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TOPPS

TRAINING & OUTREACH PROGRAMS IN PLANETARY SCIENCE
INSTITUTE OF METEORITICS, UNIVERSITY OF NEW MEXICO

Fun is not enough – The role of universities in encouraging middle school students to consider technical careers.

Univ. of New Mexico PACE

- Target - For middle school students in NM-MESA, in schools with high minority enrollments.
- Goal - Reach large numbers of students who still have to decide about college prep in high school.
- Method - Class visits, activities, and a field trip including running our electron microscope. Students meet undergrads, grad students, technical staff, and faculty. Teacher training component in activities and student attitudes vs. reality.
- Over 2,000 participants during the first two years of the program.

Evaluation - understanding what the students think.

- Gender Attitudes – Middle School Students
  - 84% in pre-tests and 86% in post-tests, agreed with the statement that “scientists can be either men or women.”
  - Most students also think minorities can be scientists or engineers.

This surprising result is a tribute to efforts to portray women and minority scientists and engineers by many agencies, including NASA. *However, students do not think they themselves can do it!*

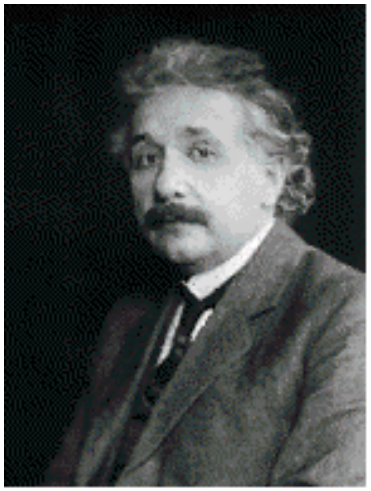
Student Attitudes – Middle Schools, Albuquerque, Socorro

- Middle School Students:
- >50 % agree or strongly agree: “I could be a professional athlete if I wanted to”.
- <35 % agree or strongly agree: “I could be a scientist if I wanted to”.

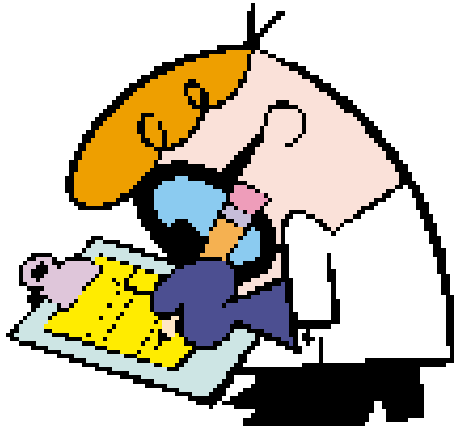
- However:
- U.S. Professional Athletes: 3,500
- U.S. Scientists and Engineers: 4,000,000
- There are 1,000 times more technical jobs than jobs as athletes in the United States!

Misconceptions about Science and Scientists

- "Scientists are weird, wear strange clothes, are geniuses at math, and are certainly not like people I know."



Albert Einstein
Culver Pictures, Inc.



Dexter

How to interest students in science and technology careers?

- Address science and math misconceptions
  - It is normal to struggle at times, and help is available.
  - Being brilliant at math is helpful, but is not required.
  - Scientists are normal people.
- Address career and college finance issues
  - Technical careers are financially rewarding.
  - College scholarships and student employment are available to most students.
  - In science and technology fields especially, college students (undergraduate and graduate) are well paid in jobs that are often related to their interests.

School visits establish rapport

Activities and teamwork build confidence

Learning how scientists think

Yes I can run an electron microscope!

“I can do it!”

Training Teachers to reinforce the message

Conclusions

- Four essential components for encouraging students to consider a technical career, and to overcome common misconceptions:
  - **Understand the message**: *All students can earn scholarships and pay for college, math can be learned, working in science is fun and well paid, scientists and engineers are people like you!*
  - **School based programs like NM MESA** (deliver and repeat the message, make it fun, immediate rewards)
  - **University and Laboratory programs** (provide role models, validate the message, share the excitement)
  - **Teacher training** (Learn how to reinforce the message).