Teaching Visual Literacy: Pedagogy, Design and Implementation, Tools, and Techniques

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Abstract Visual literacy is emerging as a key concept in educational standards in the twenty-first century; for example, the Association of College and Research Libraries developed higher education competency standards for visual literacy in 2011. Several of the Common Core State Standards emphasize visual literacy in terms of navigating, decoding, and encoding visual information. The purpose of this report is to discuss student experiences in a graduate-level visual literacy course that was revised to include a themed blended approach, reflective writing, a portfolio, collaborative projects, interactive online discussions, and several low-stakes production assignments. Due to an institutional shift towards blended course formats, key program courses were redesigned to fit the needs of commuting students. Another factor underlying the course redesign was the need to address the proliferation of participatory digital media in the twenty-first century. The course was enhanced in 2009 with a blended format, redesigned based on student feedback and piloted in 2011, and revised and piloted once more in 2012. Data were collected through pre- and post-course student surveys, student interviews, and student reflections. The findings of our case study indicate that engagement and active learning occurred and that these characteristics might be transferrable across many learning contexts. Course design concepts and examples of activities reviewed in this report are appropriate for higher education audiences and of interest to K–12 educators.

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Introduction

This case study report examines the redesign and development of a graduate-level, interdisciplinary course in visual literacy offered through The Department of Educational Technology, Research, and Assessment (ETRA) at Northern Illinois University, USA. The course began 30 years ago with a focus on conceptual knowledge, research, visual production activities, and integration of visual literacy aspects in professional practice. The course was originally organized around key terms in the International Visual Literacy Association's (IVLA) definition; namely, encoding and decoding, with an emphasis on decoding. Class sessions involved discussion of multiple readings, organized by visual media available, such as print images, ads and posters, displays, photographs, videos, and films. Decoding activities utilized review of design elements through print images, art, television, and film; encoding was created with still and video cameras and even magazine images copied and revised. As a final project, students were asked to complete a 5–10-page review paper, highlighting information from a variety of academic resources, and detailing how that information could be used to add to or change practices in their professional settings (instructional design in business, K–20 classroom, health care, and museum).

As educational learning theories and strategies changed and new technology tools made encoding much more available, the course activities were modernized. We have made samples of our course materials available on our website, http://www.vislitsandbox.com, to help facilitate the description of this case. The approved objectives of the course were not altered, but the means to their accomplishment did evolve each time the course was offered. With the proliferation of digital (and therefore visual) culture, the course has evolved to reflect the changing paradigm of the twenty-first-century classroom, to include a focus on multiliteracies as originally defined by the New London Group (1996). Multiliteracies encompass the broad scope of traditional, digital, and emerging communication skills that foster competency in global digital citizenship. We believe that multiliteracy concepts deserve to be continually taught in education programs across the nation, and our course ideas may provide an excellent example for others to adapt to a variety of learning settings. The course, ETT 531: Visual Literacy, is offered yearly and fulfills requirements for multidisciplinary degrees and programs, although it is offered through the College of Education.

ETT 531 has consistently been a popular course over the past two decades, so when the university encouraged its departments to offer more courses in a blended format, ETT 531 was a prime candidate. In addition, the need for encoding skills as well as decoding skills was becoming more prevalent as access to digital collaborative tools continued to spur educators' desires to incorporate digital technology in the classroom. Since many of our students seek practical application of visual literacy, especially in terms of digital technology, we decided to shift the primary focus of the course from research and literature review to learning by doing as proposed by Dewey (1938). Our students enjoyed the three to four production activities in the original course, but we saw an opportunity to expand the production aspect of the course as a means to immersing our learners in twenty-first-century literacies, fo-

cused on visual literacy. We wanted to provide the same level of theoretical understanding, while adding the practical, hands-on experiences required for literacy in the twenty-first century (Williams and Zenger 2012). Therefore, the original course goals did not change with the redesign of course format and content presentation. Course goals and learning objectives for ETT 531: Visual Literacy are:

> Goal 1: Develop definitions related to theories and concepts of visual literacy and visual culture within the context of 21st century literacies from historical, professional, and personal contexts.
> Objective 1a: Review and analyze definitions of visual literacy.
> Objective 1b: Locate, understand, and analyze professional and educational visual literacy and multiliteracy standards.
>
> Goal 2: Explore and identify the contextual worth of learning theories, methods, and tools for the development of visual literacy in learning and training environments.
> Objective 2a: Review and summarize visual learning research and apply it to specific projects.
> Objective 2b: Develop critical viewing skills and demonstrate understanding of their application for learning settings.
>
> Goal 3: Explore and experiment with tools and methods to create, select, and integrate visuals in educational contexts and professional practice.
> Objective 3a: Analyze visual communications.
> Objective 3b: Identify and utilize design and production elements in various visual production activities.
> Objective 3c: Create visual media to explore visual meaning-making.
> Objective 3d: Select/explain/revise learning environments/materials to incorporate concepts of visual literacy into instructional technology practice to improve learning.

While we did not revise the course goals and objectives, we revised the format, design, and activities to more effectively emphasize the fluid, problem-solving nature of learning in the twenty-first century. The emphasis shifted from traditional reading, discussion, and final paper, a product-based approach, to an activity-rich curriculum with the focus on adapting and transferring skills through a process-based approach (Crockett et al. 2011).

Case Study Report Overview

As we approached this project, our research problem was at first difficult to define. We did not see any problems with the original course, simply a changing paradigm of approaches to all literacies, visual included. Our research problem was formed, therefore, in terms of what we experienced in the teaching of these literacies, underscoring the current scholarly literature's focus on gaps in student perception and effective use of visual and digital media (Williams and Zenger 2012). Our experience indicated that most of our students, whether in their early 20s or late 40s, exhibited a lack of fluency and comfort in reading, manipulating, creating, and sharing visual, digital media.

The first layer of the research problem involves a gap between student multi-literacy skills and educator expectations. Although the research literature has long since dispelled the myth of the digital native (Kennedy et al. 2007, 2009; Smith et al. 2008), in practice many teachers overestimate their students' multiliteracy skill sets (Margaryan et al. 2011; Kerawalla and Crook 2002). In fact, many assumptions are made about the Net Generation, including the misconception that they come to school with highly developed multiliteracies in place, including information literacy, digital literacy, and visual literacy (Cordes 2009). This gap between student abilities and educator expectations can lead to frustration as well as degrade the learning experiences of students. For example, should students understand through basic instructions how to upload papers correctly to a learning management system (LMS) with proper naming conventions and file formats? When students encounter difficulties in such a mundane task, do they give up or do they problem-solve by drawing upon visual cues, using information resources, or transferring digital skills across applications? In our particular study, we discovered that regardless of technical, visual, or information skills experience and training, students require additional scaffolding of learning to guide them; further, they need scaffolding to promote higher-order, reflective thinking and transfer of skill sets, to allow them to develop skills for communicating across modalities, purposes, and audiences.

The second layer of the problem involves clarifying the relationship among multiliteracies and determining a balanced emphasis among these skill sets in course development. At one time, visual literacy was a term that could define most multimedia experiences; however, in the twenty-first century, visual literacy is blended with digital, information, media, and cultural literacies (Cordes 2009). In a digital age, educators are faced with the convergence of multiple literacies (multiliteracies) across disciplines and contexts (see an excellent discussion in Avgerinou and Pettersson 2011). Crockett et al. (2011) have even suggested that educators reframe their perception of literacy as "fluency"; literacy, they contend, describes the lower-level skills, but fluency describes mastery. Educators should strive to bring students beyond the literacy level to fluency, "the level at which these skills have become internalized to the point of transparency, where the skills become part of the unconscious process and do not stand in the way" (p. 14). Figure 1 provides an overview of our research problem and case study overview.

We reviewed the course design, content, and delivery of the long-established multidisciplinary graduate course, ETT 531: Visual Literacy and began to realize that the course needed to address these converging multiliteracies. We concluded that we might achieve this through immersing students in a dynamic, media-, and modality-rich learning environment with low-stakes, high-challenge experiences.

As we contemplated the formidable task of creating a robust, blended, dynamic new version of this popular course, our overarching questions guided our planning:

1. *Why were changes to the course necessary?* We believed we needed to clarify the purpose of learning, teaching, and practicing "visual literacy" in the twenty-first century as one of the interrelated multiliteracies. We reviewed the literature on visual and multiliteracies as well as Common Core Standards and twenty-first-century skills.
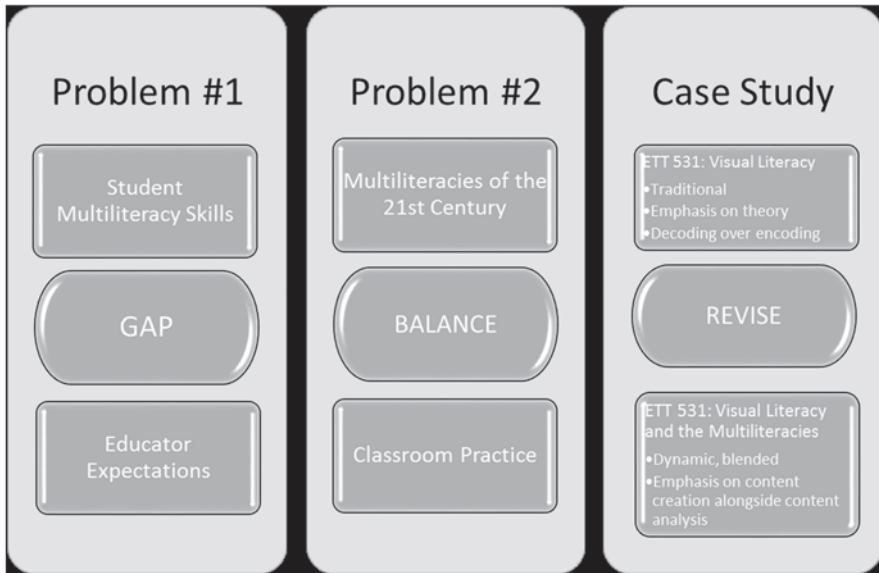
Fig. 1 Visual literacy course redesign research problem

2. *How would we change the course?* We decided to transition from the traditional theory-based course requiring a theory-based final paper to a hands-on or learning-by-doing model in which several low-stakes activities afforded exploration and practice to foster deeper understanding of multiliteracy theory in practice (Kuh et al. 2010; Svinicki 2010; Tinto 2012). Changes included:

a. *Delivery*: from on-campus face to face to blended (hybrid) to promote interaction across modalities
b. *Design*: from regular weekly topic units to an expedition theme to encourage exploration and provide a visual metaphor
c. *Instruction*: from a more traditional lecture/discussion/activity format to a more student-centered focus
d. *Assessment*: from several traditionally graded assignments to what we came to call a "low-stakes/high-stakes" learning expedition (low-stakes assignments; high-stakes learning outcomes for real life).

We also designed research questions to guide data collection:

- What elements do students identify as important for a successful blended course?
- How do students engage in and perceive their experiences in reflective writing assignments in a largely production-based course?
- What are students' perspectives on the portfolio component of the course?
- What were students' experiences with low-stakes production assignments juxtaposed with collaboration, discussion, and reflection?

Our methods included collecting and coding artifacts from ETT 531 courses in 2011 and 2012. These artifacts included discussion posts, e-mails, journal entries, portfo-

lios, assignments and reflections, and enter/exit surveys. We used NVivo software (http://www.qsrinternational.com/products_nvivo.aspx) to conduct open and axial coding; we determined patterns through first-cycle coding. Entering the second cycle of coding, we developed overarching categories and examined visual displays of the coding landscape, such as word clouds and maps. We wrote analytical memos on our data to summarize the findings and applied them to possible course changes.

Throughout this report, we will describe the reactions of the instructors and the students, the co-teaching model, and the results of our investigations into student responses to our many course changes as collected through observation, reflective journals, and end-of-course surveys. We include our thoughts for the future based upon these investigations.

Why Were Changes to the Course Necessary?

Visual literacy is more recognized today than ever before and is a significant addition to the twenty-first century and Common Core Standards for teachers in a majority of states in the USA (Partnership for 21st Century Skills 2010; Illinois State Board of Education 2011, 2014). These standards add goals in communication, multiliteracies, and critical thinking to the traditional literacy goals. Visual literacy development is vital to the multiliteracies, as described by the Partnership for the 21st Century, which leverage visual literacy development with information literacy, digital technology literacy, and media literacies along with critical thinking.

Advancing literacy in the classroom or workplace requires educators to engage learners in critical thinking strategies for producing, interpreting, and assessing visual and multimodal texts. Traditional literacy goals of text comprehension and analysis must not be ignored, but rather enhanced through the integration of multiliteracy curriculum strategies. The Partnership for Twenty-First Century Skills (2004) has provided a framework delineating the skill sets that will prepare learners for success. Among the skill sets, the partnership identified media literacy, which it defines as analyzing and creating media. Comprehending, assessing, and utilizing visual information is an important component of these "new" literacies; in fact, "… visual literacy is not only one of the most important literacies but also a basic skill for other twenty-first century literacies" (Aberšek 2008, p. 11).

Today's students need to develop skills in these multiliteracies, which include improving skills in areas such as information literacy, visual literacy, digital media literacy, and others as well as reading and writing skills (Koltay 2011; McKenzie 2009; Ohler 2008; Valmont 2003). It is essential for learners in the twenty-first century to develop communication and literacy skills that include the ability to locate, evaluate, understand, and critically think about information found through different media as well as the ability to interpret and create both visual and written artistic forms of expression (McKenzie 2009; Ohler 2008; Valmont 2003; Moore et al. 1999; Illinois State Board of Education 2014). Developing student proficiency in

these new literacies helps students improve their ability to communicate in today's world of global and digital communication.

This challenge faced by educational professionals at all levels is addressed through the carefully planned readings, activities, applications, and reflections on how to facilitate meaningful learning experiences that deeply engage the learner in visual literacy. An example for teachers and curriculum developers in K–12 schools is incorporating these new literacies into the classroom in a way that engages and motivates students to continue to develop their reading and writing skills for learning (Serafini 2011). The use of visual literacy ideas and strategies to enhance verbal learning has been examined for over 45 years (Braden 1996). For trainers and design professionals, an example is learning how visual literacy theory informs design and helping learners become analytical consumers of visual data. An example for faculty involves engaging students in reflective construction of meaningful projects across a variety of curriculum that will enhance students' critical thinking skills in both encoding and decoding of highly visual culture our students have grown up in (Martin and Madigan 2006).

For over 30 years, helping educators understand and integrate visual literacy development with technology has been the main goal of our graduate-level visual literacy course. The course originally had a traditional emphasis on reading and discussion with three to four production activities and a final research paper. The redesign of this visual literacy class for our graduate program took place over a 3-year span of class offerings and was based on course evaluations and class surveys; further, the redesign has been continued in 2014 as the course is being adapted for a fully online format. The recommendations from those student surveys and reflections suggested a need to incorporate the importance of the new literacies with technology skills development. The changes were also based upon literature in the new literacies and standards and the annual student feedback on course expectations, projects, and their meeting new Common Core State Standards.

How Did We Change the Course?

The course format was redesigned to offer a blending of face to-face and virtual class time. The course site offered robust materials and activities for distance learning and connected these to face-to-face meetings. The virtual sessions were not considered less demanding or different from the face-to-face meetings; rather, the same rigor and dynamic participation was expected. The course was restructured as a reflective expedition through which students explored visual literacy in historical, professional, and personal contexts. Students were challenged to reenvision the psychology of learning in terms of what Nicholas Mirzoeff (1999) calls "the paradox of visual culture" or the ubiquitous yet overlooked nature of visuals in the twenty-first century.

Delivery: Working Toward Blended Flow

Blended learning, also called hybrid learning, refers to a course format that "enable[s] students to travel to campus for some activities, while using the network for others, taking advantage of both environments" (Johnson et al. 2014, p. 10). The NMC Horizon Report of 2014 listed "Integration of Online, Hybrid, and Collaborative Learning" as one of the fast trends in educational technology or "driving changes in higher education over the next one to two years" (p. 10). Further, a 2007 Sloan Consortium survey report indicated that "Consumer preference for and openness to online and blended delivery far exceeds consumer experience of these delivery modes. This suggests that the market for online/blended delivery has a lot of room for growth" (p. 21) (Allen et al. 2007). The Horizon Report (2014) also suggested that as new digital tools continue improving communication among students, their peers, and their instructors, the quality of blended learning will continue to improve "community and interaction" in the blended or hybrid learning environment (p. 10). As such, we saw an opportunity to explore blended learning in a course focused on active visual critical thinking and problem solving. Adding the online component to the course would provide opportunities for learners to engage in visual literacy practice independently, digitally, and collaboratively.

We created a blended course that provides interactive experiences where the students cocreate the learning along with the instructors. We wanted to immerse students in visual learning, applying theory and concepts within the experience. For all three pilot courses, we met face to face approximately every 2 weeks with one virtual class in between. Some virtual meetings were synchronous, taking place in an online virtual world. For example, learners gathered in the virtual world of Second Life and used avatars to conduct virtual field trips, discuss course concepts, and present learning experiences. Our goal was to create a truly blended model of delivery in which student communication, participation, and activity seamlessly flowed regardless of delivery modality. We believe our blended approach was successful based on student feedback, such as this response to our end-of-course survey:

> I have taken a number of blended courses and feel that this course has used blended format better than any of the blended courses I have previously taken. I think that the professor and instructor dedicated time, energy, and effort in an effective manner to bridge the face-to-face classes with the virtual class sessions. I think that the professor and instructor designed the class activities, discussions, and presentations in a way that the face-to-face classes and virtual class sessions felt extremely connected. I have taken a number of blended courses here where the face-to-face class sessions feel like a completely separate entity from the virtual class sessions but in this course felt truly blended.

Achieving this blend was accomplished through careful planning. We ensured that all virtual class session topics and activities clearly linked to the previous and upcoming face-to-face sessions, thus establishing what we call *blended flow,* or continuity of structure, rhythm, and pace. A virtual session should not be different in flow from a face-to-face session. Providing this continuity of blended flow allowed students to feel comfortable in virtual sessions, but more important, students also

felt that participation expectations were the same regardless of the meeting space. Virtual weeks were neither easier nor more difficult than face-to-face meetings.

Readings, videos, and web resources were assigned for examination prior to the class session whether or not the class met face to face. For face-to-face meetings (approximately 3 h), an introduction to a key concept from the readings was introduced and discussion was facilitated. Students were then led through a hands-on tutorial to apply the concepts with an activity, and then were given time to work in small groups on specific projects. These "in-class activities" were low stakes, meaning that students were graded on participation rather than product. These activities were presented as learning opportunities and risk taking was encouraged. The activities were also warm-ups for official assignments that would follow the practice activities and which students would complete outside of class. Another benefit of these low-stakes activities is the large array of tools and skills provided for student exploration. Students were given freedom to choose appropriate tools, and these experimental activities provided opportunities to test and try them.

For asynchronous virtual class meetings, the same structure was followed except that students could choose to work in groups or on their own, discussions were posted to a discussion board, and instructor guidance was provided through virtual modes. Synchronous virtual class sessions were treated as field trips. For example, students visited educational "lands" in the virtual world of Second Life. Students were given a guide and asked to select at least three spaces in the virtual world that represented education centers, visual literacy examples, discourse communities, or events such as performances, concerts, or festivals. An example of a visual literacy space that was popular with students was the reproductive system tour created by Oregon State University's medical college. In this tour, student avatars rode in a small vehicle through a giant human reproductive system. Within the tour, there was narrative, text (in the form of informational cards), and multimedia. Students traveled through the tour in groups of four and were able to discuss the experiences as they occurred. Other virtual field trips included an ancient Rome simulation, Genome Island (an interactive science experience), the Globe Theatre, and a Peter Pan simulation. Small groups explored various destinations and events, and later reported their experiences to the class through photo stories and reflections.

The structure of each meeting, whether virtual or face to face, included:

- A visual, usually digital-based example of a principle from the week's readings, used as a discussion starter.
- One or two in-class activities, experimenting with digital and other tools, to practice the related principles of multiliteracies.
- A reflective writing activity and/or in-class discussion board through which students shared results of their in-class activities and discussed the concepts further.
- A wrap-up of the week and a preview for the coming week.

Sample Meeting Structure

1. Introduction to a key concept from the week's readings via video, brief activity, or reflective question. For face-to-face meetings, this was done usually with an overhead projector. For virtual meetings, students followed embedded media and text in the course site. For both modalities, all materials were arranged in order of use in the week's folder, and all materials were available from the beginning of the course. Figure 2 provides a glimpse of a weekly folder's materials.
2. Discussion stemming from opening activity. In both virtual and face-to-face meetings, discussions were continued on the discussion boards.
3. One to three in-class activities, which earned participation points and so were "low stakes," examples are as follows:

   a. Practice Digital Story: Students were given a brief hands-on tutorial before practicing digital storytelling in small groups. We began with a familiar tool, PowerPoint, as later in the course other tools were introduced. (See instructions and a sample on our website).
   b. Brief Comic: After success with the PowerPoint story, we asked students to try a new tool, Pixton Comics. The stories they began in the practice session developed into full examples later. (See instructions and samples on our website).

4. Reflection immediately following activities:

   a. Use of discussion board during class: Students posted their stories to the class discussion board. In class, we reviewed and discussed them, now using these as concrete examples for the principles learned in the week's readings, lecture, and discussion.
   b. Journal prompt: Reflect on what you have learned concerning effective storytelling from our readings, activities, and discussions. How have these class experiences influenced your attitude toward the importance of storytelling as a teaching and learning tool? How might you use this tool in the future?
   c. The graded discussion board asked students to reflect on appropriated art and image manipulation. (See sample on our website).

Another method we used to ensure blended flow was by using the discussion board course tools of the LMS in nontraditional ways. Course discussions extended beyond the "read and summarize" model with some discussion board postings occurring during and after face-to-face in-class activities. Our students were accustomed to discussion board tools used as virtual session participation. We asked students to post projects and examples during our face-to-face time and to respond to each other online during class. At times, we would use the liquid crystal display (LCD) projector to display portions of a particularly interesting discussion. Using the discussion board tools in the face-to-face classes accomplished two important goals: Students came to see discussion boards as a vital form of communication and became effective at continuing class discussions outside of class time, and students helped each other learn the technology skills needed to include pictures and videos in their posts

Digital Storytelling

In *Make Me a Story*, Lisa Miller (2010, p. 5) says that digital stories:

"…sometimes do tell what we traditionally think of as stories, as when students write about persona successful digital story is that, rather than simply reporting the facts, it answers some question that

According to Miller, digital stories offer the following benefits:

1. They empower and engage reluctant readers
2. They build community in the classroom
3. They help students analyze audience in the process
4. They do not need to be complicated to be effective
5. They can be used across the curriculum
6. The process is as important as the product (reflective learning and integration of multiple sk
7. The process draws and builds on what students already know

What are some other non-digital ways to use storytelling in education?

Digital Storytelling in Plain English

Digital Storytelling in Plain English
Duration: (4:06)
User: sublimities - Added: 6/21/09
YouTube URL: http://www.youtube.com/watch?v=zP6CeGLFuOY

Watch Video

Please review prior to class

Digital Storytelling/ Math Tutorial for EDIM 504/ Finding slope

Digital Storytelling/ Math Tutorial for EDIM 504/ Findir
Duration: (3:52)
User: wolferobynm - Added: 10/24/09
YouTube URL: http://www.youtube.com/watch?v=dKyeI6JU9vE

Watch Video

Sample of teacher-made digital story. You don't need to view the whole story; however, please

1st Grade Student Digital Story

Digital Storytelling with PhotoStory
Duration: (0:50)
User: edtechgun212 - Added: 3/12/10
YouTube URL: http://www.youtube.com/watch?v=ALzS7q67vfY

Watch Video

Sample 1st grade digital story.

(a)

Fig. 2 Sample of lesson content

"Dominoe" Example

Here is a storyboard for the digital story "Dominoe": http://cogdogroo.wikispaces.com/Dominoe+St

There are many tools available to make different types of digital stories.

- Here is the Dominoe digital story made in PhotoPeach: http://photopeach.com/album/173u2
- Here is the same story with voice narrative on Youtube: http://youtu.be/eMp-FI-sXrU
- On this page, the author of the story has demonstrated the Dominoe story in 50 different tool

Considerations when choosing tools:

- Ability of the person creating the digital story
- Availability of the tools and necessary technology
- Media format of the story content (photos, movies, animated pictures, music, voice narration)
- Storage and display options for the digital story (online, school server, flash drives)

In-Class Activity: Digital Story

In-Class Activity: Brief Comic

In-Class Activity: Digital Story

Build Content ∨   Assessments ∨   Tools ∨   Partner Content ∨

In-Class Activity Digital Story Practice.docx

In-Class Guided Tutorial: PowerPoint for Digital Stories

We will use the following files (called "assets") for a guided tutorial on using PowerPoint for digital stories. PowerPoint is a great choice because it does not require Internet connectivity and most productivity software suites offer a slide show type of option.

Here is the tutorial guide: PowerPoint for Digital Stories.pptm

Here are the assets for the tutorial plus a few extra in case you'd like to practice more. Download these to the desktop or a folder you create on the desktop:

Background 1.JPG
Background 2.jpg
Background 3.jpg
Polar Bear.jpg
angry office worker.jpg
Television.png
Characters.gif
Help Desk Woman.png
All "assets" in a zip folder if you prefer: Tutorial Assets.zip

(b)

Fig. 2 (continued)

as well as techniques to organize and sort posts. Discussions were linked directly to activities and readings, requiring students to reflect on their learning and engage in discussions about the purpose of specific activities. In order to make the online discussions just as meaningful as face-to-face interactions, we combined formal graded discussions with in-class sharing and reflection (for participation points). The graded discussions included a clear rubric (see website for rubric) that encouraged timely and frequent participation.

The graded discussion prompts challenged students to view or create a visual communication and then discuss it in terms of the course readings (see samples on our website). In this manner, we were able to incorporate theory and conceptual material that was linked to learner experience. While creating such deeply integrated

discussion opportunities required much planning, the results were quite positive, as shown in these student comments from our survey:

- I liked that during our face-to-face class sessions some time was provided for us to extend our online discussions with classmates.
- The class provided different activities and discussions, which I was actually involved in, and enabled me to reflect upon my own visual learning. In fact, I have started thinking about what I am learning, and how to adopt visual learning in my teaching strategies in the future.
- The online discussions were a great way to connect with others.
- Many times I learned as much or more in the discussions than I did from the readings.

Design: Leading Students on An Expedition

We created a themed course to model visual teaching and learning. We wanted students to be able to make mental maps of the course design and visualize the course metaphorically rather than as a document repository. We modified a blackboard teaching style structure ("expedition based") and created an expedition theme. The course began on the announcements page, while a left-hand-side menu provided course navigation. The menu items reflected the expedition theme and required students to explore and learn the course layout, as we did not use the typical vocabulary for the course links. After Announcements, the menu was divided into four sections. The first section contained informational content that students might require at a glance. We provided a navigation overview, the syllabus, and an overview of due dates and points. The next section contained the course content areas; after that came resources and instructor contact information, and finally the course tools. Figure 3 provides an overview of the course design. All hypertext markup language (HTML) pages in the course site were provided as portable document format (PDF) downloads for students, and all pages were compatible with most mobile devices.

We included specific questions about course structure and navigation in our end-of-course survey. We were initially concerned that our prolific announcements might annoy rather than help; however, the survey results were positive. Students overwhelmingly appreciated the announcements (94 % of respondents over two courses):

- I feel like the use of announcements helped create a good bridge between the face-to-face meetings and the virtual class sessions.
- They were like tweets and feel they were very useful.

Another concern we had as we built the course revolved around our desire to make available all course materials from the start, similar to an online course. While preparation was a bit arduous, we were able to organize at a detailed level that allowed students to manage their time and prepare when it was convenient to them. To this end, the syllabus link contained instructions listing which important documents to

Fall 2012 ETT 531 - 1 Visual Literacy 🏠 **Announcements** **1**	1. The Announcements page served as the course landing We sent announcements, which were also pushed through student e-mail, several times throughout the course: • Session wrap-ups to reinforce concepts and clarify next steps • Weekly reminders, tips, and resources • Encouragement • Optional challenges (e. g. , participating in a photo story challenge)
Navigation--Start Here Expedition Syllabus Due Dates & Points **2**	2. The second section offered information at-a-glance. • Course navigation guide that explained layout and course flow • Syllabus: official syllabus and all important documents • At-a-glance due dates and points: This section was vital for our learners, every one of whom worked and had personal responsibilities outside of class. This was a single page providing an at-a-glance due date calendar and points schedule for the whole course. Student feedback suggested that this was one of the most useful, visual features that helped student mentally map their excursion through the course
Weekly Adventure Packs Campfire--Discussions Expedition Journal **3** Expedition Assignments Expedition Portfolios	3. The third section offered course content areas including: • **Weekly Adventure Packs**: weekly content such as videos, lectures, readings, samples, etc. • **Campfire**: discussion boards • **Expedition Journal**: private journals for biweekly reflections • **Expedition Assignments**: graded activities that built upon several smaller, low-stakes practice activities • **Expedition Portfolios**: individual student portfolios displaying selected projects
Backpack--Resources Contact Your Guides **4**	4. The fourth section linked to supplemental resources that students could refer to throughout the course and use for their final project. The instructor contact information was also here
My Grades Tools **5** Help	5. The final section contained the tools our students are accustomed to seeing in this LMS

Fig. 3 Course navigation menu for ETT 531 Fall 2012. The menu reflects the expedition theme

Due Dates & Points

Due Dates & Points "At-a-Glance"

ETT 531: Visual Literacy Fall 2012 Due Dates and Point Values At a Glance		
Note: All Extension Activities must be submitted in Blackboard. Other requirements, such as posting to your portfolio or to LiveText will be discussed in class.		
Due Date	Points	Name of Activity
8/29	0	Pre-class assignment: Quilt Activity
8/29-9/5	0	Discussion Board #0: "Getting to Know You" (not graded but mandatory)
9/5-9/19	5	Discussion Board #1: "Defining Visual Literacy"
9/12	5	Journal #1: Reflecting on Visual Literacy in My Field
9/19	5	Extension Activity 1: Visual Definitions
9/19-10/3	5	Discussion Board #2: "Appropriated Art/Image Manipulation"
9/26	5	Journal #2: Telling Stories
10/3-10/17	5	Discussion Board #3: "Using Graphic Texts"
10/10	5	Extension Activity 2: Graphic Text Creation
10/10	5	Journal #3: Visual Composition
10/17-10/31	5	Discussion Board #4: "VL Concepts and 5-Frame Stories"
10/24	5	Extension Activity 3: Digital Story
10/24	5	Journal #4: Film and Learning
10/31	5	Extension Activity 4: Critical Analysis of Short Film
10/31-11/14	5	Discussion Board #5: "AECT Standards"
11/7	5	Journal #5: Games, Virtual Worlds, and Animations
11/14	5	Extension Activity 5: Animated Lesson
11/14-11/28	5	Discussion Board #6: "Final Project Ideas"
11/28	5	Journal #6: Living a Life of Visual Literacy
11/28	5	Extension Activity 6: Games/Virtual World Exploration
12/5	15	Extension Activity 7: Final Project Presentation
12/5	40	Extension Activity 8: Final Portfolio
12/5	80	Extension Activity 9: Final Project
8/29-12/5	75	Class Participation (5 points x 15 meetings)
Total	300	

ETT531 Fall 2012 Due Dates and Points.pdf

ETT 531 Checklists.docx

Fig. 4 Screen capture of "Due Dates & Points" tab in course. Included was an at-a-glance view of important due dates and a handout of checklists to help students organize themselves

download and refer to throughout the course including the official syllabus, the course agenda, the complete packet of graded and nongraded activities and assignments with rubrics, and the journal prompts. We also included a packet of checklists that broke down activities by type, since our face-to-face and online sessions were integrated and activity oriented. For example, we offered checklists that showed each assignment, journal entry, discussion board, and in-class activity by date along with the point values. We found that providing organization tools helped students relax and become more comfortable with the learning-by-doing format and, at the same time, we were promoting visual organization. The survey question asking students about the at-a-glance due dates section for both 2011 and 2012 earned a 100% positive response. Figure 4 is a screen capture of the due dates "at-a-glance" tab.

Student comments on the supports for staying organized and managing time were very encouraging:

- I loved seeing all of the due dates in one place. In other courses, I have become confused with all of the dates for projects and discussion boards, especially when they are hidden inside of the project descriptions.

Expedition 1: "Orientation to the Course" 3 Weeks	• Class Welcome & Overview • Defining 21st Century Literacy
Expedition 2: A Picture is worth.. 4 Weeks	• Picturing Words • Telling Stories: Storybooks, Graphic Texts, and Digital Storytelling • Composing Visually in the 21st Century • What's in an Ad? Visual Literacy and Advertising
Expedition 3: Visually Communicating with Motion 5 weeks	• Exploring Film as Visual Communication • Video Games & Visual Literacy • Virtual Spaces and Communities—Visual Metaphors • Exploring Animation
Expedition 4: Travelogue 2 weeks	• Final Project Workshop • Final Project Showcase

Fig. 5 Course content structure. Instead of units, we organized the course into four expeditions, each one exploring various facets of visual and multiliteracies

- It is inconvenient to click into project descriptions every time you need a reminder of a due date (describing the typical class structure). This, for me, was the best class I have ever taken in terms of clarity and convenience of due date communication.
- I found it useful and reassuring to know that I was staying on top of things, especially while keeping up with projects for another course as well.

The course topics were divided into four expeditions, each one with a different exploration theme. Each expedition explored various facets of visual and multiliteracies and provided several opportunities for practice and discussion of these skills. Throughout the first three expeditions, we also discussed the final project, which was an opportunity for students to demonstrate their understanding of visual and multiliteracies by designing materials appropriate for their professional setting. Along with providing the final project details from the first week and forward, we also provided several examples of successful student projects. These samples became one of the discussion prompts on the discussion board, and allowed students to consider their own final project choices thoughtfully. The final project deliverables included an implementation plan description, at least one artifact, and a poster presentation. Our goal was to connect the final project to learning that occurred throughout the course, and we encouraged students to discuss and consider final project topics from the very first expedition. Figure 5 shows the four expeditions in the course.

Perhaps the most significant change we made to the course design was our approach to assignments and grading. We used a low-stakes/high-stakes approach, with multiple activities and experiences earning participation points (low-stakes assignments) and opportunities to choose culminating assignment topics to use in real-life contexts (high-stakes learning). The low-stakes activities, such as creating

a brief animation, analyzing a visual, or creating a comic strip, allowed students to experiment with visual learning concepts and tools without fear of grade impact if their experiment failed. The high-stakes learning challenges occurred organically with expedition (unit) assignments as students discovered interests and personally relevant applications of visual and multiliteracies in the low-stakes activities and applied these to larger projects of their choice. On both 2011 and 2012 course surveys, students expressed a 100 % satisfaction with this unusual, participation-based approach:

- I think having a range of small assignments is important to this visual literacy class, because I get to now leave here with experience in a diverse range of applications, and many of which I would not have realized, could be so useful for me, had I not needed to experiment with them. Only having one or two major assignments I think would prevent us from learning a variety of valuable skills.
- I enjoyed seeing how easily I could integrate visual literacy skills into a number of different class topics.
- I am thankful for having the opportunity to get the exposure [to] many different tools that I can use in class. Thank you for a great Expedition!

Instruction and Assessment

Another significant change to the course involved instruction method and style. We wanted to continue to move away from the traditional content-centered style of teaching and adopt a learner-centered approach. Our instruction was informal, we provided casual and immediate feedback in class, and we created our own examples along with the students as the class experimented with various tools and techniques. We kept repeating, "Just try it out." Students earned full credit in the form of participation points for attempting the application of multiliteracy skills even if the attempt was not perfect or was incomplete. The points were earned through an open and adventurous attitude and brief written reflections on each experience indicating that learning had occurred.

We also decided the course would be most effective if co-taught, especially since we included multiple hands-on learning activities and team projects. Our face-to-face sessions were bustling with activity, and having two instructors invested in the course proved beneficial. While a teaching assistant or lab assistant might be helpful, having two instructors to provide guidance seemed important to the students. The student survey comments on the effectiveness of co-teaching in the course included the balance of styles between the two facilitators, different perspectives of the two facilitators, and the added availability that comes from having two facilitators. Our co-teaching also helped model collaboration, which we included as a main feature of the course. For example, students created visual definitions of visual and multiliteracy terms for a shared class visual dictionary. Almost all in-class activities were completed in small groups.

Having two instructors also eased the burden of providing timely student feedback on the multitude of activities students completed or experimented. We focused on qualitative feedback and used Socratic questioning to guide student learning in personally relevant directions. We also placed less value on due dates and more on reflection. Although we provided due dates as guidelines, we were more interested in students exploring the learning experiences and so did not deduct points for nominally late assignments.

The specific tools used in the course are much less important than the freedom to experiment and share knowledge. For activities that involved digital tools, we made samples and job aids for one or two selected tools but offered many other options so students had choices. We showcased tools we personally found to be easy to use and easy to adapt to a variety of learning situations. The most popular tools and techniques, based on our survey results, included:

- Weebly: a free, easy-to-use website creation and hosting tool that we used for student portfolios and collaborative projects; students also were thrilled with their finished portfolios showcasing their work (samples are available on our website).
- Pixton: a comic maker.
- Digital storytelling in multiple formats including Animoto, GoAnimate, and Photopeach.
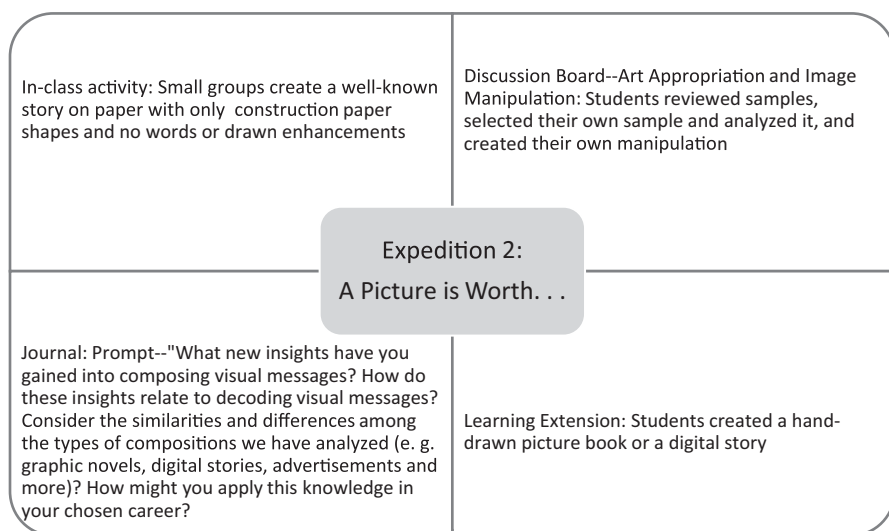- Assessment of visuals and elements of visual messages.

In a typical graduate-level course, reading is assigned, lectures are given, discussions take place, and learning is assessed through an exam or project. In this traditional model, students might experience periods of time when no learning occurs. One reason the visual literacy course was quite popular stemmed from the nontraditional approach and the successful combining of hands-on activities and theory. Over the years, the authors added to the course and had offered students multiple opportunities to expand their literacy skill set.

As educational technology professionals, we recognized in our students the swiftly converging skill sets emanating from the many new and ever-changing Web 2.0 tools, mobile devices, and virtual spaces. Our students were adept, but not broadly so and not with transferability. For example, we noticed that while many students could communicate well through their mobile devices, they experienced difficulties with basic LMS functions and often seemed helpless to problem solve. We were nonplussed at the multiple times we assisted students with simple online tasks only to discover that many students could not "read" the visual landscape of our LMS, Blackboard. Additionally, our curiosity was piqued through some casual observations and discussions with students about how they were engaging with digital information; for example, many students would bring laptops to class, but the main activities were note-taking and checking e-mail. They were not even visiting Facebook, using visual organizers, or using the visual tools in the word processing programs to enhance their notes! Why was this so? With so much visual and digital power at their fingertips, it simply did not make sense that our learners, many of whom were educators themselves, remained passive and peripheral practitioners of

the multiliteracies. Later, a 2-year study on student use of technology confirmed our observations on a much larger scale (La Roche and Flanigan 2012).

From these observations, and from the literature, our ideas began to develop and expand. The visual literacy course was the perfect environment to continue fostering empowered learners with fearless and enthusiastic multiliteracy sensibilities. The seeds were already there: A senior faculty member had been teaching multiliteracies for years with video making, image manipulation, content curation, and more. A course revision incorporating multimodal skills across a range of task-based and higher-order thinking activities became our priority.

We wanted our students to learn and move beyond their comfort zones in every class session. Therefore, we designed low-stakes activities that students completed in class with a minimum of instruction but plenty of samples. Students were given ample time to experiment, work in groups, and complete experimental projects that might or might not lead to a larger project. Each expedition also had a "Learning Extension," which was a more formal assignment; however, the Learning Extensions altogether were equal to the participation points, which helped alleviate stress and encouraged students to take risks. The Learning Extensions were all available in a single packet as well as individually in each expedition folder and included instructions, a grading rubric, and sample completed projects. Multiple samples were necessary because the assignments gave students freedom to select topics and content, while also providing specific guidelines and requirements. In each expedition, students experimented with low-stakes activities, reflected on their learning in journals, participated in online discussions, and created a Learning Extension project. All activities related to each other to enhance learning. Figure 6 shows an example of how 1 week's activities related.

In-class activity: Small groups create a well-known story on paper with only construction paper shapes and no words or drawn enhancements	Discussion Board--Art Appropriation and Image Manipulation: Students reviewed samples, selected their own sample and analyzed it, and created their own manipulation
Expedition 2: A Picture is Worth. . .	
Journal: Prompt--"What new insights have you gained into composing visual messages? How do these insights relate to decoding visual messages? Consider the similarities and differences among the types of compositions we have analyzed (e. g. graphic novels, digital stories, advertisements and more)? How might you apply this knowledge in your chosen career?	Learning Extension: Students created a hand-drawn picture book or a digital story

Fig. 6 Example of related activities

Discussion

Most students expressed high satisfaction with the course; interestingly, the heavy workload in the course did not impede satisfaction. While the course had a combination of 38 reflective assignments and in-class activities, the majority of these were "low stakes" in terms of points. Students earned points by reflecting on their experiences each week. Students felt that they spent a great amount of time on work for this course, but this seems to have added to their satisfaction, especially concerning what they learned. For example, one student said, "Overall, I really enjoyed this class, even though it did take up more time than other classes, the activities we did were worth the time. I gained a lot and am happy to have had the experience!" Another student commented:

> I thought this class was exceptional. There was a lot more work than in other classes but, honestly, I appreciated it as other grad courses have not seemed like grad courses. It was helpful to learn a little about many programs so we can then choose which to explore further. I appreciated your flexibility in recognizing that it was more important to meet the content skills rather than having an assignment in by a given deadline.

While students expressed satisfaction with the hands-on activities, they were less favorable toward the traditional work of reading critical essays. One student summarized these feelings:

> I really enjoyed the whole of the class. My favorite part of it was actually using the tools that we talked about instead of just knowing that they were out there. The only change I might make is cutting down some of the readings, I did not learn as much from them as I did from the other activities in class and they did take a lot of time to read. If we could, including even more tools would be fun.

Some students also saw the course format as enabling collaborative learning and encouraging open-mindedness. Many students mentioned changing their own teaching behaviors: "This class has expanded my understanding of a critical competency that all teachers must master to be effective in the classroom. Personally, I am much more open-minded about incorporating new techniques into my classroom."

Students also indicated that the multiple low-stakes assignments helped them master concepts and skills they initially found difficult. One student expressed these thoughts like this:

> Some terms, such as scale and depth, and value, hue, and saturation are very similar in meaning and, as a person with a non-artistic background, it was difficult for me to understand the nuances that differentiated the meaning of the terms. This is an example where repeated exposure to the terms and having the ability to complete exercises that compared/contrasted or sorted images into correct categories was very helpful.

The hands-on application of visual literacy seemed to be a source of satisfaction for students. Also, the blended model seemed to help students pace the steady workflow and give them time to digest new information, ideas, and skills. Students enjoyed working theory into practice during the course:

> Honestly, my favorite part of the class were the sessions where we were able to create things. That's not something that I get to do normally, so when we worked in groups and

created the Photopeach video and made the fairytale storyboards using visual literacy principles, and other activities like these were one of my more favorite parts of the semester. Not only was it fun to actually create something, but the act of "doing" really drove home whichever topic we were covering at the time. This reason is one that I feel the blended version of the course is the best. Meeting in person allows us to meet and work with our classmates as well as get one-on-one instruction. The virtual weeks then were good to allow us to explore on our own some of the tools we were working with.

While students seemed to enjoy the experience of using tools in the classroom, they appeared to be most enthusiastic about the application of these tools and visual literacy theory in their professions. Students mentioned being able to apply what they have learned to their other coursework as well as their job; some envisioned using these tools in future careers, too. As one student said, "The chance to learn and work with Web 2.0 tools was very interesting for me. I hadn't heard of any of the tools we had used in class and I really enjoyed receiving instruction in how to use them, but then how they can also be used to encourage visual literacy as well. I can definitely see myself utilizing some of the tools in my professional future."

The one aspect of our course we did not discuss in detail yet involves the amount of student reflective writing we included. Every activity and assignment included a brief reflective writing, and each student kept a private, digital journal. The primary goal in our revision of this class was, of course, enhancing student learning. We also wanted to experiment with a flexible yet robust task list, low-stakes point scale, and reflective writing for learning. Adding the reflective component was important since we did not expect students to master all the encoding skills we practiced. Students were asked to reflect on over 20 assignments and provide an overall reflection in a portfolio of their work. They were also given an open-ended survey at the beginning of the course and at the end asking about their experiences with reflection (and other items). Student comments were very encouraging:

Reflection is a new idea for me since beginning graduate study in education. I like the reflection model because it gives me a chance to show how much I have actually learned rather than go through the anxiety of studying for a test where I have to hope that what I am memorizing matches what the professor is going to ask.

At the beginning of the course, some students appeared to have negative ideas about reflection. One student noted, "I really don't see any value in reflection no matter the area. I do not look forward to the reflection piece required for this course because it is not helpful to me and is not something I will ever use." However, students seemed to value reflection towards the end of the course, mentioning how reflection was appropriate for graduate-level work. Another student pointed out "At first, I didn't see much value in this, but as time went on, I realized that reflection helped me to form more concrete ideas and opinions on what we were studying and how we were studying it. It also helped to reinforce my learning." One especially insightful student's comment related storytelling and reflection to deep learning: "For me, at least, memories are fixed by stories. Making a story of learning anything, reflecting on how it happened and what is learned, is what creates a lasting memory. It is reflection that transfers ownership of knowledge."

For effective learning, ownership of one's learning process is important. The learning process can be deeply personal, and it is therefore important for learners to have autonomy in learning. This concept is one we take for granted in the USA. One international student said:

> It is too sad for me to say that I have been a teacher for twelve years (1997–2009) and I have never used reflection in my teaching process. I believe that the undemocratic life which I used to live in [another country], did not allow me to use reflection in my teaching process. I believe that reflection is part of democracy. Now, I feel [I am] a lucky person who started to use democracy through reflection.

How fascinating that reflection and freedom might be related! Meaningful reflection can foster new identities and new possibilities. One student hinted at personal transformation: "As I gaze back down a jagged and circuitous path, I am comforted that I have observed and assimilated more than it may have appeared at first blush. The most important lesson was trying to rip down preconceptions and walls of stubbornness."

While reflection can be time-consuming, students might benefit from extensive practice with this skill. In order to make a personal transformation, the learner must analyze his or her possibilities. Reflection can help students build narratives and meanings from their learning experiences that can transform their self-perception and identity. In the typical classroom, we often do not plan for adequate reflective writing, nor do we attach it directly to "disorienting experiences" (Mezirow 2009, p. 19) that cause adult learners to work outside of their comfort zones. The discomfort of plentiful hands-on, digital, and other visual activities gave students an opportunity to leave behind their accepted identities (e. g., "I am not an artist; I am a science teacher") and gain new perspectives. While the heavy workload of creative activities forced students out of their comfort zones, the bountiful reflective writing opportunities helped them own their experiences and forge new perceptions of themselves.

Implications Across Educational Settings and Recommendations

The results of our study were encouraging and have inspired us to continue our own expedition in teaching and learning visual literacy in the twenty-first century. Our design changes in delivery, design, instruction, and assessment helped our learners grow as independent explorers of the visual world in which we live. Along with our students, we also learned valuable lessons, and we have decided that this course will continue to be a work in progress as long as our visual world continues to expand. Current concerns involve the digital landscape of a fluid, mobile, instant-access world. What will tomorrow bring to our visual literacy course—immersive virtual reality?—big data?—3-D printing? What will tomorrow bring for our colleagues in K-12 settings?

We hope that lessons learned through our study will inspire educators of all levels to embrace an explorer's approach to visual literacy in their curriculum. Concerning delivery methods, we learned that students enjoy blended spaces when instructions are clear, and the virtual sessions follow a similar structure to the face-to-face sessions. Feedback from students indicated that clarity is an important feature of an effective course; future research might focus on student perceptions and expectations of effective virtual class sessions. While K-12 settings might not yet be blended, the communication between home and school is beginning to bridge that gap in the form of digital communication systems such as family or parent portals with access to daily classwork and message boards. Based on our findings, we recommend that K-12 educators make lesson plans and overall learning goals available to parents through these media.

Concerning the design aspect of our project, we learned that the themed approach helped students mentally organize their learning and map their semester. Metaphors are powerful communicators, and visual metaphors can enhance the learner's in-depth learning by providing connections. In this area, we feel that K-12 settings are already strong. However, our study results demonstrate the importance of engaging students through the *process* of their learning experience. Providing an appropriate metaphor over the entire semester provided continuity in the student experience that could be further explored in both K-12 and higher education settings.

Our study also demonstrated that traditional methods of instructional delivery such as reading/lecture/discussion can be adapted to a more student-centered focus. Providing all learning materials at the beginning of the course allows students to have control of their learning path. Providing multiple low-stakes activities allows students to explore and practice the application of concepts in a safe environment, while preparing them for more formal assessment. Again, in this area, we feel that K-12 educators have already made great strides toward student-centered learning; for example, learning stations would be a K-12 application of what we attempted with our graduate students.

Finally, the most radical departure from traditional structure appeared in the points system we used (and are still perfecting). In removing the pressure of performance for a grade in the majority of activities, we freed our students to take risks, explore outside of their comfort zones, and think creatively. For graduate-level students, this system requires an adjustment in expectations; at first, the students are very concerned about each activity and are focused on the product rather than the learning experience. However, each time we have taught the course in this format, we have found that by the third week students stop asking about grades and begin asking perceptive questions and offering new ideas and suggestions. Grading rubrics that clearly emphasize the importance of reflection over final product (for the low-stakes activities) seem to help assuage students' concerns. One other benefit to including several low-stakes activities is the reduction in time-consuming grading. Feedback is usually given immediately and in person or through quick and thoughtful digital messages. We feel certain that this approach would be helpful in K-12 settings as well.

Conclusion

Ultimately, our wish for our students was that they take ownership of their learning, learn to enjoy the process of becoming visually literate, and deepen their practice of critical reflection. The changes we made and continue to make in our teaching of visual literacy will focus on empowering learners to take risks and inspire them to become lifelong learners, undaunted by changes in technology, media, and communications. One student reflected at the end of the course, "It was great to spend time thinking about what visual literacy is and what makes it work. I feel like I have barely scratched the surface, and I hope to continue to educate myself on my own."

References

Aberšek, M. K. (2008). Visual literacy—One of 21st century literacies for science teaching and learning. *Problems of Education in the 21st Century, 5,* 9–17.

Allen, I. E., Seaman, J., & Garrett, R. (2007). *Blending in: The extent and promise of blended education in the United States*. Needham: The Sloan Consortium.

Avgerinou, M. D., & Pettersson, R. (2011). Toward a cohesive theory of visual literacy. *Journal of Visual Literacy, 30*(2), 1–19.

Braden, R. A. (1996). Visual literacy. In *Handbook of research for educational communications and technology* (pp. 491–520) New York: Simon and Schuster Macmillan.

Cordes, S. (2009). Broad horizons: The role of multimodal literacy in 21st century library instruction. In World library and information congress: 75th IFLA general conference and council.

Crockett, L., Jukes, I., & Churches, A. (2011). *The 21st century fluencies series: Literacy is not enough: 21st century fluencies for the digital age*. Thousand Oaks: Corwin.

Dewey, J. (1938). *Experience and education*. New York: Macmillan.

Illinois State Board of Education. (2011). The new Illinois learning standards incorporating the common core [PDF]. http://www.isbe.state.il.us/common_core/default.htm. Accessed August 18, 2014

Illinois State Board of Education. (2014). Illinois State Standards: Introduction. http://www.isbe.state.il.us/ils/pdf/ils_introduction.pdf.

Johnson, L., Adams Becker, S., Estrada, V., & Freeman, A. (2014). *NMC horizon report: 2014 higher education edition*. Austin: The New Media Consortium.

Kennedy, G., Dalgarno, B., Gray, K., Judd, T., Waycott, J., Bennett, S., Maton, K., Krause, K.-L., Bishop, A., Chang, R., & Churchward, A. (2007). The net generation are not big users of Web 2. 0 technologies: Preliminary findings. In R. J. Atkinson, C. McBeath, S. K. A. Soong, & C. Cheers (Eds.), *ICT: Providing choices for learners and learning.* Proceedings of ASCILITE 2007 Conference. Centre for Educational Development, Nanyang Technological University, Singapore. http://www.ascilite.org.au/conferences/singapore07/procs/kennedy.pdf. Accessed July 12, 2014

Kennedy, G., Dalgarno, B., Bennett, S., Gray, K., Waycott, J., Judd, T., Bishop, A., Maton, K., Krause, K., & Chang, R. (2009). Educating the net generation—A handbook of findings for practice and policy. Australian Learning and Teaching Council. http://www.netgen.unimelb.edu.au/downloads/handbook/NetGenHandbookAll.pdf. Accessed July 12, 2014

Kerawalla, L., & Crook, C. (2002). Children's computer use at home and at school: Context and continuity. *British Educational Research Journal, 28*(6), 751–771. doi:10.1080/0141192022000019044.

Koltay, T. (2011). The media and the literacies: Media literacy, information literacy, digital literacy. *Media, Culture & Society, 33*(2), 211–221.

Kuh, G. D., Kinzie, J., Schuh, J. S., & Whitt, E. J. (2010). *Student success in college: Creating conditions that matter*. San Francisco: Jossey-Bass.

La Roche, C. R., & Flanigan, M. A. (2012). Student use of technology in class: Engaged or unplugged? *Journal of College Teaching & Learning (TLC), 10*(1), 47–54.

Margaryan, A., Littlejohn, A., & Vojt, G. (2011). Are digital natives a myth or reality? University students' use of digital technologies. *Computers & Education, 56*(2), 429–440. doi:10.1016/j.compedu.2010.09.004.

Martin, A., & Madigan, D. (2006). Preface. In A. Martin & D. Madigan (Eds.), *Digital literacies for learning* (pp. xxv–xxviii). London: Facet.

McKenzie, J. (March 2009). Reading across a dozen literacies. From now on: *The Educational Technology Journal,* 18(4). http://www.fno.org/mar09/dozen.html. Accessed May 20, 2014

Mezirow, J. (2009). *Transformative learning theory*. In J. Mezirow & E. W. Taylor (Eds.), *Transformative learning in practice: Insights from community, workplace, and higher education* (pp. 18–31). San Francisco: Jossey-Bass.

Mirzoeff, N. (1999). *An introduction to visual culture*. Chicago: Psychology Press.

Moore, D. W., Bean, T. W., Birdyshaw, D., & Rycik, J. A. (1999). Adolescent literacy: A position statement for the commission on adolescent literacy for the international Reading Association. http://www.reading.org/Libraries/Position_Statements_and_Resolutions/ps1036_adolescent.sflb.ashx. Accessed July 9, 2014

New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66*(1), 60–92.

Ohler, J. (2008). *Digital storytelling in the classroom: New media pathways to literacy, learning and creativity*. Thousand Oaks: Corwin Press.

Partnership for 21st Century Skills. (2004). Skills framework. In *Media literacy*. http://www.p21.org/index.php?option=com_content&task=view&id=349&Itemid=120. Accessed August 18, 2014

Partnership for 21st Century Skills. (2 June 2010). Statement by Ken Kay, President of P21, on the Common Core State Standards Initiative [Press release]. http://www.p21.org/index.php?option=com_content&task=view&id=941&Itemid=64. Accessed August 18, 2014

Serafini, F. (2011). Expanding perspectives for comprehending visual images in multimodal texts. *Journal of Adolescent & Adult Literacy, 54*(5), 342–350. doi:10.1598/JAAL.54.5.4.

Smith, S. D., Salaway, G., & Caruso, J. B. (2008). The ECAR study of undergraduate students and information technology, 2009 (Research Report Vol. 6). Boulder, C0: EDUCAUSE.

Svinicki, M. D. (2010). Learning and motivation in the postsecondary classroom. In S. A. Ambrose, M. W. Bridges, M. DiPietro, M. C. Lovett, & M. K. Norman (Eds.), *How learning works: Seven research-based principles for smart teaching* (pp. 70–79). San Francisco: Jossey-Bass.

Tinto, V. (2012). *Completing college: Rethinking institutional action* . Chicago: University of Chicago Press.

Valmont, W. J. (2003). *Technology for literacy teaching and learning*. Boston: Houghton Mifflin Company.

Williams, B. T., & Zenger, A. A. (2012). *New media literacies and participatory popular culture across borders*. New York: Routledge.

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