THE CENTER FOR THE FUTURE OF Teaching & Learning at WestEd

High Hopes – Few Opportunities

The Status of Elementary Science Education in California

STRENGTHENING **SCIENCE EDUCATION** IN CALIFORNIA

Research conducted by: The Lawrence Hall of Science at University of California, Berkeley, and SRI International

About the Initiative

Strengthening Science Education in California brings together educators, researchers, and others to examine the status of science teaching and learning, and develop recommendations for improving science education in California. Funding for this initiative was generously provided by the S.D. Bechtel, Jr. Foundation.

Project Partners:

- Belden Russonello & Stewart
- Inverness Research
- Lawrence Hall of Science at the University of California, Berkeley
- SRI International
- Stone's Throw Communications
- The Center for the Future of Teaching and Learning at WestEd

About the Research

Methodology:

- Survey of district administrators (N=280)
- Survey of elementary school principals (N=168)
- Survey of elementary school teachers (N=543)
- Case studies of promising elementary school efforts to teach science (N=9)

Californians Believe Science *Should* be a High Priority

Nearly nine out of ten (86%) Californians in a recent poll viewed science education as very important or essential.

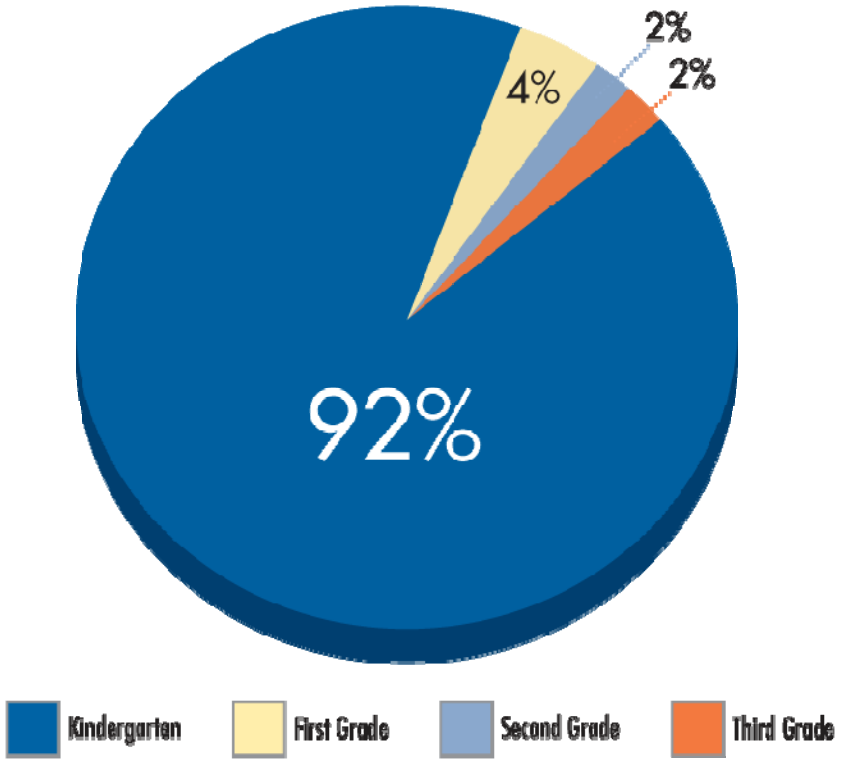
Belden, N., Lien, C., & Nelson-Dusek, S. (2010). *A priority for California's future: Science for students.* Santa Cruz, CA: The Center for the Future of Teaching and Learning.

Educators Believe Science Education is Essential and Should Start Early

- Nearly all (99%) of elementary school principals surveyed reported that providing students with science education is essential (77%) or very important (22%).

- 98% of principals and 95% of teachers believe it should start early (K-2).

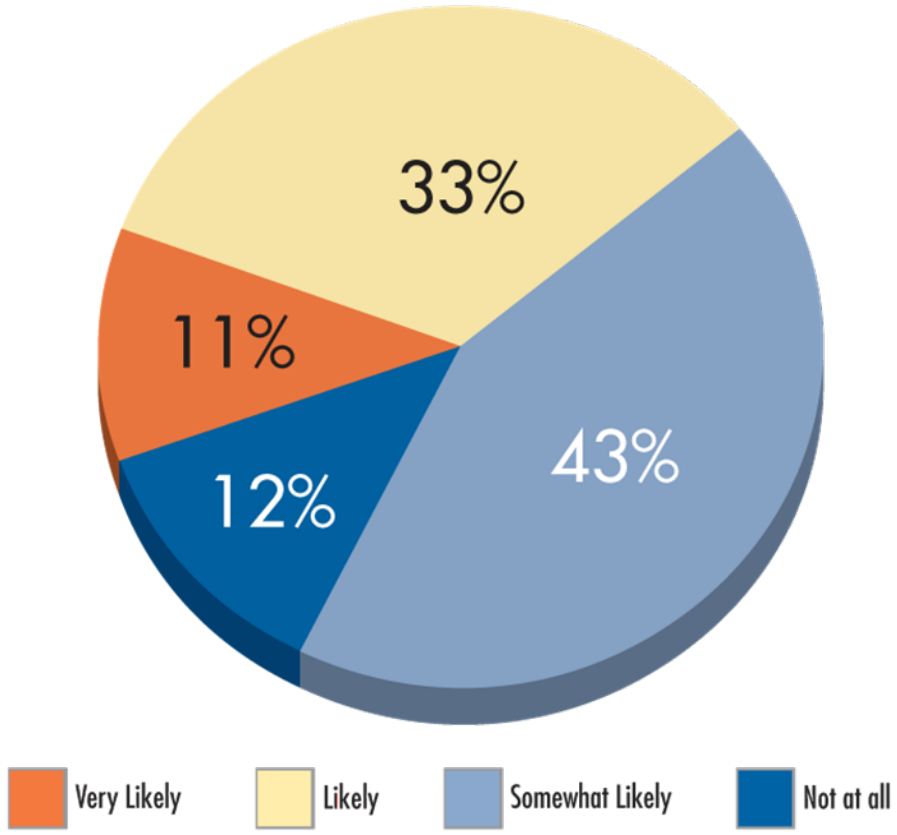
Elementary Principals Reporting the Grade at Which Schools Should Begin Teaching Science



But There are Few Opportunities for Science Learning

Quality is Low in Many Schools

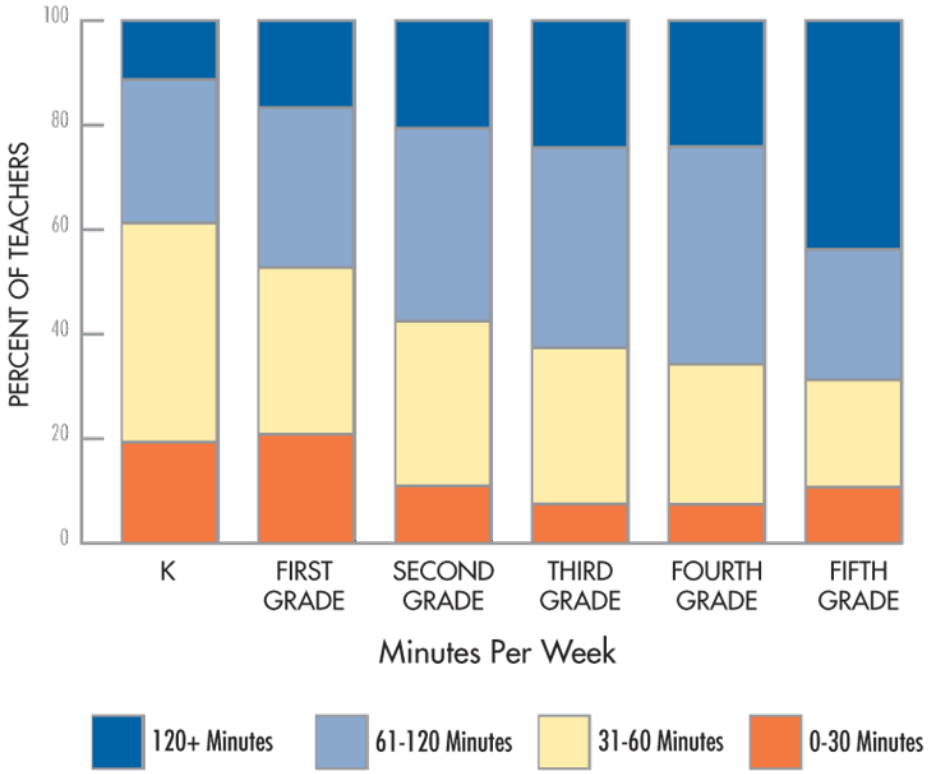
Elementary School Principals' Reporting of the Likelihood That Students Receive High-Quality Science Instruction



Less than half (44%) of principals surveyed believe their students will receive high quality instruction.

Good Intentions, but Little Time

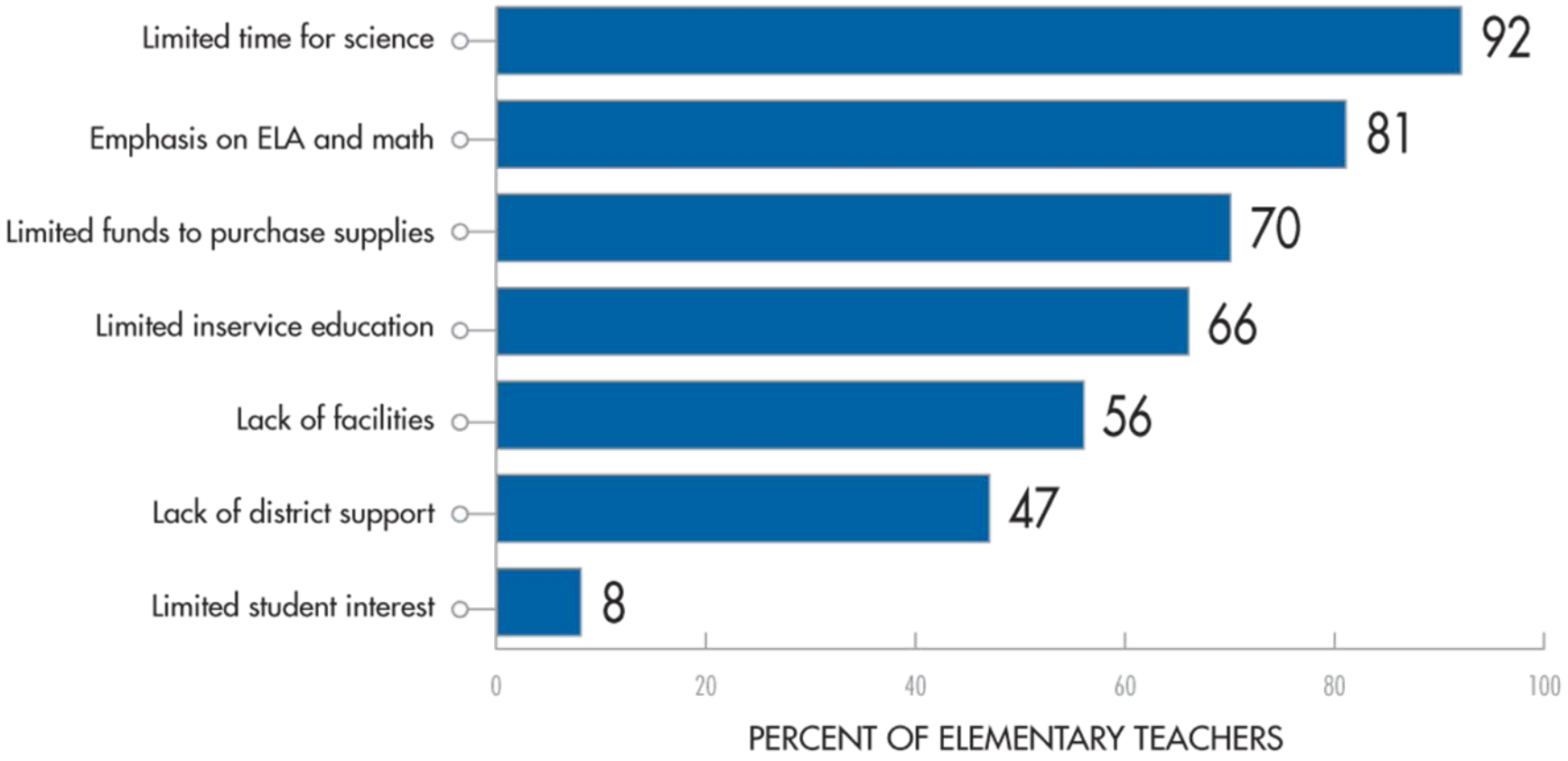
Time Spent on Science Instruction in Elementary School



Despite educators' beliefs that science education should begin early, more than half of teachers surveyed spend **less than one hour per week** on science in kindergarten and the first grade.

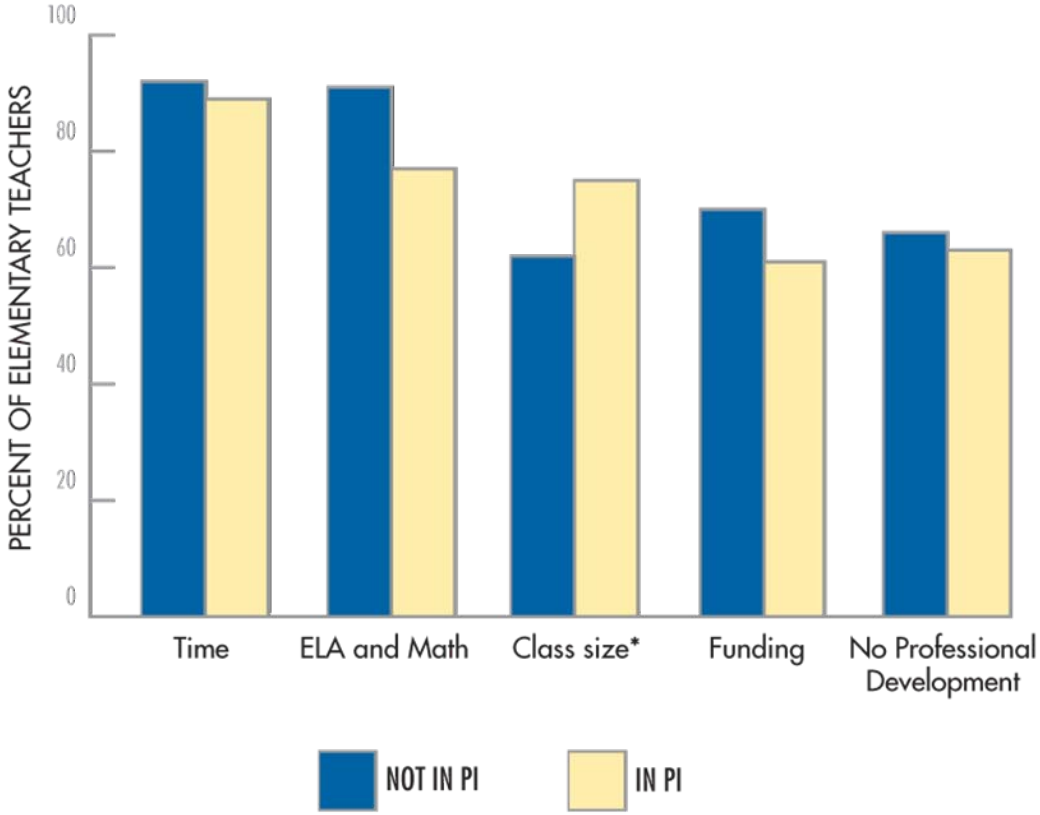
Accountability Pressures Squeeze out Science

Teacher-Reported Factors That Are Major or Moderate Challenges to Teaching Science



And **All** Schools are Struggling

Elementary School Teachers Reporting Major or Moderate Challenges, by School-Level PI Status



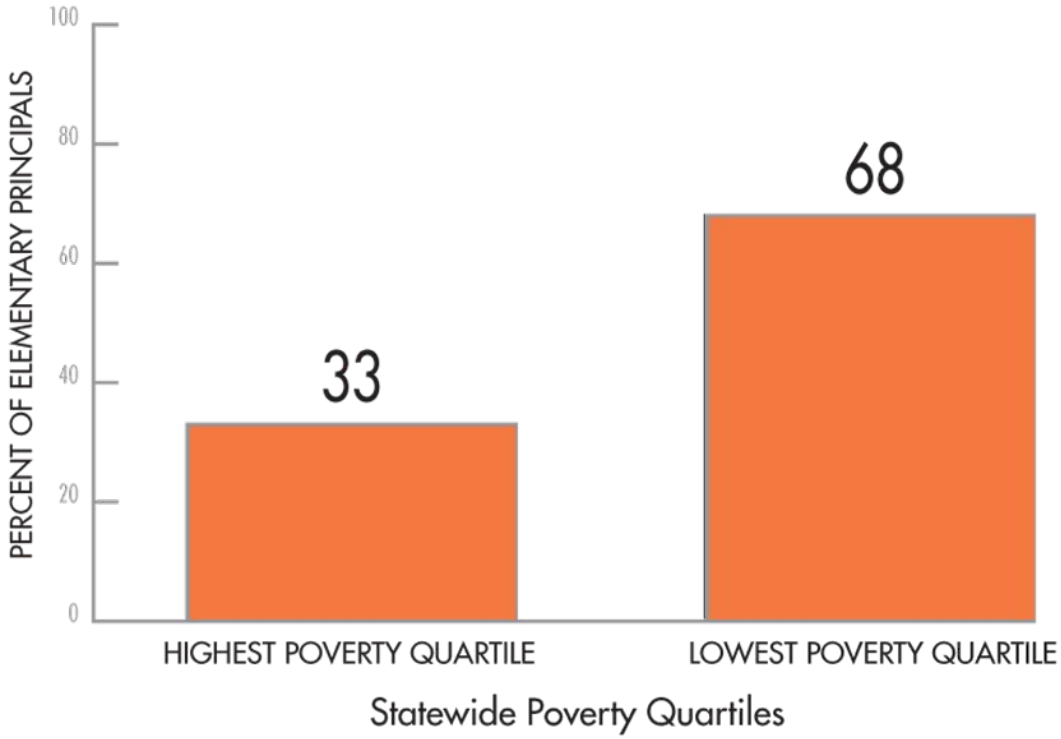
Challenges to teaching science are affecting all schools, regardless of Program Improvement (PI) status.

* Indicates statistically significant difference

But Some Schools Face Greater Challenges

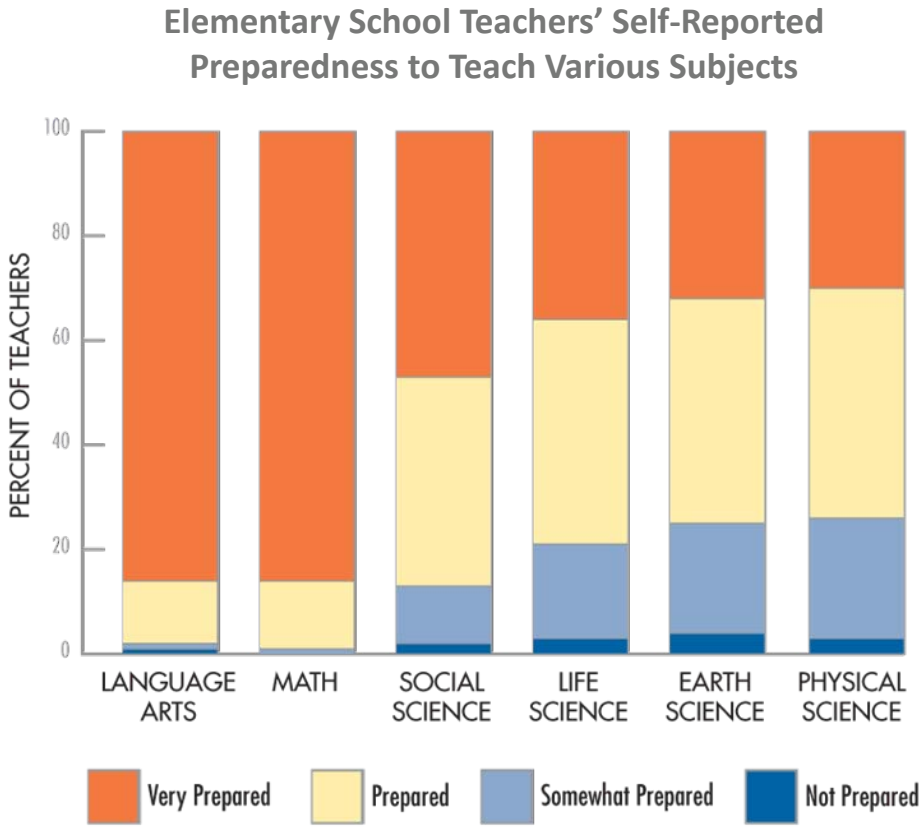
Principals in more affluent schools were more than twice as likely to report having launched science initiatives over the past 5 years than those in the state's poorest schools.

Elementary Principals Reporting Significant Science Initiatives in the Past 5 Years, by School-Level Percentage of Free and Reduced-Price Lunch



Conditions for High Quality Science Teaching are Rarely in Place

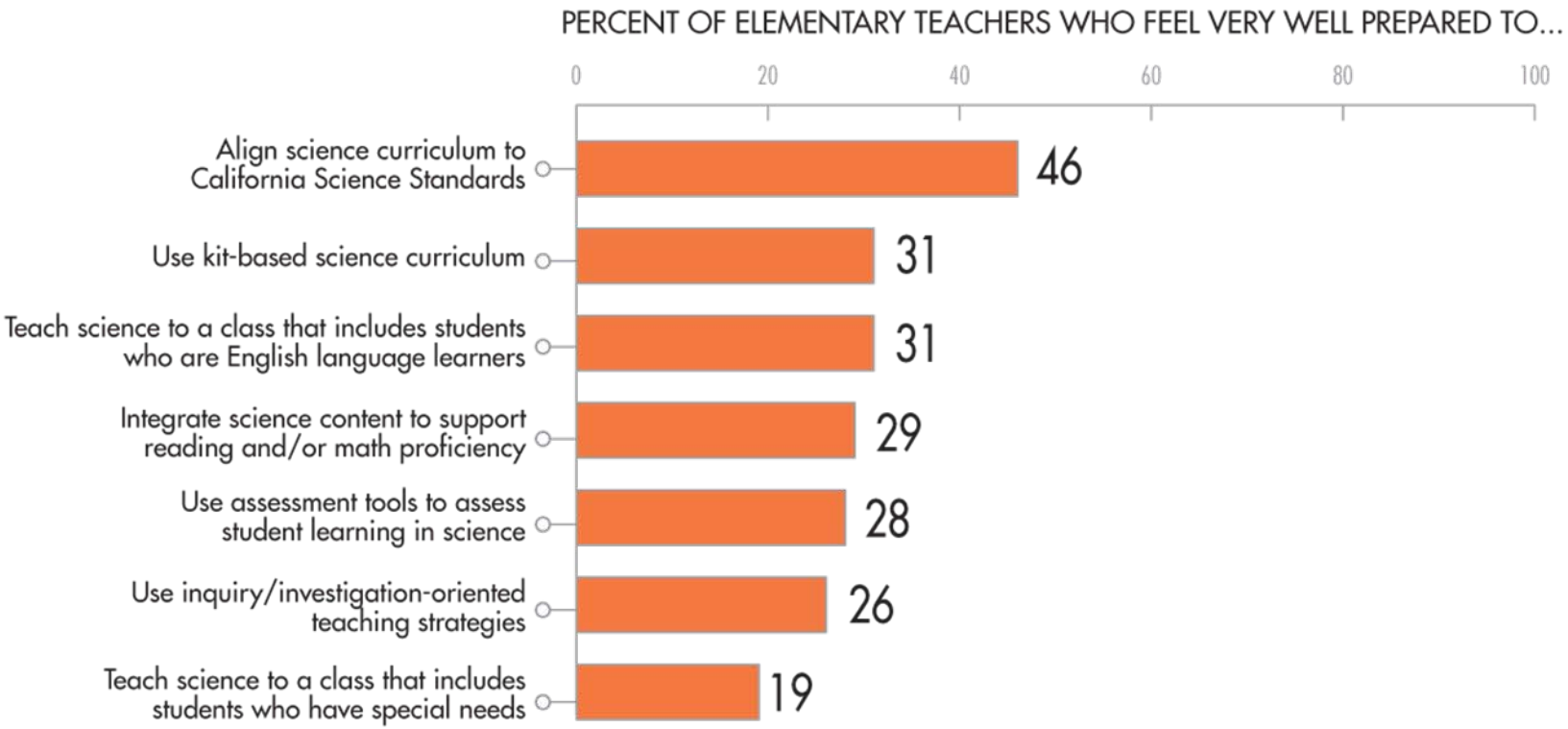
Elementary Teachers Feel Less Prepared to Teach Science…



Only about a third of teachers feel very prepared to teach the subject.

…and Less Prepared for Activities Central to High Quality Instruction

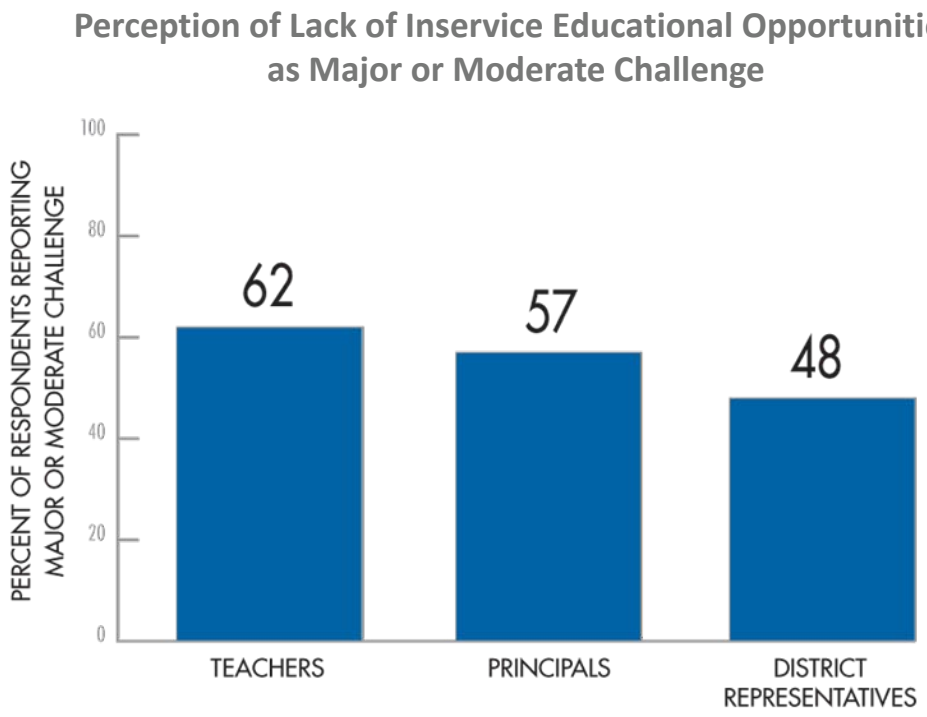
Elementary School Teachers' Self-Reported Preparedness in Specific Science Instruction Activities



Yet Little is Being Done to Support Teachers

- 85% of elementary teachers have not received any science-related professional development in the last three years.
- Nearly two-thirds (62%) identified the lack of professional development as a major or moderate challenge to providing science instruction.

Lack of District Support for Professional Development



- In contrast to the teachers' opinions, less than half (48%) of district representatives viewed the lack of professional development as a challenge.
- It's worth noting that fewer than 21% of districts surveyed reported that they provide science-related professional development to elementary teachers.

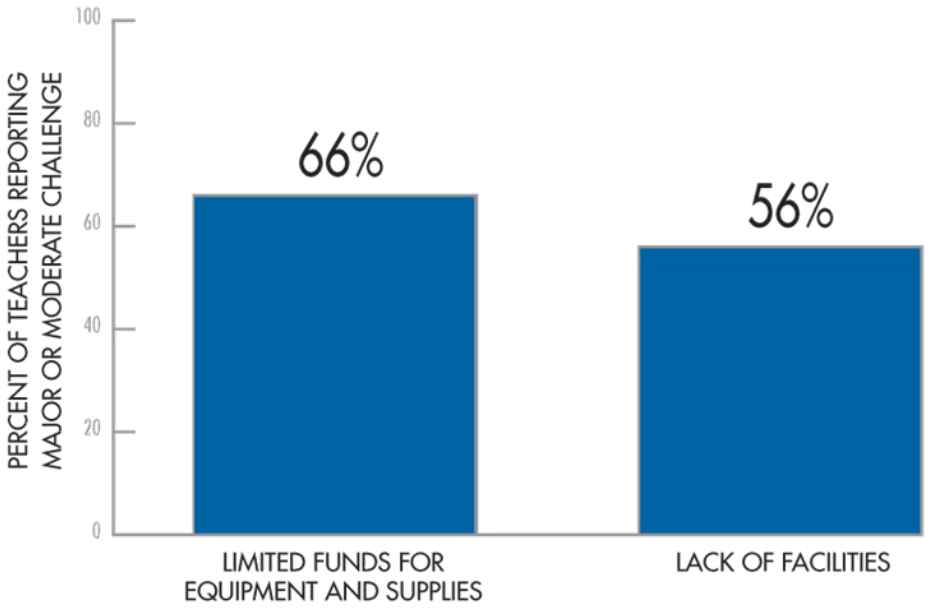
Little Infrastructure Support for Science Education

Lack of Staff Dedicated to Science

- More than 60% of districts have no district staff dedicated to elementary science.
- 75% of elementary schools do not have access to a science specialist or coach.

Resources for Science are in Short Supply

Common Obstacles to Elementary Science Instruction: Limited Funds and Lack of Facilities



- Two-thirds (66%) of teachers say limited funds for equipment and supplies presents a major or moderate challenge to providing science instruction.
- More than half (56%) say the same about a lack of facilities.

Quality Science Education is Possible

Our research found that the following can make a difference:

- Curriculum that engages students in the investigation and doing of science
- Time for teaching
- Well-prepared teachers
- Access to support and resources

Quality science education requires:

- Commitment
- Expertise
- Partnerships
- Resources

Recommendations

For state policymakers:

- Immediately review and revise the accountability systems that are driving science education out of California's public schools.
- Restore a full and balanced curriculum for every student, starting by including science in the elementary grades.
- Establish adequate resource allocation and support systems to ensure that students have the opportunity to participate in high-quality science learning experiences.

For local policymakers:

- Increase the time students spend in the study of science.
- Increase support for teachers to teach science by providing appropriate materials and space, professional learning opportunities in science pedagogy and content, and access to science learning expertise.
- Examine flexible and varied uses of time and space to support deep and relevant engagement in the practices of science.
- Build on successful models of public entities partnering with science-rich education organizations to strengthen science learning opportunities for students and teachers.

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Partners in the project include:

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