

# Science and Math Teaching and Learning

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## Introduction

There are a variety of new educational approaches that have been developed in order to improve on traditional ways of teaching and learning science and math. I believe improving upon the current state of science and math education is important, and hence, that it is necessary to inquire into these approaches. To do so, I read about and gained practical experience related to these new approaches as well as contributed to them through reflection on their related pros and cons.

## Goals

- Support the open ended transactional approach to science available on Serendip. <http://www.serendip.brynmawr.edu>
- Update the informational links on Serendip relating to interactive learning. [http://www.serendip.brynmawr.edu/sci\\_edu/](http://www.serendip.brynmawr.edu/sci_edu/)
- Create a new resource on math education.
- Aide and participate in the three Summer Institutes for K-12 teachers that encourage discovery-based learning.
- Create summaries and evaluations of these Institutes.
- Read papers and have discussions with my research partners about issues in science and education.



Courtesy of <http://www.alice.org/>

## Implications for Education

### *Computer Science Institute (Haverford College)*

<http://www.serendip.brynmawr.edu/exchange/node/998>

- What is the difference between computing v. computer science?
- We can use computers like a telescope or microscope in the classroom.
- Web 2.0 provides an overload of information.
- How are women and minorities being drawn into computer science?
- What does accessible computing look like?
- Computer science as a way to develop problem solving skills.

### *Brain and Behavior (Bryn Mawr College)*

<http://www.serendip.brynmawr.edu/exchange/node/1000>

- The traditional scientific method is linear, it's necessary to think of it in terms of loops.
- Our brains are not simple input/output engines.
- Teachers are brain surgeons.
- Is disinterest the beginning or the consequence?
- Failure is success. It's a process of getting it less wrong.
- What is the role of the I-function?
- Skepticism is needed in order to progress.

### *Science and a Sense of Place (Bryn Mawr College)*

<http://www.serendip.brynmawr.edu/exchange/node/1002>

- Our location in our self, city, state, country, world, and universe is significant
- Understanding our location in these places can create knowledge of our surroundings.
- What does it mean to have guided inquiry based learning?
- We can bring neighborhoods closer to the students through watershed education.

### *Group Discussions*

<http://www.serendip.brynmawr.edu/exchange/node/583>

<http://www.serendip.brynmawr.edu/exchange/node/572>

<http://www.serendip.brynmawr.edu/exchange/node/588>

<http://www.serendip.brynmawr.edu/exchange/node/584>

<http://www.serendip.brynmawr.edu/exchange/norty>

<http://www.serendip.brynmawr.edu/exchange/brainstories/dobbs>

<http://www.serendip.brynmawr.edu/exchange/node/581>

- We can work together in order to get it less wrong.
- Our own perceptions and experiences will alter the way we see things.
- Acknowledging others' stories will contribute to our own.



Courtesy of [http://serendip.brynmawr.edu/local/suminst/ssp07/watershed/IMG\\_0028.jpg](http://serendip.brynmawr.edu/local/suminst/ssp07/watershed/IMG_0028.jpg)

## Conclusion

<http://www.serendip.brynmawr.edu/exchange/node/997> , <http://www.serendip.brynmawr.edu/exchange/node/1004>

At the beginning of the summer I wrote a starting paper that addressed what I felt the strengths and weaknesses of science and math education were. I realized that I still believe that teacher preparation is important, there are better ways of approaching science and math, and that students are ultimately accountable for themselves. I am left asking myself:

- What does effective science and math teaching and learning look like?
- How can people be reached as individuals in education?
- What is being done to prevent resistance to science?
- How can we make students feel comfortable to fail, explore, and challenge?
- What has to be done for students to understand constructing their own understanding is key?

## Future Plans

There are many ways of teaching and learning science and math education. What I plan on exploring this year is what those ways are and which ones have been more successful. I am hoping that through this experience I will be able to create techniques that will help my future students.