



Redesigned High Schools for Transformed STEM Learning

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Evaluation of STEM Schools

- NSF-funded evaluation of 10 STEM schools in North Carolina
- All are inclusive – but three different models
 - Re-designed high schools
 - Early College High Schools
 - New Tech Network
- Do innovative learning environments help students become active STEM learners with the capacity to think critically and solve real-world problems?

STEM schools

- Supported by North Carolina New Schools (NCNS), a private-public partnership
- Small schools
- Guiding principles
 - Personalized instruction
 - Emphasize connections across fields
 - Collaborative group work
 - All students prepared for college/careers



STEM high school – group design

Implementation

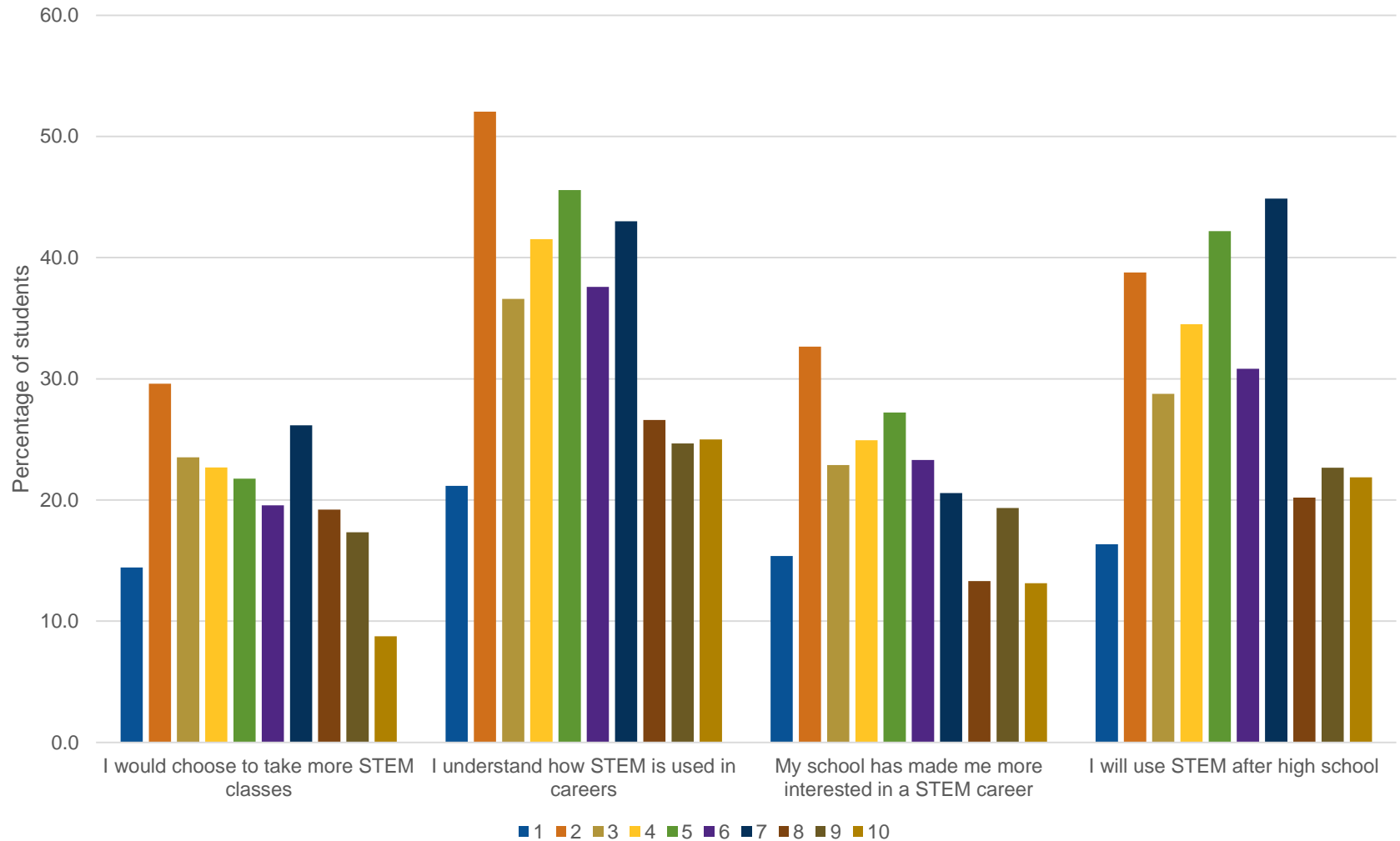
Staff in all schools believe that project-based learning and personalized student-teacher interactions are key elements of their reform

Analyses show schools had consistently positive ratings in classroom culture and student-teacher relationships

Analyses show schools varied in their use of project-based learning – some project-based learning was not rigorous

Student survey shows school differences in attitudes about STEM

Student STEM attitudes, by school



Why so much variation in STEM attitudes?

- Schools chose to be “STEM schools”
 - Each school may define it differently
 - Each may have had different motivations for choosing STEM
- Sustainability challenges
 - Leadership changes and teacher turnover
 - Challenges in forming partnerships with businesses and universities
 - Changes in funding/support from external sources

Why so much variation in student attitudes?

- Instructional factors
 - Teacher experience
 - Teacher professional development
 - Rigor of project-based learning
 - Use of technology
- Student factors
 - Poverty level
 - Student and parent motivation

STEM schools do have an impact

- Compared to similar students in traditional high schools, students in STEM schools are more likely to report that
 - They were more interested in pursuing STEM courses
 - They believed their school was helping them develop skills and understand steps needed to pursue college and careers.
- Compared to matched students in traditional high schools, students in STEM schools
 - Had higher rates of passing advanced math and science classes
 - Were more likely to take classes for potential college credit
 - Were more likely to graduate