Detroit Area Pre-College Engineering Program (DAPCEP), founded in 1976 to provide STEM classes for Pre College students in Southeast Michigan.

DAPCEP offers high quality education in classes in Detroit Public Schools, on Saturdays at participating universities and industries sites and residential programs at universities.

DAPCEP received its first NSF grant in the 1980’s.

DACPEP was awarded its first ITEST grant in 2002, awarded a renewal grant in 2005 which concluded in 2009.
Both ITEST Grants
120 students, 60 seventh grade students and 60 ninth grade students.

The evaluation criteria for both grants included:
• Focus groups for parents and students
• Pre/post surveys for parents and students
• Pre/post class assessments for students
• Parental workshops
• Mailed and online surveys
• Teachers interviews

The students in the ninth grade in 2003, graduated from HS in 2007 and the students in seventh grade in 2003, graduated from HS in 2009.

The students in the ninth grade students in 2006 are currently in the 11th grade and the seventh grade students in 2006 are currently in the 9th grade.
Strategies to Stay In Touch

• Pizza Parties
• Seminars
• Website/ UTube Posting
• Mailed and emailed surveys

Longitudinal Needs

Another strategy of acquiring data could include utilizing one or more of the social networking applications currently used by students. We could possibly find out what our students are doing, where our students are; get current their contact information and birthday data; etc.

We should stay in touch with student and their parents. Examples would be to send a birthday card or a holiday greeting. If the family moves, a forwarding address might be provided.
Parental Involvement
Innovative Technology in Science Inquiry Scale Up (ITSI-SU)

For sample activities visit:

http://itsi.portal.concord.org

Principal Investigator:

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Innovative Technology in Science Inquiry Scale Up (ITSI-SU) is a five-year project which will reach three times as many teachers as its predecessor ITSI in three years.

- ITSI-SU will reach 264 teachers over 3 years.
- Experienced teachers are selected and trained to be master teachers for the final 2 years.
- Certified trainers will continue to recruit teachers with a fee-based model after the project ends.
- Exemplars will be freely available from the ITSI-SU website.
• **Teacher training** is extensive with workshops over the summer, face-to-face meeting and online courses.

• Teachers are also part of an **enriching online educational community** where they share their work which is peer reviewed by project staff, site directors and other teachers.

• The project website provides **templates** with rubrics for creating and **customizing** activities.
ITSI-SU provides activities in earth, life, and physical sciences for grades 3-12.

Protein structure – From DNA to proteins

Introduction/Discovery Question

This activity will focus on how information stored in DNA is read by the cell and used to build proteins that the cell needs.

What is so important about DNA?

DNA is a long molecule found in the nucleus of every cell of all living organisms. DNA has several functions: storing and copying genetic information, passing it to the next generation and supporting genetic variability. Every living cell can translate information stored in the DNA into a sequences of amino acids in the proteins made by the cell.

Collect Data

Explore DNA by highlighting different sections of the DNA fragment.

1. Examine the 3D model of DNA. Use the buttons below the model to highlight different features of the DNA.
2. In addition, you can rotate the model by placing the cursor on the DNA and holding down the left mouse button and dragging it.
3. Find a view that shows a view allowing you to see how the nucleotides from one DNA stand pair up with the nucleotides from the other stand. Describe the nucleotide pairings that you see.
Meeting Special Needs

States offer a diverse range of students including urban and rural districts with an emphasis on low-income, minority populations. Each state has unique and different needs and will be able to create and modify activities so that they can meet their own objectives and standards.
Data Collection

• All students and teachers enroll as members.

• Teachers and students can view reports of student work.

• Student data persists after logging out. Teachers and students can view all work at a later date.

• Teacher customizations of exemplar activities are peer reviewed by fellow teachers.

• We monitor:
  ~ Student and teacher use of activities
  ~ All changes from original exemplars by teachers
  ~ Responses by students
Longitudinal Data Collection

• If a 10% increase for students entering the work force was reported, what threats to validity should be addressed?

• What would be persuasive results from a 10 year study?

• How do you design the study?
  ~ size and length
  ~ random tracking
  ~ sampling rate
  ~ stratified study
Robotics: Fundamentals of Information Technology and Engineering

Randal August
Academic Director, Lowell Institute School, Northeastern University  Boston, Massachusetts
The Project – Cohort 3

• Comprehensive Project
  – Teacher Professional Development
  – Student Outreach
  – Four years (including 1 year no cost extension)

• Successes
  – Trained 65 teachers in 7 school districts
  – Outreach to 220 inner city students (practicum)
  – After school programs involving over 1900 students
Program Breakdown

• Summer Outreach
  – One during first year
  – Two per year starting year 2
  – Five days long, 5 hours per day

• After School
  – Average 20 per year
  – Typically 12 weeks long, 1 day per week
  – Two hours long
Data Collection

• Basic Demographic Questionnaire
• Content Knowledge Survey
  – Based on MA State testing requirements
  – Augmented with Engineering Design questions
• Satisfaction / Attitude pre and post Surveys
• Observational Protocol (RTOP)