Required reading for my ED4760 class: Communications Technology in the Curriculum this week is an article titled, "Integrating Technology into K-12 Teaching and Learning: Current Knowledge Gaps and Recommendations by Hew, Hhe Foon; Bush, Thomas. My mission, because I chose to accept it, was to summarize and reflect on the information in this article.

Hew et al, begin their article with a definition of what technology integration is. As this new century marches forward so does technology and along with that almost a new language – the language of technology. It is important to understand the vernacular of technology, a challenge as the industry of technology changes at light speed. As defined by Hew et al, technology integration is, "the use of computing devices such as desktop computers, laptops, handheld computers, software, or Internet in K-12 schools for instructional purposes." With this definition in mind, the researchers set out to discover "barriers" to integration and broke those barriers into six main categories: resources, knowledge and skills, institution, attitudes and beliefs, assessment and subculture.

In this paper, I will summarize what I feel to be the key information of the important barriers, and then I will reflect on that barrier.

A) Resources

Summary: a) "Access to technology is more than merely the availability of technology in a school; it involves providing the proper amount and right types of technology in locations where teachers and students can use them" (p 3).

b) "The lack of technical support is yet another resource-type barrier...technology-suppported pedagogical knowledge" (pp 3-4).

c) "The lack of technology-related-classroom management knowledge and skills is another barrier. In a technology-integrated classroom, teachers need to be equipped with technology-

related classroom management skills such as how to organize the class effectively so that students have equal opportunities to use computers, or what to do if students run into technical problems when working on computers" (p 4).

Reflection: a) I agree with this statement. I have finished two practicum's of student teaching and before that I was an educational assistant for six years. I have worked in schools that have fantastic technology in the form of computer labs, laptop carts and permanent computers in classrooms. Although computers were available, there are common barriers to using technology across the schools in which I have taught. The computer lab can often be booked up in September – for the year! Laptop carts are, in theory a fantastic idea. These carts are mobile and generally contain class sets of computers. The computers come the student, thus reducing wasted time transitioning from regular classroom to a computer lab. However, in reality laptops were never designed to be man-handled by children, they need to be powered down properly, and they need to be plugged in when not in use. These steps are not always followed, resulting in computers that do not work due to rough handling, it takes forever for them to boot up only to have to power them down properly before they will work and that is only if they actually have juice. One possible solution would be a BYOD (bring your own device) policy. The idea of students bringing their own laptops or tablets to school to complete their work with is a great idea. I am sure before my children (ages 13 and 10) graduate I will have to supply one. The Livingstone Range School Division is piloting this project this semester at the high school in Ft. Macleod. We will have to wait and see if this breaks down some barriers for teachers and students.

b) Not only is it important to have on site or very accessible tech support, it is paramount that those "techies" understand and support pedagogical knowledge. I have run in to barriers several

times in my education career (that is not very long!) already due to techies who do not

understand nor support my technology needs in the classroom. There needs to be dialogue

between all stakeholders. If all stakeholders including superintendents, principals, teachers,

parents, and technical support would all benefit from discussions on what technology looks like

in the classroom. It is very important to educate our students with technology – it is a way of life

for this generation it is not a separate class that is offered on a one time basis. Teachers should

use "teachable moments" and build technology right into the curriculum. Technology is a fact.

c) Students, on their own computers, with internet access could be a ticking time bomb of a

classroom management issue for teachers. Teachers need training in technology-related

classroom management skills, so that they can feel confidant allowing students on technology.

Students will need to have more than a working understanding of to further their education

career, they will only gain this knowledge by hands on experience. Our teachers need to feel

confident that they can manage students on technology, if they feel secure they will allow

students to explore further. It is by exploring that students will learn.

Attitudes and Beliefs: Summary: "Teacher attitudes and beliefs towards technology can be

another major barrier to technology integration...the decision of whether and how to use

technology for instruction ultimately depends on the teachers themselves and the beliefs they

hold about technology" (p 5).

   Reflection: It is very important to educate teachers on technology. We all struggle with

the beast that is technology; sometimes it is your friend, sometimes your foe. It is important for

educators to understand that we all struggle with technology at some point. Many educators feel

that they need to be the foremost authority on a topic in order to introduce it in their classroom.

We need to foster an environment where teachers feel safe to introduce technology. Teacher's need to understand that it is okay to learn with their students and maybe even let their student teach them. Teaching is all about taking risks with the knowledge knowing that there is a support network for teachers.

Assessment: Summary: "High-stakes teasing can be defined as assessment with serious attached consequences such as promotion or graduation for students...or rewards versus sanctions for schools. The pressures of such testing can be a major barrier to technology integration. Such emphasis on testing undercuts the potential promise of technology as a teaching and learning tool. As a result, the focus of technology use in K-12 education has not been on the use of computers for teaching and learning, but rather on the financial benefits of computer-based testing and the warehousing of assessment results." (p 6).

   Reflection: As educators in Alberta, with the recent announcement of the demise of PATs, we are fortunate as this is a barrier now has been erased. What is a factor is how do we assess technology. We must be cognizant of what we are assessing. It is important that the technology is only the tool to help achieve the outcomes. When we assess, we must remember that we assess only the outcomes, not the student's efficiency of technology. The two cannot be confused.

Subject Culture: "refers to the 'general set of institutionalized practices an expectations which have grown up around a particular school subject , and shapes the definition of that subject as a distinct area of study'...teachers are reluctant to adopt a technology that seems incompatible with the norms of a subject culture". (p 6)

Reflection: Teachers are in the middle of a paradigm shift in regards to technology. Thoughts are shifting, and teachers are trying to grasp what their subject now looks like immersed in technology. It will take a great amount of professional development and attitude change to allow this immersion to take place. Of course, pre-service teachers just graduating have had university instruction on technology integration. There needs to be provisions for mentors for experienced teachers and encourage collaboration to increase the integration of technology that is available for their subject.

I found this article to be very informative. It provided a lot of food for thought. What I think that this article provided for me is a glimpse of what technology in the classroom is really like. I feel that there is a bit of a disconnect between what I have been taught in university on how to engage students with technology – to what is actually available and allowable in a K-12 classroom.