

Access to Information but the Gaps in Research Persist

Success

I have been in the field of science education for less than a decade. Yet in that time and probably before, I think that science teachers have shown excellence in communication. Teachers readily tell each other about resources and help each other find lessons and information. Most of the time, one has to ask for a copy of “such-and-such” lesson or to hear more about how something went in another teacher’s classroom, but science educators seem more than willing to share, especially *when asked*. I am definitely indebted to the teachers around me during my first years of teaching, who offered up every resource they had to me.

Furthermore, there never seems to have been a shortage of professional development in science content. For decades, companies have provided training, national and local conferences have been held and content workshops have been offered. Such an abundant offering would not exist without demand. Science teachers demand knowledge about science, and in order to get it they will give up weekends, or summers to intern in research labs, they might fly all over the world to help in field research or even try to shuttle off into space — all to learn science with each other, for each other and for their students.

When the Internet came on the scene, it seemed to become the choice forum for science teachers to exchange and access information. Like fish to water, they quickly made use of Internet resources and tapped into its potential for the education field. Someone recently suggested to me that perhaps the internet has come to serve three main benefits for educators: accessing information, enhancing teaching, and interacting with other professionals.

When I was in the classroom teaching cell reproduction (mitosis), I struggled with how to accurately convey the content coupled with maximizing student learning while addressing some of the major misconceptions precipitated by this topic. On the internet I was able to find video which could be paused or reviewed, and graphic illustrations created by a biology teacher and posted on his website. I used these sites to form the foundation for a Webquest which ended with an outstanding PBS Quicktime illustration of cancer. This led the way to some more traditional classroom exercises (Yes, I pulled out the out onion root tip slides!) which seemed to be enhanced by the more illustrative and more learner-centered web activity. As a whole, I thought it was a most powerful lesson, perhaps because it had the whole package from the internet to the hands-on and a lot in between which contributed to the needs of my students and my own professional development.

When I look at the resources available online and the consideration educators have paid to accurately convey material and support it in another teacher’s classroom down the road or around the world, I am so impressed and enthusiastic about sharing this information with those who can use it. It goes without saying: If you need a lesson on squid, let’s say, Google it and you got it. Better yet, in another browser window at the same time, if you have access to an online forum offered by a national organization, you can start an ongoing threaded discussion, finding out what works and what doesn’t. All this is before even tapping into the resources which surpass content. With the click of the mouse, you can tap into the knowledge of teachers who have been doing this for decades or those that have just entered the field. For whatever your purpose or need, you can find a science teacher to assist.

Vexation

Years ago, I started my second year of teaching high school science. My school district always held professional development days before the school year began. As a new teacher, I was so grateful for this time to get my act together and to interact with the other teachers before things got busy. At my school, each of these days began and ended with a faculty meeting. One of these mornings, on our way into the room, the faculty was instructed to pick up a handout which was an article on brain-based research. I skimmed the article before the meeting began, as did others. “What was going on?” I wondered. I knew about brain-based research from my certification program, when I also learned about and embraced constructivism. Nothing from the world of education research had ever infiltrated a faculty meeting before. Was the principal going to use it to start something? Or to question it? To investigate the idea’s worth in a

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faculty discussion? What would the other people in my department think? Would we design lessons together to see this instructional theory in action? My interest was piqued!

The meeting went on and on without any mention of the article or its topic. Right before we broke for lunch, as people were gathering their things, the principal said, “Oh, and I had you pick up a copy of an article on brain-based learning — I thought you might find something useful from it to use in your class this year, especially as we want to keep our test scores going up.” Meeting dismissed.

The obvious disconnect between the education practitioner community and the education research community troubles me. On one hand, we have the researchers. These people are occupied with questions relating to classroom instruction methods (brain-based learning theory, for instance), curriculum, logistics of schooling, etc. They seem to talk amongst themselves, know each other, keep track of each other’s research as well as offer each other feedback.

On the other hand are the science teachers. Science teachers are occupied with teaching on a daily basis (I often meet teachers who fill their summer vacation or their retirement with teaching-related endeavors), classroom management and NCLB-related assessments, etc. They give little attention to the science education researcher, and if they are exposed to any research at all, it is probably from scientist researchers in their content area.

I began thinking of the medical field as a good comparison to this entire situation during my student teaching days. The medical student graduates to doctor, who is urged to attend conferences. These meetings include not only the medical researchers who have been in the lab, but also the practicing doctors who are seeing patients who may potentially benefit from the information being presented. Both attend the same conference. There are presentations and discussions on both “cancer killing cells in the lab” and “a case study of one woman’s response to cancer” as well as “clinical trials reveal possible treatment for cancer”, all of which may subsequently be published in the same journal. Those in the audience (be they other researchers or practicing doctors) can voice their concerns about the research, acknowledge its worth, suggest alternatives based on experience or disqualify its utility. What if practicing doctors held their own separate conferences after they left medical school and never really listened to what the research at those medical schools was saying? What if they kept their knowledge status quo, or homogenized, without interference or challenge?

Based on the obvious disconnect between science ed research and science ed practitioners, one might think that teachers are satisfied with the status quo in their field. They are (rigorously) trained as teachers, some agreeing to a short, intense, payless period of time in which to gain certification. Depending on their training, they may be alerted to discrepancies and controversies in education research, actually witness a “pulse” or vital sign of the field. This easily flatlines, however, as the teacher is sequestered to their classroom, to their issues, and perhaps given the impression that no one, especially a science education researcher, would understand exactly or really what is going on there implicitly or explicitly or has any ground on which to say anything about it. After all, weren’t colleges only for learning about and teaching about what is useful for preservice teachers?

Furthermore, based on the obvious disconnect between science ed research and science ed practitioners, I can see that education researchers might perpetuate the disconnect. As a rookie on the research “team” now, I have to ask myself, why is the apparent disengagement from practicing teachers seemingly acceptable? Why do researchers stand by while their findings are misinterpreted and misrepresented, sometimes under the guise of professional development? Why has the inquiry-based method sat in the literature for almost forty years and veteran teachers learning of it now (in a variety of professional development sessions) are “so glad to learn about this NEW technique” which may have as many definitions as there are teachers? Why aren’t education departments at colleges the hubs of professional development for science teachers rather than just another spoke?

In the end, I believe I will have to reckon with these incipient ideas, to be a proponent of understanding and to properly assess and then lessen this researcher-practitioner gap. So how can I do this within the scope of my current position and what are the possible pitfalls I should avoid?