

Technology Shaping Learner Dispositions

Abstract

In 2006, our education program went through an extensive accreditation process, during which our faculty identified program strengths and weaknesses. One area of weakness stood out in large part because little effort had been put into conceptualising and addressing it previously. Measuring and impacting learner dispositions were seen as areas where our education program could improve. Our whole faculty has been asked to look into how we can shape and alter learner dispositions. This article stems from one program's initial identification of an area of weakness, but the focus could apply to a wide range of teacher preparation and training programs.

In this article strategies to bring about change in pre-service and in-service teachers' dispositions towards using technology in education are considered. Changing dispositions is shown to be critical because teachers may ignore current instruction in favour of teaching models they encountered in their past (Pajares 1992). An overview of the crucial roles modeling and reflection play in changing dispositions is provided, and methods for using technology to facilitate the successful implementation of these strategies in the learning process are described. Examples are provided for teaching in face-to-face environments and in online learning environments.

Introduction

We have nothing less to do than to get inside of whole peoples and change their motives and dispositions. (John Raleigh Mott while accepting the 1946 Nobel Peace Prize.)

Dispositions are a critical part of the teaching and learning process as they represent the willingness and desire to learn and grow. Wikipedia provides a simple and succinct definition of a disposition as '...a habit, a preparation, a state of readiness, or a tendency to act in a specified way'. Expertly designed and delivered lessons on the best instructional practices the field has to offer will have little impact if the learner's disposition prevents him or her from being open to new approaches. Thus, a change in disposition results in meaningful change in behaviour. These types of changes are the primary goal of most educators but seem difficult to prompt and difficult to measure.

In the United States, many schools and colleges of education receive accreditation from the National Council for Accreditation of Teacher Education (NCATE). NCATE provides standards for teacher education programs to ensure quality. This role is similar to the self-accreditation that individual universities conduct in Australia using the standards from the Department of Education, Science and Training (DEST). One of the components of a teacher education program evaluated as part of the NCATE accreditation process requires that programs assess the disposition of the learners who are enrolled. NCATE provides its own definition of dispositions as, '...the values, commitments, and professional ethics that influence behaviours towards students, families, colleagues and communities and affect student learning, motivation, and development as well as the educator's own professional growth' (NCATE 2001:53). Thus, NCATE implies that individuals who train and teach teachers should do more than disseminate information in the hope that learners will acquire it. Rather, educators should be teaching information and skills in efforts to change future behaviour by changing, altering, or surfacing the underlying thought processes of their learners i.e. their dispositions. Cognitive psychology holds as a fundamental principle that meaningful behaviour change only occurs when thinking and beliefs have been changed (Johnson & Thomas 1994; Solos & MacLin 2004).

The importance of changing learner dispositions cannot be taken lightly. When dispositions are not altered, the learner will go through the educational experience with little demonstrated growth. In the case of preservice teachers, these learners will often end up teaching using previous teaching models from their own educational history and not the instruction being taught in their program (Pajares 1992). If the education process is to matter, then learner dispositions must be addressed and these dispositions must be meaningfully altered. Thus, an overall goal of this article is to surface and discuss options for sharing current research findings with pre-service and in-service teachers in such a way that their dispositions are altered.

This article focuses on exploring ways in which educational technologies can be used to help shape the future behaviours of preservice and inservice teachers. While other research has focused on what educational programs can do in this regard (Wayda & Lund 2005) this article is strictly directed to those individuals who train or teach educational technologies to preservice and inservice teachers. The first focus of this process is exploring the strategy of modelling to shape and change dispositions. Modelling is described, and an example provided, for a general classroom setting that relates to teaching educational technology content. Modelling is then applied to online learning. Secondly, reflection is explored with a model of reflection provided. The reflection model is applied to key technology tools. While shaping dispositions is not exclusive to modelling and reflection, these are two strategies that have support in the literature for causing change.

Modelling

Katz (1993) addressed a process for changing dispositions of educators. One implication stands out with regard to teaching technology to educators and pre-service educators. Katz writes that:

. . . dispositions are less likely to be acquired through didactic processes than to be modeled by young children as they are around people who exhibit them. If teachers want their young pupils to have robust dispositions to investigate, hypothesise, experiment, and so forth, they might consider making their own such intellectual dispositions more visible to the children. The list of potential ways that teachers could exhibit the intellectual dispositions to be strengthened and supported is very long and deserves serious attention in the course of curriculum planning and teacher education (1993:3).

While much of the limited literature on learner dispositions is focused on what educational programs can do to measure and impact dispositions, the implication from Katz is that individual instructors can make a difference. In fact, teachers, instructors, and trainers of educational technology have a responsibility to open up their own thinking processes and provide learners with an opportunity to see how the instruction and curriculum came to fruition. In other words, educators should not only teach the planned curriculum, but they should also model the processes used to create said curriculum (Aust, Newberry, O'Brien, & Thomas 2005). Wenzlaff (1998) even directs teacher educators to model desired dispositions while also demonstrating them. In this case, the educator would be modeling thinking and decision-making. Within a live class, this could be accomplished through the proven instructional technique of the 'The think-aloud model'. The think aloud model will be slightly different depending on whether the teacher is delivering skill instruction or content instruction. Generally, when delivering skill instruction, an instructor first cues the learners that she is about to model use of the skill and then provides a step-by-step demonstration using the new skill and simultaneously thinking aloud to her learners about each step (Deshler & Schumaker 1993; Norman 1992). In this way she shares with her learners what expert instructors think when executing the particular skill. For a simple example, if the instructor were teaching how to add video clips to a slide in a presentation software application, she would walk her learners through the steps of the approach and share her

thoughts and decisions as she worked in the application itself. The teacher would speak about the process she is following so that the learners can visually see what happens on the computer screen as the teacher thinks aloud.

If the instruction is focused on gaining information or understanding critical content, a instructor still begins the model by cuing learners that he is about to model how he comes to understand the content. He then thinks aloud identifying prior knowledge or hooking the new content to previously learned information (Deshler, Schumaker & Bulgren 2001). For example, if the instructor was teaching about the concept of asynchronous class discussions, he might begin by hooking it to more common synchronous class discussions or some other common concept such as the answering machine that is used to share information without the presence of all involved parties. Then, he demonstrates identifying unique characteristics of the concept, thinking aloud about whether the characteristics are always present, sometimes present, or never present. Next, he demonstrates and thinks aloud about how he would differentiate examples and non-examples of the concept. Finally, he works through creating a definition of the new concept in language he or his learners understand. In both cases, learners should be involved in the model as quickly and frequently as possible and should also have the opportunity to model the same processes to a peer (Bulgren, Deshler & Schumaker 2000). Think-aloud modelling increases learner consciousness, demonstrates that learning is an active process and shows how expert learners think as they approach complex tasks and information (Aust, Newberry, O'Brien & Thomas 2005; Duncan 1996).

Modelling can also be extended to the actual teaching process itself. As Katz (1993) recommended, the way the actual curriculum came to fruition should be exposed for learners so that they can better understand the work that goes into creation of instruction. The instructor can briefly explain how examples presented in class were developed. The instructor can provide background information to learners to help them realise that quality instruction is carefully planned. This is where using technology solutions can be particularly effective.

Adding Technology to the Modelling Mix

Teachers often teach in a way that they were taught (Calderhead & Robson 1991) and many teachers have grown up in schools where educational technologies were not valued and online learning was not experienced. As such, education technology professionals need to be much more overt in how they deliver instruction both in live classrooms and in online classes. Rather than providing a reading assignment that might appear to some learners to be busy work or have little connection to other assignments in a unit, the instructor can provide a snippet explaining how the article helps to achieve course objectives. This snippet could be written on a blog for learners to read. In this example, a blog can be used to help demonstrate how a library database or Google was searched (e.g., even providing the search terms) to find supplementary resources and how the literature in the field was examined to find research on any given topic to get a better grasp of the subject. A blog could even be used to provide a follow up podcast where the focus is an instructor's reflection on teaching the current lesson. If a lesson is not going well, the instructor can help learners understand why changes are being made before the end of a unit (i.e. formative evaluation) and how the current lesson might be taught differently in the future (i.e. using summative evaluation). If an instructor is teaching how to use a particular website or software, then perhaps a screencast can capture the instructor using the site or software appropriately for learner reference. [Camtasia Studio](#) is popular screen capturing software on a PC while [Snapz Pro X](#) is the popular choice for Macintosh users. Providing the regular instruction and a look behind the scenes requires considerable effort, but the gain for learners could be substantial. Not only do learners learn the content better when modeling is employed, but, as current and future teachers, they also get a model for how expert

teachers approach, plan, deliver, monitor, evaluate and adjust lessons. Calderhead and Robson (1991) note that novice teachers will use expert teachers as role models for developing their own images as teachers. Given that the potential for teacher education programs to impact future teaching behaviour seems to be lacking under the status quo, a dramatic change is necessary to have a greater impact on learner dispositions.

If an instructor is teaching a skill to learners in an online learning environment, the instructor can still think aloud synchronously (i.e., interactions with virtually no time delay) using tools like [Elluminate Live!](#). This tool allows for synchronous collaboration between instructors and learners. *The Knowledge Tree* successfully uses [Elluminate Live!](#) for synchronous sessions, as does the popular learning management system [Blackboard Learning Systems](#). Potential solutions for online, but synchronous, learning also include instant messaging (IM) along with audio and video chatting as the technology evolves. If an online learning environment is solely asynchronous in nature (i.e. not at the same time) then a blog can be effectively implemented. An instructor could also provide modelling using podcasting tools and video enhanced podcasts to record the modelling. However, the blog format allows for learner and instructor interaction and this interaction has been found to be critical for shaping dispositions.

Figure 1 provides a simple example of an individual blog being used to model how an online session is built.

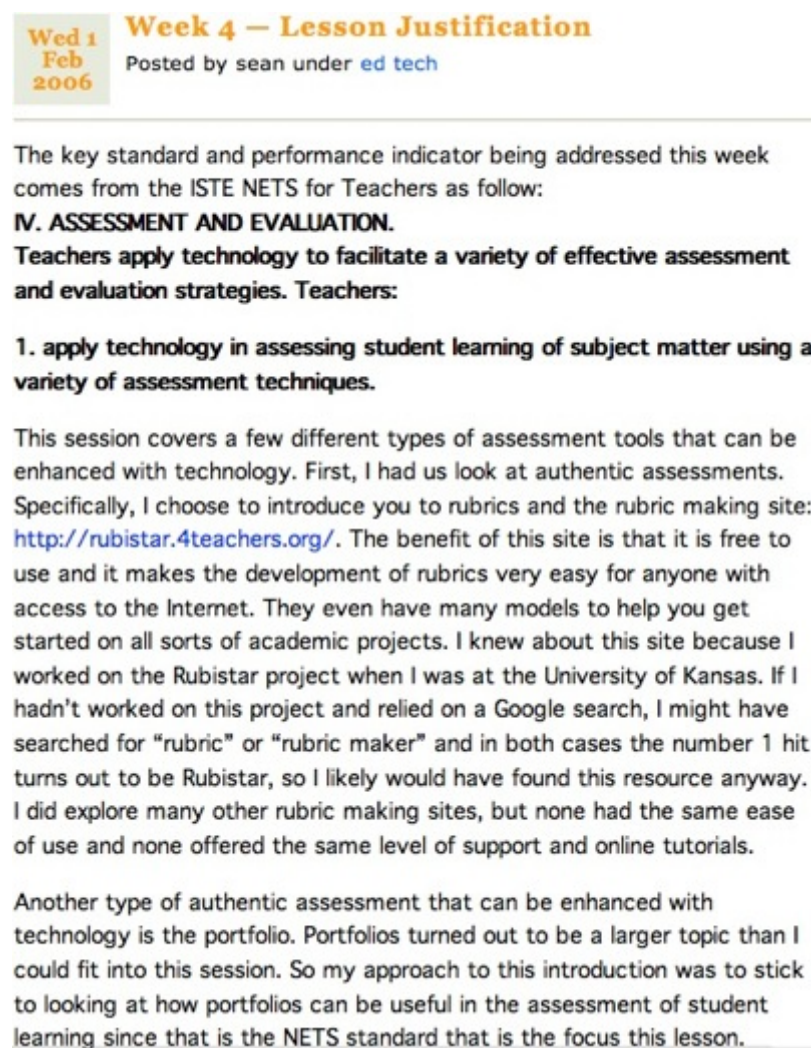


Figure 1: Lesson Justification

Critical Reflection

Reflecting in the learning process is a concept that stretches back to Dewey (1933) nearly 75 years ago. Reflecting on one's teaching is thought to be critical for shaping future behaviour. Wenzlaff (1998) explained that learners who analysed and reflected on their progress and growth were able to alter their dispositions. Hughes (2003) provided examples of how teachers use reflection to decide on whether or not to use new technologies in their current curricula. But, being able to critically reflect on assignments and individual growth is a necessary part of changing dispositions, particularly when the reflection is more formative in nature (Beck, Livne & Bear 2005). Thus, if a primary goal of teacher education is to positively alter learner dispositions toward teaching, reflection should be a continuous part of teacher education programs. Many education programs require learners to create a summative portfolio that is built over two-three years of schooling to represent overall learning in the program, as [this site](#) demonstrates (Wetzel & Strudler 2005). This type of portfolio might benefit programs of education; however, a better choice for increasing learner growth and changing dispositions is clearly the reflection of the formative variety.

The preservice teacher reflection process requires instructor input to be effective. As learners turn in assignments, the instructor should provide meaningful feedback (Smyth 2004) and in doing so, open a dialogue with the learner (Harris & Bell 1990; cited in Smyth 2004). This dialogue can pose questions and raise issues that help learners to better reflect on their own learning.

Long and Stuart (2004) suggest that the instructor should use this dialogue to have learners think about how their own prior experiences influence their beliefs, because these beliefs impact the decisions they will make as teachers. The implication of this step is that learners need to know their own beliefs and be forced to confront these beliefs as they relate to teaching. Perhaps the reflection begins with the learner stating his or her beliefs with regard to the current learning objective. For example, the learner could write a few paragraphs stating how the current lesson might be manifested in the learner's future or current classroom.

Wenzlaff (1998) suggests that learners should be asked to reflect on the act of teaching and what it means as future teachers. Further, Wenzlaff (1998) suggest that the reflection piece might then be best left open-ended with instructors providing general guidelines and learners determining how to engage in the process. The open-ended nature for reflection might be difficult for learners to achieve early on, as Dollase (1996) noted that preservice educators found reflection difficult. Wade and Yarbrough (1996) support this thinking as they found that instructors should allow for some learner expression, but the instructor should provide some structured reflection to balance the open-ended components. Thus, an instructor might consider providing more support early in the reflection process as learners learn to reflect on their own learning.

Successful reflection takes many forms in the literature as noted above, but the prevailing undertone of the research provides some commonalities for reflection in any class. If an instructor is conducting an inservice or other training opportunity then the reflection process will necessarily have to be shortened to accommodate the length of time the instructor spends with the learners. The key for instructors appears to be including a reflection process as part of the instruction and valuing and participating in that reflection with the learners.

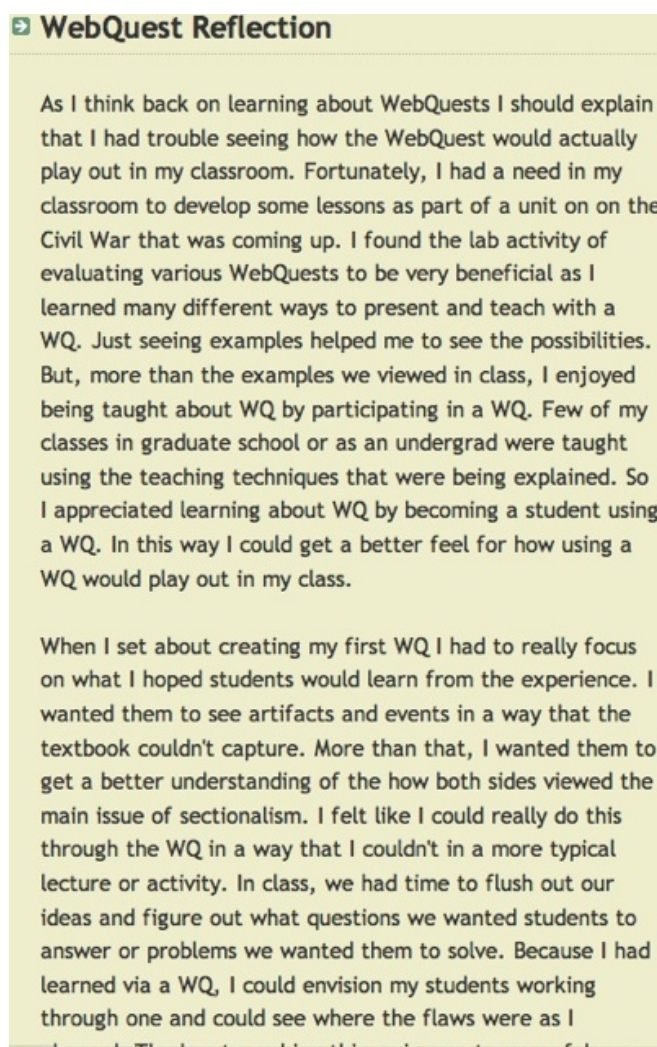
An example of how the reflection process could play out in a typical class might be as follows:

1. Instructors provide a model for reflection as the course or training begins. As detailed earlier in this article, the model could possibly be written on a blog and updated after each lesson is taught. Learners will see the reflection process

modelled from an expert teacher so that they can better learn how this process works. Instructors might even encourage learners to participate in a dialogue about the modelled reflection using the commenting feature found on many blogs.

2. Learners are required to write about their various teaching beliefs and/or philosophies. When learners have difficulty writing this statement, particularly earlier in their education, the instructor might consider providing examples of various teaching philosophies and have learners determine which philosophy most closely aligns with their own thinking. This can give learners a starting point for developing their own positions.
3. Learners complete assignments and evaluate how various assignments are meaningful in their own learning processes. Learners should be encouraged to reflect after any course-related activity takes place (e.g. class discussions, quizzes, projects, labs).
4. Instructors should return assignments with meaningful feedback and questions. This feedback can start a dialogue between the instructor and the learner that forces learners to examine beliefs.

One student who recently learned how to create a WebQuest had positive things to say about WebQuests. She teaches social studies on the secondary level and provided the following quote along with her own WebQuest in her electronic portfolio (Figure 2).



WebQuest Reflection

As I think back on learning about WebQuests I should explain that I had trouble seeing how the WebQuest would actually play out in my classroom. Fortunately, I had a need in my classroom to develop some lessons as part of a unit on the Civil War that was coming up. I found the lab activity of evaluating various WebQuests to be very beneficial as I learned many different ways to present and teach with a WQ. Just seeing examples helped me to see the possibilities. But, more than the examples we viewed in class, I enjoyed being taught about WQ by participating in a WQ. Few of my classes in graduate school or as an undergrad were taught using the teaching techniques that were being explained. So I appreciated learning about WQ by becoming a student using a WQ. In this way I could get a better feel for how using a WQ would play out in my class.

When I set about creating my first WQ I had to really focus on what I hoped students would learn from the experience. I wanted them to see artifacts and events in a way that the textbook couldn't capture. More than that, I wanted them to get a better understanding of the how both sides viewed the main issue of sectionalism. I felt like I could really do this through the WQ in a way that I couldn't in a more typical lecture or activity. In class, we had time to flush out our ideas and figure out what questions we wanted students to answer or problems we wanted them to solve. Because I had learned via a WQ, I could envision my students working through one and could see where the flaws were as I planned. The key to making this assignment successful was

Figure 2: WebQuest Reflection

While educational programs are interested in measuring and evaluating learner dispositions, individual instructors can do so as well because the instructors play a critical role in this process as the connection between program, curriculum and learner.

Technology in the Reflection Process

Many education programs have turned to portfolios as a means to measure overall program quality and with the rise of technology use in education, various programs are shifting to electronic portfolios (ePortfolios) in place of the traditional portfolios. Wetzel and Strudler (2005) examined several programs that were using ePortfolios as part of program review and accreditation processes. They found that having the proper leadership, faculty buy-in to the concept of using ePortfolios, and a clear rationale for using ePortfolios in the program are key aspects of successful implementation of ePortfolios. Williams, Davis, Metcalf and Covington (2003) also suggested that portfolios success depends on the model that a program employs and that a portfolio should fit into the whole program and be constructed as learners progress through the program. Implementing ePortfolios in a program is a large, complex undertaking; however, when ePortfolios are implemented, they do have the potential to affect learner dispositions (Wenzlaff 1998).

Individuals who have tried using ePortfolios find the process quite labour intensive and unwieldy as they try to identify the most effective and efficient process and applications to employ. Bartlett (2002) discovered that ePortfolios lead to learner frustrations over time and equipment constraints among other complaints. In fact, Bartlett (2002) found that the development process consumed 22% of the total instructional time. Woodward and Nanlohy (2004) identify a multitude of development and usage issues with ePortfolios from software to hardware problems and even access to the content. Wetzel and Strudler (2005) describe a school in which learners began developing ePortfolios using a free tool, only to learn that during the implementation process the tool had become part of an expensive package. This charge made the software a barrier in the development process, as many learners could not work on the ePortfolio from home. Further, the school lab space quickly became overcrowded. Schools struggle to choose an ePortfolio system for standardisation and implementation. Barrett has developed [a website](#) devoted to exploring some ePortfolio development solutions and even this list is not all-inclusive. Further, Barrett also has [a resource](#) developed for online portfolio development (See Useful Links for details).

Bartlett's (2002) study showed that the strength of an ePortfolio is not necessarily tied to its electronic form as learners did not see the electronic nature of the portfolio as being more beneficial than a paper version with regard to self-evaluation or reflection. Kennedy (2003) even explains that a blog can combine some of the best elements of a portfolio driven course. Given the problems previously described, an individual instructor could benefit greatly from using a blog instead of an ePortfolio, when the ePortfolio is not a part of a larger education program. Higdon (2006) discusses, in a webcast, shifting the use of ePortfolios to blogs as well. In doing so, a learner could easily create a blog (for example Blogger.com or Xanga.com) and record reflections on the blog. The blog is much easier to create than an ePortfolio leaving the instructor more time to teach curricular goals and objectives, with less time spent on the nuts and bolts of creating an ePortfolio. Moreover, an education program looking to review learner reflections could use an RSS reader or news reader to follow the learner blogs. Further, education programs can still establish database systems or institutional ePortfolios that can aggregate and store data for later analyses.

The self-reflection process has been identified as a crucial aspect of changing learner dispositions (Wenzlaff 1998). Learner reflection is not limited to any one tool. If the reflection process can be transferred to learner blogs, then individual instructors can further use blogs as part of an overall effort to change future behaviour and disposition while greatly reducing the barriers to learner reflection that come from developing a traditional ePortfolio. Blogs lend themselves to the kinds of dialogue, community (White 2006) and inquiry (Farmer

2004) that has been identified as being necessary for effective reflection to take place (Harris & Bell 1990; cited in Smyth 2004).

Figure 3 provides an example of one learner's self reflective process. The assignment had students learn about evaluating online material and then visit a website that was presented as something it was not. The student reflection piece notes the original thinking and then describes the change the student goes through in realising that things are not always what they seem online. This example also provides a glimpse of the feedback that the student received from the instructor.

📅 Saturday, March 25, 2006

Web Eval

When you first asked us to visit the martinlutherking.org website and evaluate it I read through it quickly thinking I could get the gist of it. I was one of the students who thought the site was appropriate for my classroom which is going to be middle school English. When you responded to my initial comments with questions for me to further explore, I realized the mistake I had made by thinking I could evaluate it quickly. Once I took more time to evaluate the site, I found that it was horrible. I found that the site was made by people who hated Martin Luther King Jr.

One of the questions you wanted me to address in this reflection is: WHAT WOULD YOU DO IF ONE OF YOUR STUDENTS HAD TURNED IN THE BLOG ENTRY YOU PREVIOUSLY WROTE? I hope that I handle the situation much like you have and that I use the situation as a learning experience. I have to admit that I was probably not giving this assignment my full attention when I turned that feedback in earlier. Sorry about that. I thought I was a better judge of websites that I read. Okay, I need to be more careful about the way I search the internet and evaluate what I find there. If I had accidentally used this site in my future classroom then I could have gotten into a lot of trouble with parents and my administrators. I plan to use the website evaluate form you gave me for sites I use in the future. I also liked the form you gave us for our students to use because I want my students to learn to evaluate material they find online and not wait for me to give the thumbs up or down.

Figure 3: Student Blog Reflection

Conclusion

Shaping learner dispositions and changing future behaviour are not easily attainable outcomes under traditional teacher education program models. When learners do not have their dispositions altered, they end up using past teaching models to develop their own images of teaching. Given that few novice and novice online teachers will have experienced good models of technology use, let alone technology integration, use and integration of technology will need to be explicitly modeled so that novice and novice online teachers can both see demonstrations and understand the thinking and decision-making processes expert teachers undergo during instruction. Additionally, opportunities to reflect on their teaching and learning, receive feedback on their reflections, and view experts' reflections will provide opportunities for growth of dispositions. Technology solutions, notably blogs, used appropriately can help to bring about a change in learner dispositions.

Useful Links

Apple Digital Campus Exchange webcast on using blogs in place of electronic portfolios

<http://edcommunity.apple.com/adc/eportfolios/?p=21>

Helen Barrett's ePortfolio development solutions

<http://helenbarrett.com/ALI/index.html>

[Camtasia Studio](#) screen capturing software for PC.

ePortfolio Clearing House

http://ctl.du.edu/portfolioclearinghouse/search_portfolios.cfm

[Elluminate Live!](#) website

[Elluminate Live!](#) [integrated with Blackboard Learning Systems](#)

The Think-Aloud model

http://pdonline.ascd.org/pd_html/elrp2think1.html

[Snapz Pro X](#) for Macintosh users wanting to screencast.

Wikipedia definitions

<http://en.wikipedia.org/wiki/Podcast>

http://en.wikipedia.org/wiki/Enhanced_podcast

<http://en.wikipedia.org/wiki/Screencast>

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