End of Day Wrap-Up Session Notes – 6/9/2010

What would it be nice to know more about in relation to climate change and tipping point for further research?

- Nice to know more about programming at the symposium – programming the NXT workshops
- In terms of research – as children develop what tools are appropriate for engineering design. What are the age appropriate tools and techniques we should be teaching for engineering design.
- Training teachers for introducing Lego/robotics/engineering into the classroom. What is the length of time should this training include? What methods should you use? What are good strategies for engaging these teachers?
- CEEO research pertaining to relationship between subject matter knowledge and following teachers adoption (note Morgan's research in follow-up).
- Differentiating instructions and robotics particularly for readiness level and how to manage wide range of students at different levels (typical range of student's ability)
- Little information from Lego about technical specifications about devices (efficiencies, tolerance)
- How can teachers promote preserving curiosity, willingness to take a risk, and not just about the grade. What has our educational system produced so that kids in college are not willing to take risk? Is there curriculum or teaching styles that keep students thinking and risk taking?
- Are there different ways of expressing planning and other ways of helping? Are there different ways of pulling out planning (manipulative, drawings)? What are modes so barriers go away?
- What are parents and administrative perceptions and understanding of how and why these tools are used and how to support/reinforce this learning at home? (Use tools with open house and faculty meetings)
- What are the longitudinal effects of including engineering in K-12: does it help or hinder? Will this create more engineers?

More resources to teach us how to build. The biggest stumbling block for teachers to accept this whole process is how to learn how to build.

Suggested resources:

Fred Martin's The Art of Lego Design – for older material starting material

A free 8 week course for RCX & NXT tutorial – CMU's

LegoEngineering.com search 'Constructopedia' (actual term?)

NXTprograms.com

Tipping point misinterpretation by several about pertaining to climate change specifically from reading

Tipping point understanding, several interpretations, and how is it recognized? The "eureka", the look on a kids face is how it is recognized. How do we make the students get there? That's our craft (as educators), isn't it? There's not a pamphlet – but how do you get to those "ah-hah" moment for those students? How many other students will get to that moment the same way? The process, as a teacher, is difficult to know how to frame context or lesson to be beneficial to the most students. The point is for teacher to be mindful of is that just because a kid doesn't understand something doesn't mean they can get there.

We could look at it the other way, teachers could learn other methods (such as SAM) to present material in several ways so they can catch more students. Also, create an environment so that kids are free to brainstorm and give ideas without penalties for being wrong.

Tipping point is also a complex system. That should be understood as best it can be to benefit the teacher and the students.

> Resource recommendation: Physics for Future Presidents

> Resource recommendation: NESEA