A First Step for Technology Integration for Teachers

by Rena Cifarelli

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How do I begin to work with teachers on integrating technology into their diverse disciplines? How do I begin to form a relationship that allows them to express their fears about technology and trust in me to overcome those fears? How do I assess their technology strengths and weaknesses so I can help them to begin at a point where they are comfortable with the technology? These were the initial questions I asked myself as a high school educational technologist, who was beginning to embark with a group of four other teachers on an action research project.

I pondered these questions at the beginning of my action research project last fall, and stopped myself from going any further in my work until I had tried to answer them for myself. How would I like to be treated if I were in their shoes? Would I want personalized support since every English, math, science or history teachers may approach their disciplines in a different manner? Is there one way to approach each teacher? I had to be myself and understand that these teachers were taking new risks working with me and the new technologies for their teaching and learning. If I could remember to be sensitive in every stage of the integration this might help the integration process. Sensitivity is critical, particularly in assessing teachers. How could I acquire data that would help the process and keep the teachers comfortable?

With respect to an assessment tool, I began to struggle with deciding whether to create a survey, a profile, or an observation check-list. I started thinking about all the classroom observations that I had made on students and the decisions I have made in a split second based on these observations. Could this process work with teachers? I needed a beginning, though, a place for us to start. The assessment tool continued to bother me. It kept cropping up in my thinking. I began to create an interview, but what questions would I ask? I began asking myself questions that I thought might be helpful to the process since each of us were in different places with our technology development and our experiences were also just as varied. How could I get a snapshot of all of this exposure? I soon found myself outlining my own background with technology and before long it became a time-line, filled with the first event, the place, the people, the purpose, and the outcome. I felt this was just the sort of process that would be a good beginning for each of the teachers to begin their work with me. We could discuss where it all began for them. This would shed light not only on what experiences they had had but also on their likes, dislikes, and possibly their confidence levels with the different technologies.

A technology time-line on my life also seemed to be a good way to start my action research journal for this project. Where did it all begin for me with technology? I first traced back my thinking through school experiences. But that is not where I was introduced to the computer or first encountered the latest technologies that we are trying to integrate into our classrooms today.

It started at home with games. My Mom had bought a computer for her house and was playing games and doing her money management on a Mac LC. Next, my brother bought one for his home and when we spent a Christmas together at Mom's we started playing these interactive games, spending hours playing together. They were not typical arcade games. They required thinking and strategy as, for example, in the game of Risk. The next major holiday we shared, Mom turned us onto email. Since we all lived in different states, this became a mainstay of our communication. It was faster than the U.S. Mail in delivery, cheaper than a phone call, and with immediate response in feedback.

I quickly joined up with America On-Line the first year it became available and volunteered to be one of their on-line academic teachers. This allowed me a new experience with integration of technology into the academic process and allowed for me to cut down the monthly costs of having an internet provider. At that time for every hour that I was on-line in the academic area I was given two free hours of on-line time, which was utilized mostly during my summer hours. This experience furthered my learning with this type of technology. I began to do research on topics of interest for both my work and my personal interests. I explored the chat rooms, web sites, and some of the America On-Line special features. This helped me to understand what was starting to unfold in this new technology medium and what students had within their reach. In college, the computer was used as a word-processer for papers and other correspondence. I began working in the college's computer center, where I managed the card punch machines that students used for their programming courses. It was a joy helping others work on their programs and helping them learn how to operate the machines, more so then managing the equipment. Once I began teaching I was fortunate enough to have a computer in the classroom. It was an Apple II computer on which students played language games, drill and skill in math, and " Carmen Sandiego" to learn geography. Then I had the students develop a newspaper for an interdisciplinary unit that led them through the process of being a newspaper reporter, a radio disc jockey, and finally a television reporter.

It proved to be a powerful process for me to recall these experiences that have been tucked away in my memory, as they shed new light on current projects that I am involved in. This reflective experience has also helped me to recognize a developmental cycle that has influenced my work with teachers and students and made me aware how my comfort and success with technology influences my motivation and persistence.

My assessment tool, I found, was a comfortable way to begin my work with teachers. We started by discussing my time line and gathering input on their personal technology time lines. I was quite shocked with some of the facts that were presented to me. One of the teachers who with whom I had a close relationship and whom I had known for over five years, revealed that she used to be computer phobic. This revelation was such a surprise. I had installed her home computer five years previously and I did not realize her true feelings about this type of technology. I asked her about this phobia. She really did not have an answer except that she felt more comfortable with technology now and it is easier for her to talk about those fears since they were in the past.

More surprises were on their way. One of the teachers with whom I have had collegial time informed me about her experiences running Apple IIe computer labs in her early years of

teaching. She seemed to be a technology teacher before we had a title or position for such. Another teacher shared that his experience also began at home with game playing with his parents. He had technology experiences at their work place and in their home before he had formal experience with computers in school and in teaching. These revelations helped me see some patterns that were forming with these teachers. The teachers who were more comfortable and advanced in their use had begun their experiences earlier in their lives before they became teachers and also used the computer for a variety of purposes. The teachers who were more involved with technology, of course, were more comfortable and had more advanced skills; but, if there was a lapse in their time line that did affect their comfort level and their skill development. The constructing of the time-line and our frank discussion about it was an effective instrument that helped unravel the complex issues that can help or hinder technology integration. These issues are: comfort level, skill level, and the variety of experiences and purposes for use. After these time-line discussions I realized that this project would yield more than what we set out to do in our research. My experience with these teachers suggested that, no matter how close we were, a checklist, or a survey would not reveal what the time line provided in detail.

The time-line proved to be an excellent beginning for each of the teachers in the project. In the first meetings, I shared my own time-line as I took notes of the teachers' individual time-lines. I learned more about them than just their feelings about technology and their experiences with it. I began to understand what expectations they had of me and of the project as a whole. We set goals and expectations together. Each teacher had his/her own personal teaching style and each had different integration assistance needs. They were very comfortable beginning with the time-line.

By the end of this action research project I learned that each teacher approached the project differently but all seemed to have similar patterns within the process. It seemed that a similar pattern was occurring with each teacher and each time they went through the process with me. This cycle is as follows:

The Self-Conscious Learner

During the initial appointment ,when I begin to mentor the teacher on the technology task that helps accomplish the goal we have set, some of the frequent comments I hear at this stage are:

- "I don't know, this is the one area I am unfamiliar with"
- "I make these stupid mistakes like ..."
- "You know so much, I will never get to know all of this stuff."

The Teachable Moments

I demonstrate the process by my showing and explaining it first.

They then take over and apply what they are learning as I guide them.

They demonstrate with some guidance, as I reflect out loud about our collaborative thinking process of what is going on and why.

I either demonstrate again as they take notes or they walk through the steps as I take the notes.

The Classroom Application

Once the teacher is ready and has created the project far enough to demonstrate or apply in the classroom they let me know if they need me in the classroom for technical support during setup; for emotional support; or to co-teach along with them.

The Sharing, the Discovery, and Expanding Horizons

Once the event occurs several times in different classes successfully, the teacher often returns to let me know how it was integrated and expanded upon. The changes are often made based on repetition, comfort level, student learning, or a collaborative learning event that occurred for both teacher and students and how they all took it to a higher level. After their sharing they always finish by starting the whole process over. They have not only one thing they want to learn but usually two or three to add to the current integration that was just completed. The cycle is self-perpetuating.

Further Questions

What about those teachers that had a lot of experience before they started, the so-called "advanced user", did they go through these stages also? Based on my observations, each teacher (no matter what skill level or comfort level) went through the stages above and continued to go through the cycle time and time again throughout the research project. The only difference that seemed to appear for the "advanced user" was that sometimes they went through the cycle more quickly and with less assistance. But I have to emphasize that "sometimes". Each teacher brought a new list of technologies they wanted to learn about. The "advanced user" often requested tasks that were more complicated than the other teachers, which required research, testing, pricing, and other types of external technology coordination beyond the normal services we were providing inside the school or classroom.

Our research project focused on the questions of how we integrate technology into the separate content areas and its impact on student learning and teaching in those areas. From my point of view, the only thing that did not seem to be a factor with the technology integration was the content area that was taught. Yes, each teacher taught a different discipline but this was not an issue or a factor in how we approached the integration or how it impacted learning. I say this because each of the teachers went through the stages of integration. Each chose tasks and goals not only based on their content area, but on their individual preference, and the needs of their students. Some may have needed more or less help while others may have learned more quickly than others but none of these factors seemed based on their teaching discipline. In fact, the sharing of the process and the research started opening the teachers to communicating about interdisciplinary connections in their courses and how they all shared similar experiences with their learning and the student outcomes.

In summary, I have learned that using a personal technology time-line was an effective place to begin working collaboratively with teachers on integrating new technologies into their

classrooms. This process helped us all to begin sharing our experiences, comfort levels, strengths, and goals. And, as I was concluding this article, my mother recently asked me how I keep up with all of the latest in technologies. I had to laugh as I handed her this paper and said, "It begins with a willingness to learn."

Now, you may be saying to yourself, "This is a conclusion to the article but the action research continues, right?" Yes, the research process does continue for us into more questions and greater possibilities. So the current questions we are exploring at the beginning of this new school year are:

1. Will this technology integration design work with a larger group of teachers (while still providing one-on-one, flexibility, and meeting teacher's needs)? I feel the project was such a success and spurred such interest in the departments, that I want to continue the progression of this wave of integration.

2. What concept or project would interest other teachers so they would want to join such a group? I still feel the invitation, the beginning of the project, and the reception is so crucial to accepting the process of technology integration.