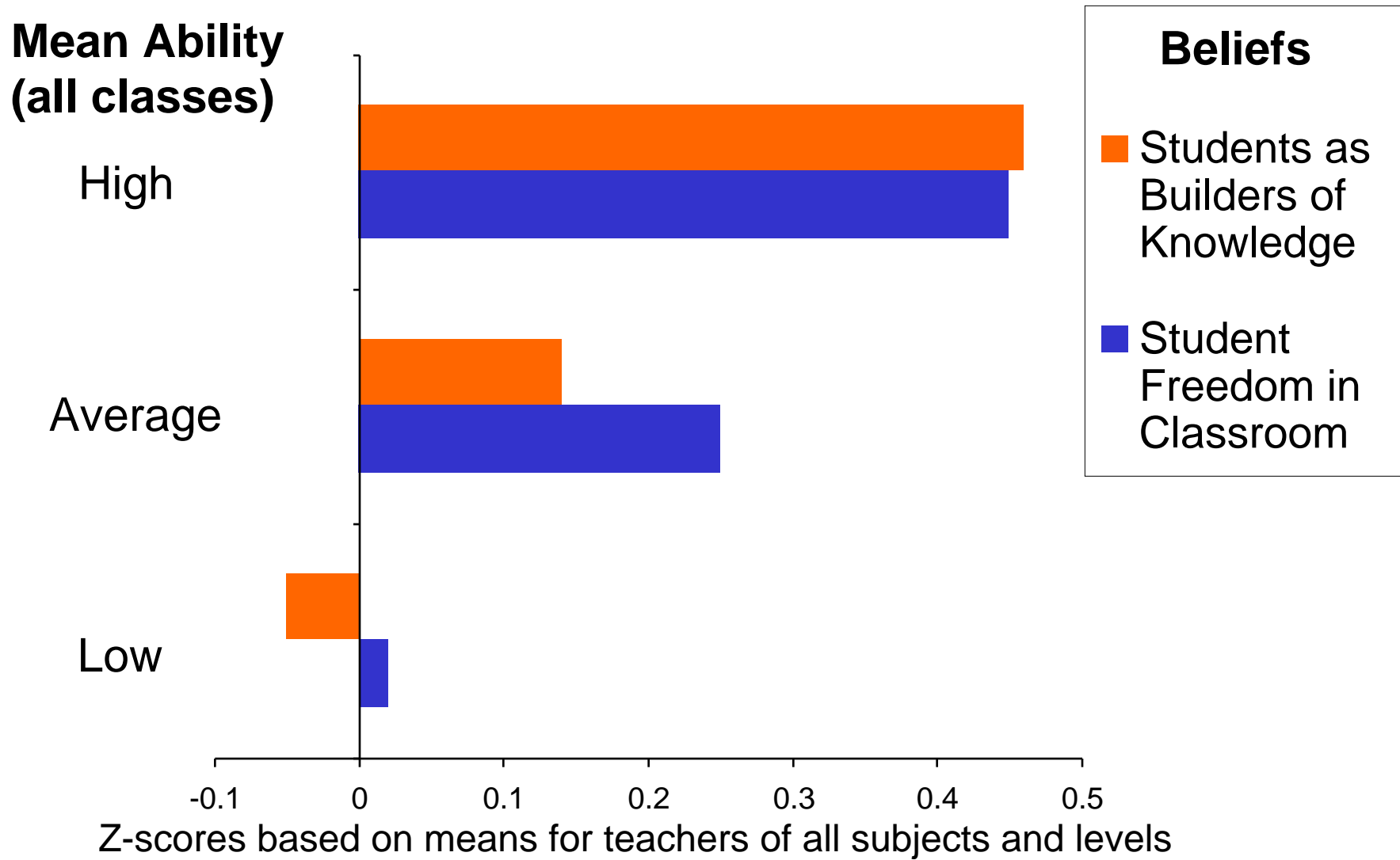


In MS & HS, “Multi-Disciplinary” Teachers Are Also Very Constructivist

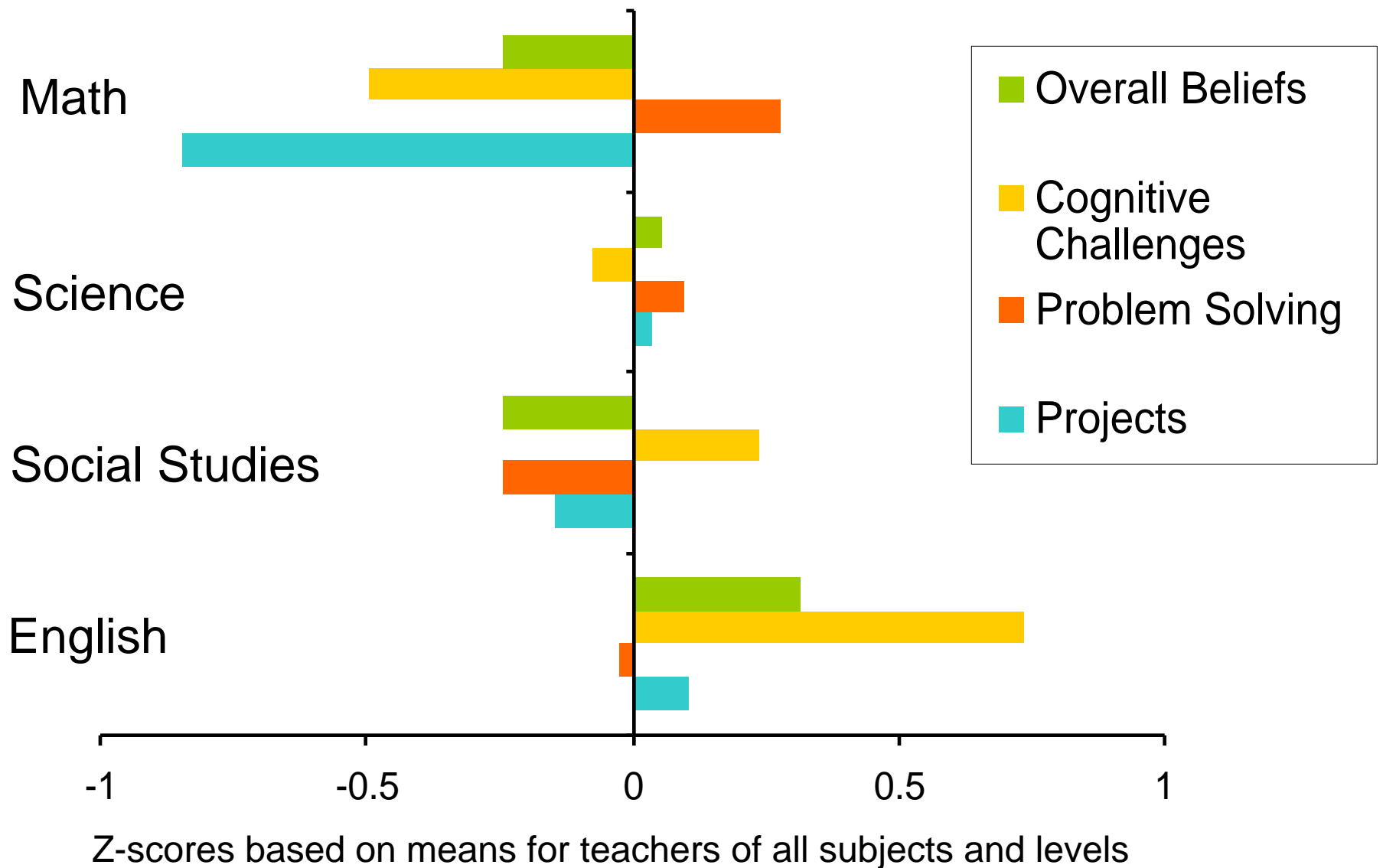


Z-scores based on secondary-level teachers of academic subjects

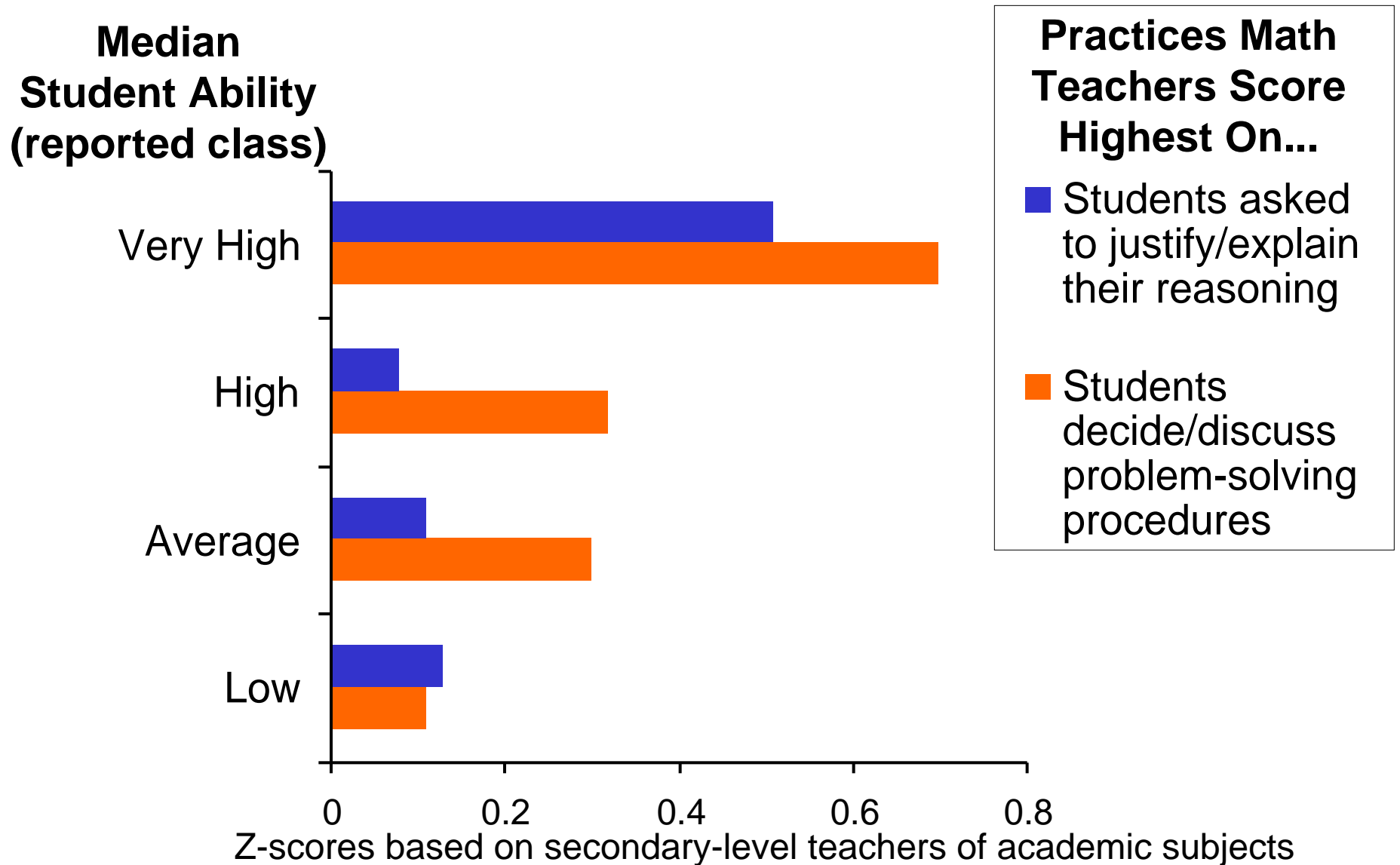
Elementary Teachers' Are More Constructivist In Their Beliefs, But Particularly When They Teach High Ability Students



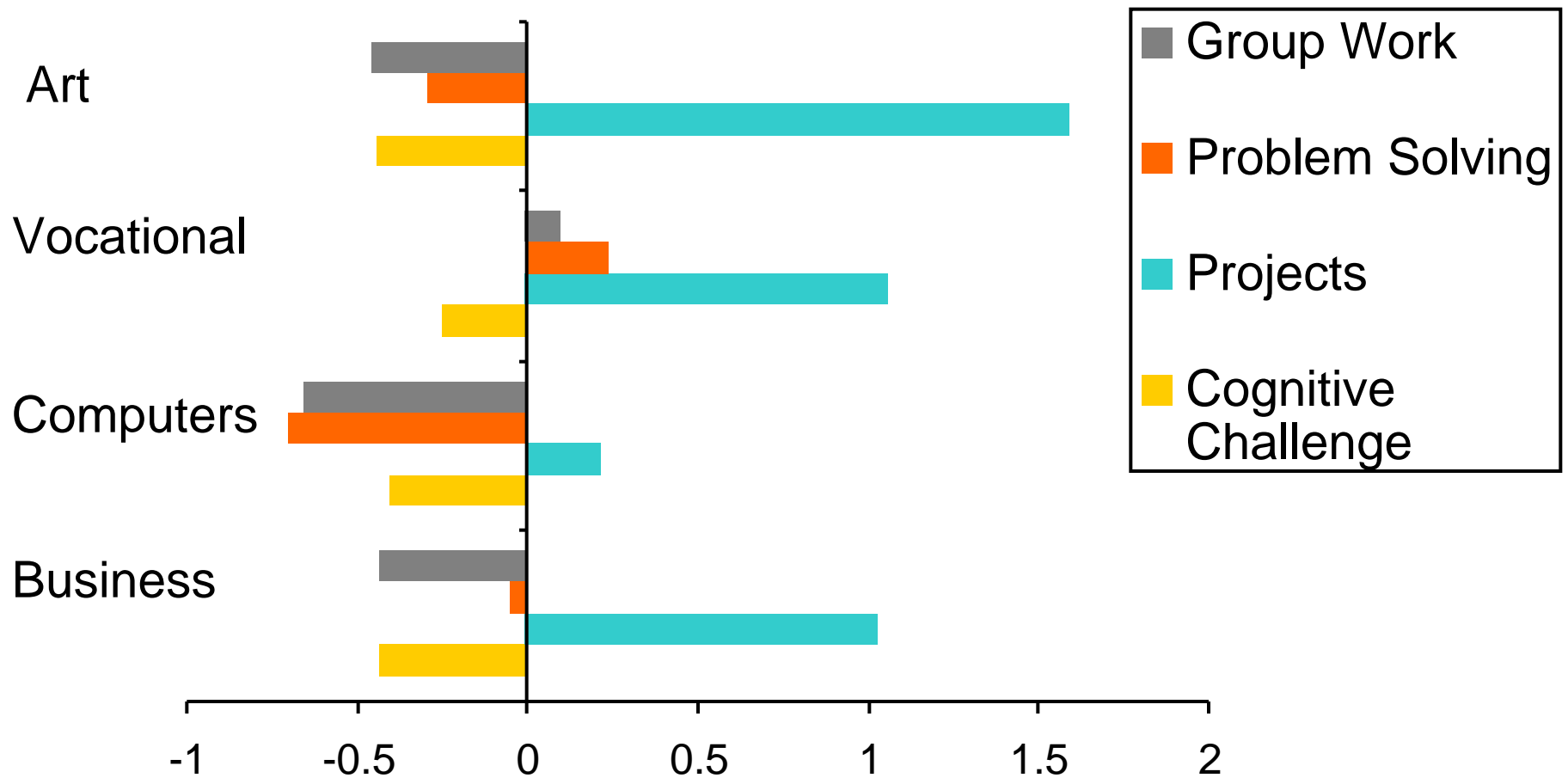
Different Patterns of Constructivist Responses by Subject Taught



For Their Most Constructivist Items, Math Teachers Favor Very High Ability Students



Projects Are Often Not Constructivist, Particularly in “Non-Academic” Subjects Where Individual Work Prevails



Z-scores based on means for teachers of all subjects and levels

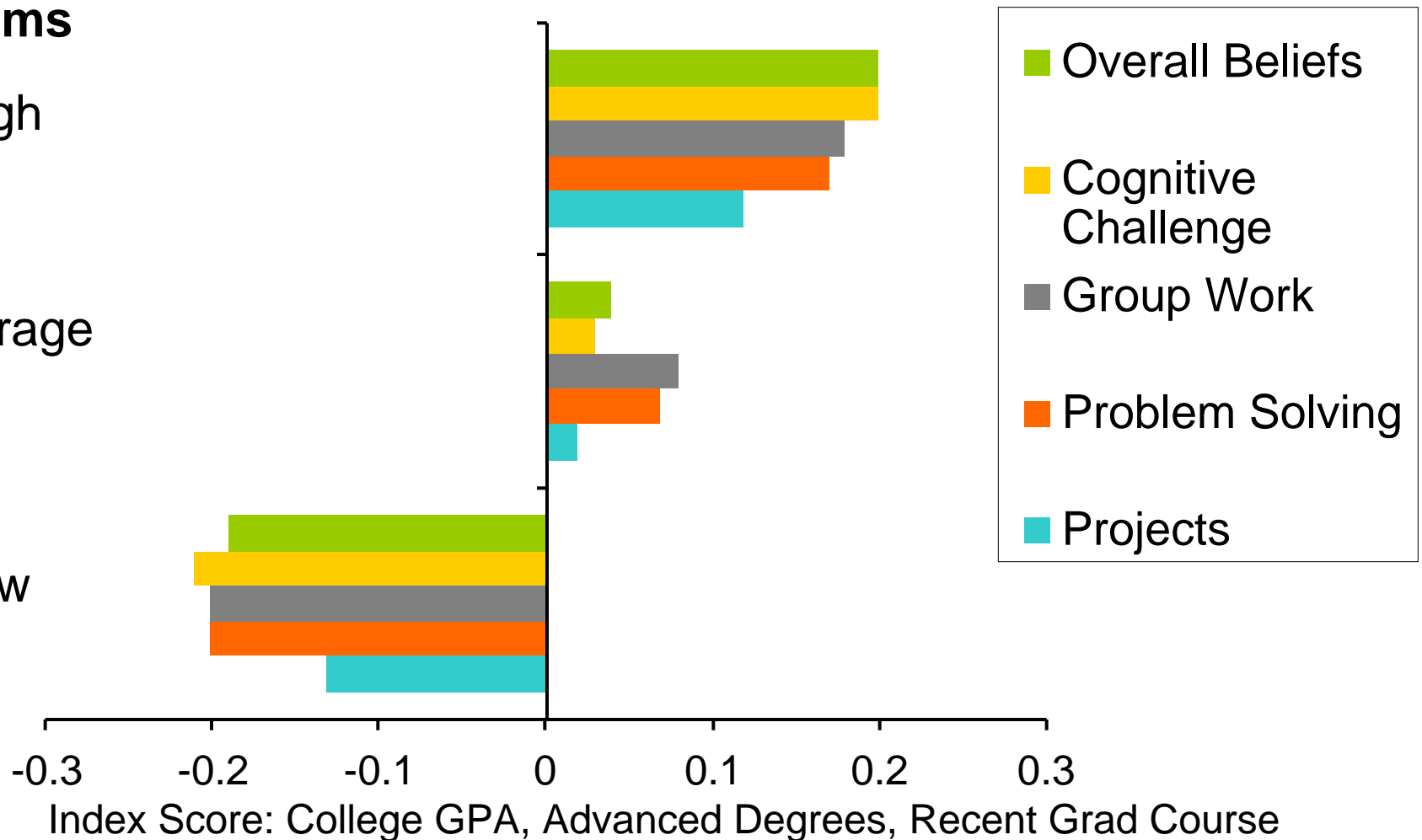
Teacher Academic Background Is Strongly Related to Constructivism

Mean on
3 items

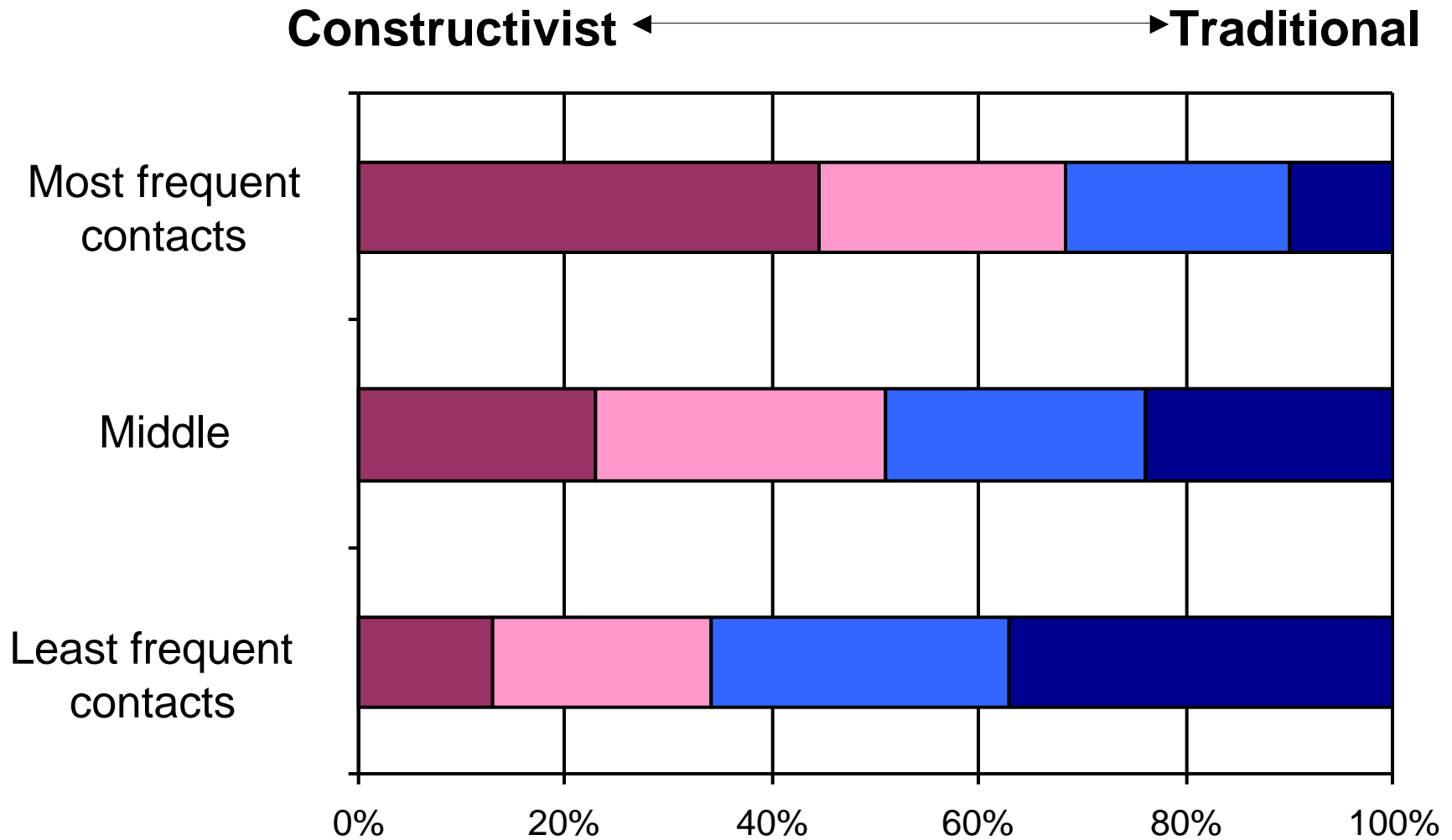
High

Average

Low



Practice is More Constructivist When There Is Greater Frequency of Informal Contacts Among Teachers



Results

- Elementary Teachers Are The Most Constructivist (especially teachers of High Ability Students)
- “Cross-Disciplinary” Teachers Are Most Constructivist at M.S. & H.S. Level
- Evidence of Projects w/out Deep Thinking
- Constructivism related to: Subject Taught, Class Size, Student Ability Level, Teacher Academic Background & Professional Culture

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- A representative sample of all U.S. teachers in grades 4-12 (Probability Sample)
- A sample of teachers from schools in major reform projects and schools with high-end technology (Purposive Sample)
- Over 4,100 teachers in 1,100 schools participated, nearly 70% of those sampled
- Completed 20 page questionnaires
- Also, data from principals and school technology coordinators in the same schools

For More Information visit our Research Project Web Site:

www.crito.uci.edu/TLC

- New findings presented weekly
- Discussion group
- Reports and newsletters: view or download
- Archive of previous newsletters and findings

Future Reports from the Teaching, Learning, and Computing Survey

- School Technology Investment Practices & Teachers' Use
- Teaching and Computer Use in School Reform and High-Tech Schools
- Technology Coordination, Support, and Staff Development and Teachers' Uses of Technology
- Teachers' Assessment of the Impact of Technology on their Teaching Practice
- Computer Use and Pedagogy in Social Studies, Math, etc.
- Computer Use in the Middle Grades
- Conference Presentations at NCTM and NECC