



Building Self-Efficacy: How MentorPower works

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*Listening.
Learning.
Leading.*

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This comes out of an attempt to put together a proposal to evaluate MentorPower for NSF. Proposal will be submitted in 2007. If funded a study based on these ideas will take place in the 08-09 year.



Does MentorPower Work?

- Yes!
 - 100 % Graduation Rate from HS
 - 85% go on to post-secondary education
 - 50 % of those to scientifically oriented careers
- Compare to national norms for
 - African Americans: 55% Graduation, 23% College Ready
 - Hispanic: 53% Graduation Rate, 20% College Ready
- MentorPower last year was 75% African-American, 15% Hispanic

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These are National Averages, New Jersey does better than the national average



Fun with Numbers

- New Jersey Norms:
 - African-American: ~69% Graduation, ~26% College Ready
 - Hispanic: ~64% Graduation, ~22.5% College Ready
 - (Calculated by adjusting multiplying national norms by 89/72 ratio of New Jersey to National graduation rate, and 45/40 ratio of New Jersey to National College Ready rate.)

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Adjusting National Averages for State Norms.

NJ does not report graduation and college ready rates broken down by race (at least for the 2003 data on which these figures are based). The adjustment is a bit naïve in that it does not take them into account.



Local Comparisons

- Trenton Central High School:
 - Graduation Rate: 72.3%
 - Postsecondary Education: 50.5 %
- Lawrence High School
 - Graduation Rate: 94.4 %
 - Postsecondary Education: 84.3%
- Ewing High School
 - Graduation Rate: 91.4%
 - Postsecondary Education: 74.2%

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From NCLB Report Cards

Note: Even though TCHS students make up over 50% of MP class, MP stats look more like Lawrence HS stats.

In other words, MP is helping make up the gap due to parental education, peer group, and income.

The numbers from Trenton HS are higher than expected and may include returning adult students in the Daylight/Twilight program.



Why Does MentorPower Work?

- Hypothesis 1:

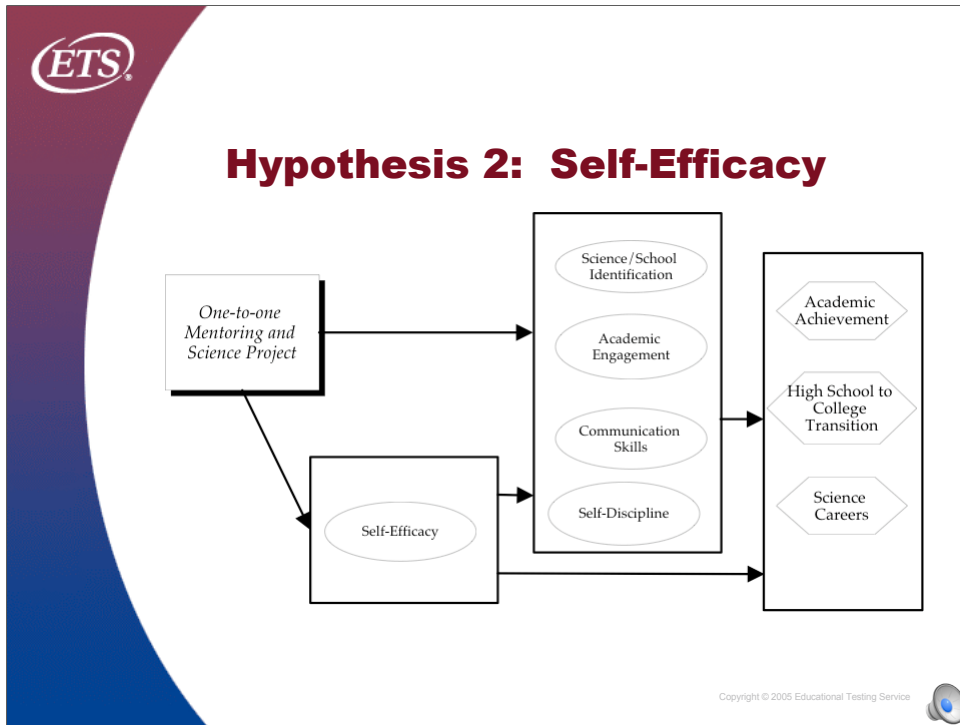
Maureen Quinn is a saint,
and a miracle is occurring.

- Unfortunately, this is a theological
and not a scientific hypothesis

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Not a scientific hypothesis, can't think of a way to falsify it!



MP directly raises Self-Efficacy (see below)

Increased Self-Efficacy and the MP program also increase

- 1) The degree to which the student self-identifies with Science as a career and staying in school to earn a degree.
- 2) How engaged the student is with school, schoolwork and independent learning opportunities
- 3) The students communication skills
- 4) The student's self-discipline

These factors taken together bring about the results we care about:

- 1) Good grades in school
- 2) Graduating from High School, getting accepted in college, and actually going to school
- 3) Choosing careers in Science, Technology, Engineering and Math (STEM Careers).



What is Self-Efficacy?

- *Self-efficacy is the belief that one has the capabilities to execute the courses of actions required to manage prospective situations. Unlike efficacy, which is the power to produce an effect (in essence, competence), self-efficacy is the belief (whether or not accurate) that one has the power to produce that effect.*

– Wikipedia

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The Wikipedia article on self-efficacy is a good starting point for learning more.

I have high self-efficacy in my computer skills. That means rather than accepting that I can't do something on my computer, I will spend a long time searching the internet to try and figure out exactly what I need to do (even when I should probably just give up and let Word format my document the Microsoft way instead of my way).



Self-Efficacy vs Self-Esteem

- Only Self-Efficacy in skills one thinks of as valuable contributes to Self-Esteem
- I have low self-efficacy in climbing and working on ladders, but that does not contribute to my low self-esteem
- Many African-American and Latino HS students (particularly males) have low academic self-efficacy, but high self-esteem.

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Self-efficacy is often confused with self-esteem.

Raising self-efficacy raises self esteem to the extent that the self-efficacy is in a valued skill.



Consequences of Self-Efficacy

- People with high self-efficacy see setbacks a challenges to overcome rather than obstacles to be avoided!
- People with high self-efficacy in science and math go into those kinds of careers at much higher rates
- Self-efficacy in math was as predictive of performance on a math assessment as was general ability!

– Pajares -- Self-Efficacy Lecture

<http://www.des.emory.edu/mfp/efftalk.html>

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First point is very important for careers in science, which is all about overcoming challenges.

Self-efficacy is more predictive of career choice than ability.

Pajares web page is a source for much of this talk and a very useful resource (and a primary source for the information in this talk.)



4 Ways to build Self-Efficacy

- Mastery Experience
 - The MentorPower Project!!!!!!
- Vicarious Experience
 - Peer Groups
- Social Persuasion
 - Much easier to decrease than increase using this method
- Physiological States
 - Stage Fright

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Maureen Quinn's divine inspiration was to build a program that works on the primary way of building self-efficacy, the MP experience!

If your peers tell you "Math is hard", and Jimmy Neutron tells you "School is an irrelevant snooze-fest" then you are going to believe it.



The Mastery Experience

- Success raises self-efficacy, failure lowers it.
- MentorPower project designed to give success in:
 - Science
 - Community involvement
 - Public Speaking/Communication
(Professional Visit, Teaching, Presentation at Fair)

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To raise self-efficacy, have student successfully complete a project!



Erik Erikson Quote

Children cannot be fooled by empty praise and condescending encouragement. They may have to accept artificial bolstering of their self-esteem in lieu of something better, but what I call their accruing ego identity gains real strength only from wholehearted and consistent recognition of real accomplishment, that is, achievement that has meaning in their culture.

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(Quote predates formal study of self-efficacy by some decades)

Quote taken from Pajeres web site.



Ensuring a successful project

- Set realistic goals
- Provide resources
 - All of the mentors together know an awful lot about an awful lot of things
- Provide scaffolding for self-efficacy, time management, project planning and other skills the mentee lacks

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Lean on experience of Mentor Power staff.

- 1) What projects are likely to succeed.
- 2) How to find resources.
- 3) Steps for project plans, and other mentoring skills



Vicarious Experience: The Mentor Power Peers

- Role Models and Peers:
 - If they can do it, so can I!
- Mentor Power provides an alternative peer group
 - Values Math and Science
 - Values Academic Success
 - Values Service to the Community

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Mentor power moves students from general peer group:

- 1) Does not value academics
- 2) Thinks Math and Science are weird

Not to mention keeping them away from very negative values of gangs.



Social Persuasion: The Mentor's Role

- Praise is a slight positive
- Criticism is a sharp negative!
- Encouragement can help mentees get over the hump
- *The fact that the Mentor--an unrelated adult--is there for the Mentee week after week is a very strong form of social persuasion*

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Just showing up every week fills this role!

Furthermore, may have to supply a little bit extra enthusiasm if mentee gets “stuck”

May be other social forces in the Mentees life. If you are having problems talk with the MP staff who can find out what's up.



Physiological States: Getting over Stage Fright

- Physiological symptoms of nervousness (stage fright) can lower self-efficacy
- Practice in such situations reduces this effect
- MentorPower provides three such opportunities:
 - Expert Visit
 - Teaching in front of a classroom
 - Poster Presentation
- Support by Mentors and MP staff ensure success

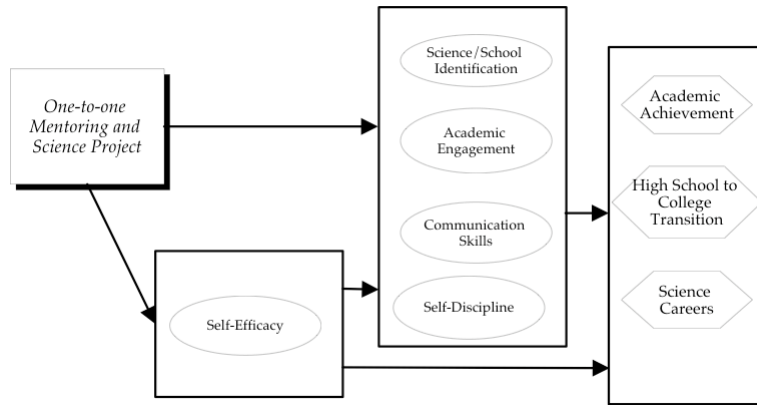
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This is the least important of the four, but MP still provides support!



Hypothesis 2 Revisited



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To get to the valued goals on the right, student has to overcome a lot of obstacles. Self-Efficacy helps them overcome the obstacles.



Hypothesis 1 Revisited

- Lots of anecdotal evidence to support this hypothesis
- Tony and Ronald are saints, too!
- And so are all of you! Go out and perform miracles.

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Students come back all the time, and write letters years after telling about how important the MP experience was in their lives.

Maureen, Tony and Ronald have made a difference in a lot of peoples lives.

YOU CAN TOO!

Be a mentor, or donate to Mentor Power.