Maps of Inquiry

“Fortune favors the prepared mind.” Louis Pasteur

Schwartz, Bransford, and Sears have created a map of kinds of expertise.

- Some are experts at specific repetitive tasks (e.g. fast touch typists, chefs who prepare only one kind of food, place kickers on a football team)
- Some are experts at complex dynamic tasks that require responsiveness and innovation (scientists, emergency physicians, schoolteachers)

**WHICH KIND OF EXPERT DO WE WANT TO PRODUCE?**

Characteristics of the upper right hand corner

- Self-checking behaviors, thoughtfulness, metacognition
- Realistic self-assessment; a match between confidence and competence
- Ability to define questions and seek answers
- Awareness of circumstances, surroundings, and variables
Fostering Adaptive Expertise

Expertise is not static. People learn. Ideally we want skills learned in one arena to transfer to other arenas (e.g. skills learned in 5th grade should transfer to high school or maybe even to the real world)

There are multiple definitions of transfer:

1. "The degree to which a behavior will be repeated in a new situation." This requires skills in "sequestered problem solving."

2. The demonstration of appropriate but modified responses in new contexts." This requires "preparation for future learning."

**WHICH FORM OF TRANSFER WILL BE MOST USEFUL?**

Schwartz, Bransford, and Sears, (2004):

"We suppose that an important way to foster innovation is to provide students with opportunities to be innovative and interactive...cultivating innovation and inquiry."

Unfortunately, most assessments are based on sequestered problem solving.
Authentic science and inquiry is hard to reproduce – *even for scientists!*

Our challenge as educators is:

1. to reproduce it closely enough that our students understand and appreciate it,
2. to do it in a way that fosters learning of the core concepts at the same time,
3. and to do it in the time we have available.