Technology, Philosophy, and Issues for Teachers

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Teachers - Welcome to your future!

So, you want to become a 21st century teacher! If you are going to teach, then there is one person that should be the top priority: the student. Over the years there will be many opportunities for teachers to "try new things out" both in teaching methods and in technology. The following essay will address some of the key points to keep in mind as you move down the path of your own professional development.

Students today are not only *expecting* to use technology – but are also demanding to learn *how to use* it better through the discipline you are teaching. They are expecting you to be the exemplar of 21st century teaching in content and practice. This can be a daunting task. Remember, if you are teaching 16 year olds, they have already witnessed ten years of books, teachers, and various curricula and as a result consider themselves experts in judging a learning environment.

So what will be new?

If someone knew the answer to that – would they not be investing in the stock market? However, there are themes that have been with education for a long time and that are likely to remain. Some themes involve the infusion of technology into the curriculum. Other themes involve understanding the role of the teacher and the learner.

Technology – accelerated change

It is clear that we are entering an age when technology can enable learning as never before. With breakthroughs still so new, we are still only scratching the surface on asking the most basic of questions. Each week we find new, brilliant breakthroughs in technology. This is most evident in technology "parts": processors, memory, bus speeds, bandwidth… all getting faster and faster and thereby allowing better integration of audio, video, speech recognition and more. Even now, "parts" created in tech labs are a hundred times faster than those currently available in the marketplace. Our world will change, and not in a matter of a decade but in a few years.

However, less evident is the progression of the "whole" of technology. The subtle integration of systems and communications: instant communication (via cell and internet messengers), live video transfer, web-casts learning and even student identity theft! Some contemporary theories postulate that the rate of technological change will plateau. Other views posit that there will be a need for dramatically increased socialization particularly

if technology increases alienation. In either case, tomorrow's teaching will not be as it was years earlier. Nor should it be.

Technology: Infusion vs. Use

For the last few years, the word "infusion" has been occurring increasingly in educational literature. How is this different from "use"? As an analogy, think of the infusion of technology as the application of a fulcrum for the leverage of learning. For example, students use an electronic discussion board in order to prepare and analyze a problem for later presentation. The purpose of the technology is to allow students in a commuter school environment to meet asynchronously to move the presentation forward. Can this concept work without the discussion board? Yes – but it would cut into time in class thereby changing course content and structure. Thus, this "use" is an "infusion" – a "new flavor" that is part of the "taste" of what is experienced. The "infusion" is an essential function of the class.

Whenever a technology becomes part of the fabric of the course and other alternatives cannot be substituted easily without disrupting the "flow" of the class, then it is infusion. Infusion is technology enabling a higher level of student activity in learning that better promotes transfer of that learning as a flexible adaptation. Many teachers infusing Web-CT or BlackBoard would be hard pressed to move to previous alternatives since the *kind* of instruction changes dramatically.

Infusing technology via a support website

The polling of students shows there is a clear, positive benefit from the use of a class-based student web support site. Student learning follows from the web-based study-guide materials, assignment details, PowerPoint lectures and more. Specific materials in and of themselves are not as critical as is a varied offering of materials. The point is to present multiple approaches to succeed with course material. You will find the student self-selects the best learning alternatives. This approach is strongly recommended to a new teacher – make your objectives exceedingly clear and post varied resources that help your student select his or her path to success. There are many ways to solve a problem.

Infusing technology via video-clip driven lectures.

Another infusion preferred by students is video-clip driven discussion. For example, when discussing the nature of Hinduism, present students a broad historical or social problem (such as "protest") requiring a solution. Many students might offer a solution involving the use of force. After some discussion, then show a brief clip from the award-winning movie *Gandhi* – the clip involving the non-violent protest at the British-operated salt-works. Afterward viewing the clip, the discussion with the class is much different. It is possible to draw parallels to other contemporary expressions of "protest" events for a deepening of student thought.

Infusing technology via posted e-lectures.

A third item is that if you use technology to present, summarize or review information then you can post this information for your students on the support website. Some teachers use PowerPoint lectures with great success, and posting the notes allows students an opportunity for more careful consideration. Some students prepare for an upcoming class by printing, reading, and bringing the notes *before* the class. Consider the many teachers you may have experienced who *only* spoke and seldom, if ever, used a blackboard. Is this the model for successful learning outcomes of the 21st century teacher? There is a great benefit to having to write things down and to make them available to students. Doing this reveals how difficult it is to make sense of information and how important it is to connect ideas together in a meaningful fashion.

Re-discovery of the teacher!

While teaching is one of the most difficult careers you can pursue, it can also be one of the most enjoyable. However, learning how to infuse technology in education certainly makes a difficult process even more challenging.

The last decade has shown some exceptional research disproving some of what we thought we knew as good teaching and learning practice. Brain, behavior and information studies have also validated other processes clarifying issues on memory, problem solving, knowledge transference, metacognition and the importance of cultural influences in learning. It is important to stay current with these findings since they can help you improve your students' outcomes.

Two highly recommended resources are:

> **National Research Council's Committee on Learning Research and Educational Practice. Specifically: http://stills.nap.edu/html/howpeople1/notice.html.**
>
> ***Brain Matters: Translating Research into Classroom Practice by* Patricia Wolfe.**

One profound example of how the new science of learning impacts the use of technology infused in a curriculum: Helping students become more aware of themselves as learners can improve learning transfer (asking and answering the question, "Who is it that actively monitors learning?")

As a consequence – incorporating in your instruction plan metacognitive (reflective) activities that actively involve students to think about thinking is helpful. In part, helping students learn means addressing a greater framework. Also, when engaged in metacognition, students are learning about themselves and misconceptions they hold. A statement made by a seasoned teacher (a colleague) may clarify this need for addressing a

student's internal dissonance: "It is good that a student has teachers of all types, since that is what the world is comprised of… (all types of people)."

The Teacher as skeptic!

Who are you? If you wish to be a teacher then you are probably much like other teachers. Findings show that one of the major traits of a teacher is skepticism. As teachers, we all live in the "house of reason" and teach our students not to accept anything without proper reason to do so. All disciplines follow logic and critical thinking in writing and in speech. Teachers exemplify this for students.

Consequently, as teachers our strong skepticism may ultimately be a weakness and one of which we should be aware in considering how we relate to non-teachers, particularly in reference to the application of technology. As skeptics, we are slow and deliberate before adopting new things. As we teach our students, we too wish to question and investigate thoroughly. We test until we are satisfied that the concept, process or thing measures up to expectations before we accept it. So how will we approach technology? Unless warranted, teachers have a tendency to question and remain skeptical. Likewise, we will stick with "tried and true" methods until convinced to change. Others may misinterpret our unwillingness to change as something else, and it is our responsibility to be clear to others regarding our skepticism.

The Teacher as optimist!

Again, who are you? Another key trait shared by teachers is optimism. After all, if a teacher cannot benefit the learner, then why teach? Subsequently, administrators, clerks, politicians and even students may perceive a teacher's strong optimism as a weakness. If teachers are "unrealistic" and "impractical" then perhaps a teacher's optimism must be balanced with methods used by non-teachers.

Both of these traits create teachers who are "skeptical optimists," resulting in a tension which is worth watching, for it is repeatedly played out in the educational arena. If you disagree, then identify your strengths. Consider – particularly with the infusion of technology – how your strengths may be perceived as weaknesses by others in the educational field who are not teachers.

> (A great reference addressing the traits of teachers is:
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> Successful College Teaching: problem-solving strategies of distinguished professors by Sharon A. Baiocco and Jamie N. DeWaters.)

Danger! Inadequate professional development!

Many teachers do not have adequate access to professional development to improve their competence for infusing technology. In these last few years of budgetary cuts, it may be the case that this will become even more severe for your future development as a

successful teacher. While efforts to change this are underway on a statewide and national level, it is wise to remain the captain of your own ship. Anticipate that the skill sets needed to innovate and execute with technology-infused classes will likely become increasingly more difficult. Creating a strategy for coping with inadequate resources for professional development will be necessary.

Isolation of teachers and disciplines!

Increasingly common in educational literature today is discussion on "silos." Recognize that teachers work in isolation from each other. However, a requirement of technology is standardization – which requires a meeting of the minds. Technology requires teamwork and shared systems. In terms of your discipline, you must work with others. In terms of the school, you must work with others. In the times of competing budgets, we must engender sensitivity to our students' success with the whole of their education and work together. As Benjamin Franklin illustrated about commitment, either we hang together or we will surely hang separately!

Ending with a personal note

Each of us has a path and seldom is it straight. As a teacher who left the teaching profession only to return some twenty-years later, my journey deepened my appreciation for technology in the role of learning. Infusing technology can make a significant difference. Perhaps my years away from the teaching profession have resulted in my giving increased value to speaking with students – particularly about how learning is best accomplished. In my efforts to help others learn, I have discovered that listening is one of the most important skills. In that spirit, your comments, suggestions, and reflections of your experiences with learning are most welcome.