GOOD MORNING! I'M TECHNOLOGY AND I'LL BE YOUR INSTRUCTOR FOR THIS COURSE

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Technology is marvelous, yet there are more phobias about technology than automobiles! Faculty who design courses with new technology should be careful about the amount of new platforms, software, and augmented reality tools they employ since it does create challenges for the students. In this article, I discuss a number of reasons why the struggle to keep your course relevant might not be worth the battle.

1. INTRODUCTION

By and large, technology is regarded by most people as having brought positive change to the world. Certainly, it has extended our life span and augmented our quality of life in countless ways. It has simplified some aspects of life, and complicated others—as experienced by anyone who has ever stood in a checkout line waiting for a manager to come and (literally) unlock the mysteries of the computerized cash register that has seized up.

Technology may have been slow to catch on in educational circles, but as the 21st century dawned, the pace started to accelerate, and progressed to what is now an unthinkable rate of constant change. Transferability has been a bit awkward and still continues to be. Far too often I review courses, or hear horror stories of courses, that feature an amazing professor's greatest course taken directly from a campus classroom to the online environment. Lectures became podcasts and the exams are multiple-choice, delivered anytime the student is ready for the assessment. Sadly, something is lost in the translation.

Some kind of quality control system should catch these instances, yet I still see and hear about them regularly. There are fundamental changes that course designers must embrace when retooling a course for the online medium. An award-winning face-to-face course is stunning for a reason: it has connections among students and student to

professor. The key ingredient—connectivity—is lost by simply uploading content, lectures, and exams to a learning management system (LMS).

What does it take for an online teaching environment to be equivalent in effectiveness to a face-to-face classroom? I believe learning occurs when students are actively engaged, regardless of the point of impact (online environment or face-to-face classrooms). However, the role of the faculty does change from one medium to the other. The old cliché "guide on the side, not the sage on the stage" is certainly applicable to this situation (King, 1993). Online learning cannot be focused on the educator, but instead on the learner.

I was preparing for a recent presentation on group project success strategies when I came across a startling conclusion. Anyone can do all kinds of cool things to set up the course activities, but without that "guide on the side" interacting with the students, they will probably fail to achieve the course objectives. Not because the course was constructed poorly, but because a course without a teacher is lacking the best ingredient: the human connection. Technology cannot replace the instructor, but it can assist the students—and the instructor—in facilitating a quality learning experience in an online classroom.

2. BELLS AND WHISTLES

I am tantalized by the future, while also frustrated with the reality of today. Technology is rapidly developing and changing the tools of the teaching profession. However, it is a two-edged sword. Educators are overwhelmed by constant developments and improvements to software programs, scripting languages, and interfacing errors due to updates by individual programs. I am certainly not proposing that we ask developers to slow down! Merely, I wish there existed a mechanism that coordinated the updates and changes to programs. The average faculty member does not have the time to continually revamp courses to take advantage of the newest bells and whistles each semester. Some institutions have the luxury of staff to help faculty with this burden. Sadly, my university is suffering the effects of the economic downturn and not able to afford the additional staff.

I think back to my childhood when the learning technology was an overhead projector or the use of a calculator for math class! The distance and speed with which technological inventions have come in my lifetime is astounding and mind-boggling. The cell phone my son carries in his pocket is his alarm clock, camera, video game, telephone, mirror, video camera, radio, phone book, newspaper, TV, flashlight, atlas, and a dozen other things. My college students access their grades using their cellular devices and some even use it for their textbooks, whereas I carried a slew of books in a backpack around campuses for a decade.

For someone to project where the technology is headed in 25 years requires a thought process like that of Star Trek creator Gene Roddenberry. The development of new

technology far outpaces the mainstream use of the technology. By the time a new iPad hits the market, Apple is already well into the development stage on the next device. I attended a great keynote address to the Innovations in Online Learning (IOL) conference, where Robbie Melton (2009) said that a new technological development revolutionizes the market every 9 months. Feel out of touch? Just wait for the newest development to come along and you're back on the cutting edge! I remember her words of wisdom whenever a smart student shows me up in class!

College students are often technologically savvy, yet their knowledge is limited to prior experience. Consider the technology you currently use. It is probably limited to the common experiences of most higher education faculty or average citizens: an LMS such as Blackboard, Canvas, or Angel; email and budgeting software, Facebook, and online banking. Specialty software may include wild things such as the SPSS software platform for statistics; programs to assist with biology, engineering, and chemistry; or notation software for musicians. Students are similarly limited to their own experience.

My wife is awesome at budgeting and online banking. In a third of the time it takes me to find the checking account balance, she can pay the monthly bills and do the dishes. However, she will bring home sheet music for me to finagle for her school ensembles because I am skilled with the music notation program Finale. My son is a genius with games and routinely shows me new functions while my elementary-aged daughter can locate any Disney show in minutes using search engines.

3. TECHNOLOGY IN THE CLASSROOM

The moment an educator introduces a new piece of software, a choice has been made that the students' use and knowledge of that program is equally important to the content of the course. I realize that is a bold statement; however, consider how many of those students will need to learn to use the program. How long did it take the educator to learn to use it? How long did it take me to learn to use PeopleSoft for my administrative duties at the university?

The learning is further compounded when thinking about the background of some students who were not able to afford the luxuries of technology as a child. I agree that many students have a cell phone and have worked with computers during their school experiences, but perhaps not at home. In fact, few of my students have a computer at home anymore. They use their iPad or other mobile device for all of their computing needs.

I used to teach a large lecture class to new education majors, where students read Ruby Payne's book on diversity and poverty: *A Framework for Understanding Poverty—A Cognitive Approach* (Payne, 2003). The college students were amazed that not every kid

had access to compact disc (CD) players, Internet, cell phones, or a computer at home. Without ever having had a CD player, classroom students did not understand how to insert a CD into the computer or stereo. It makes all the difference to understand the prior knowledge of the students.

I link this to music, a topic with which I am most familiar. A professional musician can pick up an unfamiliar instrument and explore it for sounds and create respectable music in short order, while a novice musician will take much longer to produce tones on the same instrument. Lesson learned is the professional musician has prior knowledge to enable faster learning of breathing, fingering, and rhythm. The novice musician needs additional exploration, coaching, and time. Of course, this is not always the case, but the example is fitting for this explanation of educational technology in classrooms.

Perhaps it is her analogy, but I am attracted to the discussion of technology integration by Elizabeth St. Germain from her blog entry on May 26, 2010:

> An effective e-Learning program incorporates proven instructional design principles to help students meet learning objectives. In fact, it can be a bit like conducting an orchestra, in which many players, tools, and instruments must work together harmoniously. What really matters is the final product. Is it music to your ears? Or is it just a lot of noise that doesn't deliver on its promises? (St. Germain, 2010)

4. CONTENT OR TECHNOLOGY

When I consider implementing a piece of technology into my teaching, I ask myself if it is important enough to spend the time away from curriculum. Will the technology be a distraction or aid to mastering course materials? The students believe their teacher has made these educational choices in advance and deemed the technology as necessary. In his June 8, 2012, blog, Sam Gliksman commented on the question he asks himself at every opportunity:

> We're human and it's a natural tendency to fall into routines—to concentrate on "what" we do and "how" without regard for the question whether it's still relevant. We continue following the same educational routines and processes without asking whether they are really preparing children for life in an ever changing society awash in technology. (Gliksman, 2012)

I remember a few times in my own education when I questioned a teaching technique of one of my teachers. The technology forced into the curriculum allowed students to use a cool toy, but it was actually a distraction more than an aid to our learning. Incorporating a software program simply for the sake of technology is not a best practice. When good teachers use technology, they have determined that the use of the software is critical to the content of the course.

A great example of effective incorporation of technology into curriculum is evidenced in my undergraduate experience. A major sheet music distributor on the Internet needed help growing their website with additional new features (please realize that the Internet was in its infancy and mostly text-based at the time). The corporation needed help from musicians to create music clips of roughly 30 seconds for sound samples. The students at my college's music program were the ones who piloted the first sound clips for the corporation. We listened to recordings of pieces and reported the timings to a technology person to edit out the selected sound clip that would then be loaded onto the company's website as an indicative sound from the composition. At the time, our work was viewed as cutting edge and to be paired with a massive company was quite the leg-up in the world. We were given access to the recordings and allowed to make decisions on which 30-second clips best illustrated a song's beauty for online shoppers. The project was a perfect integration into our education. We were engrossed in content, not learning a software program or lost in coding. Our intent was to listen to recordings and suggest where the clips should be taken from in the recording. Media specialists at the corporation made the clips and our work would show up online for the entire world to benefit. Our time was useful and productive because we engaged the content, not the technology.

A poor example from my graduate education is the use of a disk operating system (DOS) prompt for a statistics course. Why on earth would the professor choose such a cumbersome method of technology when the SPSS software program could perform the calculations and diagram it with less than half of the work as a statistical analysis system (SAS)? The SAS (DOS prompt) was located on a root server at the university and challenging to access for students. Furthermore, it was 20-year-old technology, had esoteric codes to trigger computations, was fussy with coding, generated many error reports, and yielded unhelpful answers to inputted problems. I hypothesize that a smarter use of a spreadsheet would have given us the same answer in half the time and effort. This instance illustrates how a professor incorporated technology, but failed to update when necessary. Instead of fusing our education with the use of technology, my fellow students spent hours gaining access to the software on the university server and learning the archaic input language in order to receive a string of numbers that made little sense. Another statistics program could have analyzed the data and presented output in a manner more fit for use by students.

In my teaching, I strive to allow students the choice of software for displaying their work on projects. Part of this is creativity (allowing students the choice), which is exciting to them. The choice is motivating for students and engages them in a decision process for displaying their diverse understanding of the course content. Allowing a student to use that diversity deepens my understanding of the topic and informs me where any

misunderstandings of content might have formed. Unfortunately, some plagiarism tools stipulate Word or rich text format only, so most of my students are forced to use Word. However, in some instances I have students write the papers and copy and paste the text into an email to me. I copy the text into a new document and upload it to the plagiarism tool to receive my report. The result is that the student does not need to learn how to use Word and is able to focus on the content of the assignment.

Give students a technology boost when it is a stumbling block. I hate to see a student struggle with the technology instead of learning content. Therefore, I intervene with the suggestion of sending it to me in the body of an email or as an attachment. I have found resources to help convert the file into the proper format for uploading to the course for the student. It is just not worth their time away from the curriculum.

My rule of thumb for technology integration for a course is no more than *one* new software package or program. I assume that they know the basics of the LMS and can navigate through a course, but any purchasing or downloading of software, or the use of games, is a new technology. Too many new technologies and my students spend their time learning software, not course content.

5. SCAFFOLDING

In an article on instructional scaffolding, Lang (2002) stated:

> Instructional scaffolding is a teaching strategy that was cleverly named for the practical resemblance it bears to the physical scaffolds used on construction sites. The strategy consists of teaching new skills by engaging students collaboratively in tasks that would be too difficult for them to complete on their own. (Lange, 2002, p. 2)

There are two types of scaffolding: hard and soft scaffolds. Hard scaffolds are, typically, pre-placed materials in the course for student use. The materials include diagrams, models, hints, examples, or references to mathematic formulas. Soft scaffolds involve one-on-one communications between the student and the instructor in the form of an email, phone call, office visit, or chat room session. Soft scaffolding is the highest form of instructor presence in an online course along with feedback on assignments and discussion forum posts.

In my courses, I require a persuasive paper. One of my frustrations is students' lack of knowledge of how to use a library (face to face or online). To the students, accessing a library's resources is a no man's land—the last resort, a death trap, the last walk to the guillotine. Students need to develop information literacy skills and a library is a key element in that process. To ease the students into the process, I have started introducing the steps of research for the term paper at midterm and using a great deal of scaffolding to insure student success. I aid in their research by placing hard scaffolding at each step of

the process. The short-term result is much better papers with the long-term result being that my students have acquired a skill set that will be very important for their continued education.

The first step is topic development, so I have located some short library-created videos with handouts detailing how to refine a topic. The next step is to locate information, but I stipulate the requirement of at least two scholarly resources. To that end, I provide the links to some great library databases inside the step. The step also includes another short video of how to locate articles and books using the databases by creating search terms. Similar steps exist for the thesis statement, creating a mind map to write from, the writing process, the rough draft, and a final submission. I also include a synchronous online session presented by a research librarian to demonstrate using databases, bibliography chasing, and using books with the same Library of Congress call letter. These tips presented by a trusted source like a research librarian make a big impact on students.

One problem in higher education is the lack of fundamental teaching. All too often, faculty give assignments with the misunderstanding that students know the process because they learned it in high school. One of my favorite projects with beginning teachers is a clear example of the assumptions we make as teachers. Direct the students to outline the sequential steps to teach an alien, such as ET, to pour a bowl of cereal and eat it. One student then reads the directions of a classmate and executes each step, but only what is written. The results are fun to watch: people pouring milk all over (overflowing the bowl), dipping in spoons upside down into the bowls, and chewing on spoons that were not removed from the mouth. The point of this activity is to be detailed, clear, and linear in creating content for education.

6. KEEPING IT REAL

In all of my courses, I have a couple of weeks of "meet and greet" built into the schedule at the beginning. As a social constructivist educator, I want my students to know each other by name and choose their own small groups. This period of socialization allows me the opportunity to get to know the students, them to become acquainted with one another, and all of us to share expectations for the course. Keeping the groups somewhat fluid during the add/drop period gives ample time for things to settle down before solidifying group projects.

The students in the course begin to understand how to subscribe to threads of discussions, reply to posts in the course blog, and practice technology such as the virtual classroom. I also offer students the opportunity to sign up for texting alerts of upcoming deadlines during the early weeks of the course. The students opt-in to the service with a simple text to my personal cell phone. I have entered all of the assignments into my

calendar with 3- or 4-day warning alerts. When the alert pops up on my phone, I copy the text of the alert and send it to the distribution list of students that opted-in for the service. It is simple and easy to maintain the system once the dates are entered into the calendar each semester. For students, it helps to reel them into the course in time if they have forgotten about an upcoming assignment. In a world fraught with technology clamoring for their attention, a simple text reminder of their assignment is a simple tap on the shoulder to draw them back to the LMS.

Some of my students opt-in for the first half of the semester, and then ask to be removed once they have the "rhythm" of my course down (when lectures open, assignments are due, activities start/end, discussion due dates, and so forth.) The students see the text as a one-on-one communication with the professor even though it is a mass text. They can reply back and ask for clarification or more details and I will respond. The presence created by a simple text message keeps students engaged by reminding them that a person is available to help with the course material.

In his article for TIME, Nick Pandolfo interviewed an online educator about her experiences teaching K-12 students online versus face-to-face instruction: "In a classroom, you can look at kids and know pretty quickly whether or not they understand what you're saying. We don't have that advantage online" (Pandolfo, 2012). Teachers are innately aware of students struggling and are able to intervene faster and more efficiently. Technology cannot identify when people are confused until the students fail or disappear. By then, the damage is done and may leave a poor attitude in its wake. Giving students prompt feedback on assignments and opportunities for partial credit on revisions help to clarify student misunderstandings of course material.

7. GOOD CHEFS KEEP REINVENTING THEIR RECIPES

Technology development happens at a blistering pace. A great tool for one semester may be obsolete by the next. If it becomes out of date, not connecting to a newer, younger crop of students the next year, or even no longer functional due to technology upgrades, it must be replaced. My grandmother started most of her amazing recipes with a stick of butter or spoonful of lard. The taste buds of this generation are not used to the heavy bases, nor will my students be willing to watch instructional videos about using an abacus to solve math problems.

My colleagues would not identify me as a technophobe, but I really am. I love technology, yet I fear what I will do when it fails, which it inevitably will. Not so long ago, the only contingency an instructor had to plan for was to have an extra bulb on hand for the overhead projector. Now, when I am preparing to present at a conference, I carry CDs and jump drives, email myself the presentation, and even store my presentation on my phone.

(Not sure how the phone helps, but it is another option!) The reliance on technology to do the teaching for me is a similar fear. In the recent pandemic, the flood of universities subscribing to proctoring services overwhelmed the ability to meet demand—tragically resulting in upset faculty, breach of contract suits, and universities struggling to find a solution. My coaching to colleagues is to keep as much presence in a course without the complete reliance on technology. Always have a backup plan. Technology is what we tell it to do, and so far we struggle with time and ability and to program humor recognition, personality, and the motivating passion for education that I bring to my courses.

My distance education friends introduce me to a wealth of information daily. It is tantalizing to see what is possible in today's world. If I had a classroom of Steve Jobs' offspring, perhaps I could relax when incorporating additional technologies into my courses. The reality is that my students are sometimes remote—living in Italy, Hawaii, Alaska, or along the Mexican border in economically depressed communities. I structure courses for just above the lowest technology I believe I will encounter. Students in major metros like Houston, San Francisco, and New York bring fresh ideas and technology into the course. I reflect on their posts describing cool new gadgets and remember what Robbie Melton pontificated at the 2009 IOL: "Just wait 9 months and the market will be turned upside-down by a new technology making most everything before it obsolete."

Technology, it seems, can do just about anything except be human. Keast and Wilson (2010) interviewed community choir and band members about what factors in their high school music experience contributed most to their desire to continue being involved in music. Far and away the strongest factor was the *conductor/teacher*—not the music, not the traveling, not any technology used in the classroom. "They cared about me" was the comment most cited. A device or software platform was programmed to deliver instruction in a precise manner. Experienced educators know that students learn differently: rates of absorption, learning styles, prior knowledge, and/or modality preferences.

There is definitely a place for technology in higher education, but it needs to be kept in its place. Despite all that it *can* do, technology will *never* replace the human connection. Technology cannot give extra time or reschedule a presentation when a student is sick or upset. It cannot provide empathy when a grandparent has died or a relationship has suddenly ended, and technology cannot look a student in the eye and tell them, "You can do this. I believe in you."

REFERENCES

Gliksman, S. (2012, June 8). *Educational technology…Why?* Educational Mosaic. http://www.educationalmosaic.com/blog

Keast, D. & Wilson, C. (2010). *The community chorus and community band of 2050: Implications and recommendations for present day and instrumental programs* [Presented Poster]. Texas Music Educators Association Conference, San Antonio, TX.

King, A. (1993). From sage on the stage to guide on the side. *College Teaching*, *41*(1), 30 –35. https://doi.org/10.1080/87567555.1993.9926781

Lange, V. L. (2002). *Instructional scaffolding: A teaching strategy.* https://cmapspublic3.ihmc.us/rid=1KDMQQ3X2-N5J29C-W4P/Scaffolding%20Paper.pdf

Melton, R. (2009). *Closing keynote remarks.* Innovations in Online Learning Conference, Austin, TX.

Pandolfo, N. (2012, June 13). The teacher you've never met: Inside an online high school class. *TIME*. http://content.time.com/time/nation/article/0,8599,2117085,00.html

Payne, R. K. (2003). *A framework for understanding poverty – A cognitive approach*. (3rd ed.) Highlands, TX: aha! Process, Inc.

St. Germain, E. (2010, May 26). Orchestrating E-Learning projects: Gain a harmonious mixture of technology, teaching, and timing. *Learning Solutions*. https://learningsolutionsmag.com/articles/464/orchestrating-e-learning-projects-gain-a-harmonious-mixture-of-technology-teaching-and-timing