

Systems: The Art and the Science

Christy Folsom

I have been thinking a lot about systems lately. My daughter was recently diagnosed with diabetes and my vocabulary has suddenly expanded to include such terms as Type I diabetes (juvenile onset, insulin dependent), sharps (not just needles, but the non-needles used for blood testing), and blood sugar levels. Scientifically, insulin works quietly and efficiently in our bodies opening the cells to let in the sugars resulting from processing food and transforming it into energy. We do not have to think about it or talk about it--until it is missing.

Now insulin is at the center of our conversations. Erin is learning how to test blood sugar levels, mix the proper amount of insulin, and recognize the curves of high and low blood sugars as they peak and valley throughout the day. She is becoming acquainted with the principles of carbohydrate, protein, and fat consumption each of which take various amounts of time to process. Properly matching insulin injection to the various food processing times is critical to having health and energy. Right now Erin is learning the scientific principles underlying diabetes care. With more experience she will develop the art--feeling and dealing with the highs and lows.

The system of teaching and learning has some interesting parallels to the system that allows us to transform food into energy. Both include the components of science and art. Both require critical mechanisms that can be taken for granted. I recently visited a special high school program for students who, for a variety of reasons, need a project-based learning experience. The classroom included a fair share of students who would probably be identified as underachieving intellectual-creative gifted students. Each student was working on an individual project. Soon they would share their projects with an audience to fulfill the exhibition requirement for a Certificate of Initial Mastery, part of Oregon education standards.

Just as our bodies require the core substance of insulin to transmit the sugars through our cells to produce energy, successful project work requires that students use the core strategies of decision-making, planning, and self-evaluation to transfer their learning into projects that teach concepts effectively to others. Project-based work undergirded by planning and evaluation strategies is common in gifted and talented programs. Those of us in gifted education take the teaching of such skills for granted.

As I listened to the teacher give the students time to work on the papers that were due that day, I knew she was unaware of the specific skills which could help students organize their own learning and be responsible for their products. As I spoke with students about their work, it was clear that they had not begun their projects with distinct criteria in mind for evaluating their projects at the end. The strategies of self-organization were as missing in the classroom as insulin production in my daughter's body.

The individual art of a teacher--feeling and dealing-- is enhanced by knowledge of the metacomponents of teaching and learning. However, teachers in most classrooms have had limited access to the conceptual foundations more common in gifted education that greatly enlarge teachers' capacities. In other fields of education this lack of a knowledge base is being noticed. Lieberman and Miller (1978), leaders in school

reform, have said, “The knowledge base in teaching is weak; there is simply no consensus as there is in medicine and law about what is basic to the profession.”

What does this mean for the Conceptual Foundations Division of NAGC? I have cited only one example of the many principles of teaching and learning that teachers both in and out of gifted education need to know. There are many more. This newsletter has outlined several opportunities for members of the Conceptual Foundation Division to share with other division members. Yet, we must also share our knowledge with educators down the hall or across campus. Lauren Resnick (1987), noted for her work in thinking and reasoning, has said,

This process of making explicit the abilities formerly left to the intuitions of gifted learners and teachers is precisely what we need to establish a scientific foundation for the new agenda of extending thinking and reasoning abilities to all segments of the population.

Just as management of missing insulin involves both art and science, when teachers and teacher candidates are more fully prepared in the science of teaching and learning, the art of teaching will also increase. Teachers will then be able to help develop competency and confidence in a much wider range of learners. As we prepare articles for the web site, place our biographies and interests on the Internet, review books for the annotated bibliography, and consider how a new brochure can better explain the division’s message, let’s keep in mind how we might help energize the whole educational system with a shot of insulin.

References

- Lieberman, A., & Miller, L. (1978). The social realities of teaching. *Teachers College Record*, 80(1), 54-68.
- Resnick, L. (1987). *Education and learning to think*. Washington, DC: National Academy Press.

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