

**Online Teaching and Learning, and the Use of Instructional Technologies in Higher  
Education**

**Sabbatical Leave Report  
Joshua Knapp, Ph.D.  
Mt. San Antonio College  
2014-2015**

### **Abstract**

This report details the activities of a study sabbatical completed by Professor Knapp during the academic school year 2014-2015. Professor Knapp completed 24.6 semester units (equivalent) of graduate and professional development courses from California State University, East Bay and San Francisco State University in two related pedagogical areas; online teaching and learning, and instructional technologies. A professional development certificate in online teaching and learning was obtained. Additionally, Professor Knapp designed and developed online curriculum, instructional podcasts, animations, videos, a website, and conducted a Flex day workshop for psychology faculty in the use of technology in the classroom using current best practices in online education and E Learning design and delivery.

and minimizes limitations have become a new passion for me and have refocused my career in an unexpected direction.

This program proved invaluable to the development of my first online class. Additionally, I feel a strong need to re evaluate and redesign my traditional classes in the context of education theory and practice.

### **Introduction to online teaching and learning (EDUI 6701)**

This class constituted my first experience with a fully functioning online class (other than the SPOT certification course- which is presented in an independent study format).

The class consisted of introducing us to the online environment as a teaching and learning space. Comparisons between traditional brick and mortar classes and online classes were made across many domains including storytelling, student success, learning, faculty and institutional needs, evaluation and compensation of instructors, accessibility, and the relative roles of student and professor. We were also asked to design a lesson for an online classroom in our most difficult content area.

We began by discussing storytelling in the digital age, and its role in teaching and learning. Thornburg (2007) makes the case that there are four versions of storytelling in traditional spaces; coined the campfire, the watering hole, the cave, and life. To simplify, the traditional lecture format shares much with the storytelling typified by the apocryphal caveman sharing stories around a campfire. The storyteller (lecturer) holds forth with a narrative shared by the listeners in a more or less one directional flow of information. Second, Thornburg (2007) argues that we learn as much or more from our social environments and peers (deemed the "watering hole") than we do from passively listening to stories around the campfire. The social environment is crucial to learning, effectively capturing our interest and attention. Third, we assimilate information and make sense of information acquired from other sources by quiet self -reflection in solitude (deemed "the cave"). Research demonstrates the importance of allowing students time to reflect upon what they have learned in other contexts for a deeper understanding and lasting memories (Thornburg, 2007). Fourth, we put our knowledge to the test in the real world - life experiences are deemed the final and most important space of learning. Each of the learning spaces discussed in Thornburg's article has an equivalent in an online learning environment (Thornburg, 2007).

These analogies provide rich material for discussion about student learning in both real and online environments. Indeed, the discussions proved very useful in the design and delivery of my own online curriculum, taught for the first time in the Summer of 2015.

Next the course turned to a discussion of the online student and characteristics important to student success in online environments. We read an article on the

rich student – student interaction, facilitating these interactions, and engaging in numerous discussions themselves without ending these discussions by providing an “answer” (Hootstein, 2002). Third, students face technical problems in an online environment. The professor is usually the first point of contact for any student experiencing problems, and to whatever degree possible, should act to help correct these difficulties. Lastly, many students will struggle with motivation in an online environment without the immediate physical presence of an instructor and other students. Designing motivating and engaging learning activities, being readily available to assist in other ways, as well as providing encouraging and timely feedback will all serve to help students remain motivated and to be successful (Hootstein, 2002). This article and the subsequent online discussions have provided me with a very useful roadmap to my roles in my new classroom. I found that considering and planning for all of these roles was extremely useful in designing and implementing my first online class.

### **Teaching models for online learning (EDUI 6702)**

EDUI 6702 focused upon teaching and learning models, emphasizing how these models would play a role in informing design and implementation decisions for our own online classes. Prior to taking this class, I had never carefully studied education theory and instructional design. During five weeks, we researched multiple intelligence theory, learning styles, learning outcomes, Bloom’s taxonomy, assessment, the changed role of the instructor in online environments, and how this information informs instructional design. I found the assignments in this class to be immeasurably helpful in designing and implementing my own online class.

We began by researching the popular and oft cited theories of Multiple Intelligences (MI) and learning styles. To my surprise, a literature review of both subjects reveals major flaws in empirical support for both theories, especially learning styles. Fortunately, it is not necessary to throw out all learning activities carefully designed with MI or learning theories in mind. It turns out there are still good reasons to present information to students in multiple sense modalities (Mayer, 2008; Moreno & Mayer, 2008).

Multiple intelligence theory would imply that an instructor should design a course that capitalizes on multiple intelligences in order to provide access to the greatest number of students (Gardner, 1984). According to the theory of Multiple intelligences, each student has a unique intelligence profile, and understanding of course material would be enhanced by providing information throughout the course in multiple “intelligence” formats (Gardner, 1984).

A close examination of the scientific literature concerning multiple intelligences reveals a deficit of empirical consensus or support for the idea. There are numerous peer- reviewed critiques of Gardner’s theory (Waterhouse, 2006). For example, Waterhouse (2006) proposes a rebuttal to Gardner’s theory of “multiple intelligences” through several lines of evidence, including citing a lack of credible neurological evidence, and flaws in logical inference made by Gardner (Waterhouse,

channels or modes of thinking and memory, known as the “visual spatial sketchpad,” and the “phonological loop” (Baddeley, 1992), which educators can engage by presenting information in both visual and auditory formats. There is also research that demonstrates that student interest, engagement, memory, enjoyment, comprehension, retention, and other factors important to education can be significantly improved by presenting information and using learning activities that engage more than one sense modality (Mayer, 2008; Moreno & Mayer, 2008).

Following lively and informative discussion concerning these important theories, EDUI 6702 turned to the role of outcomes in course design. I began this part of the class as a skeptic of the importance of using learning outcomes to guide instructional design. For example, learning outcomes can limit flexibility while teaching. Second, the use of outcomes forces the instructor to guess at the pre existing knowledge of students, a guess which of course may be inaccurate. Third, the use of outcomes in course design usually assumes that all students start at the same place. Fourth, failure to measure an outcome does not mean that meaningful learning or change in attitude have not taken place. There are other potential problems. And yet I began to be convinced of the importance of learning outcomes in instructional design. Most importantly, outcomes provide the instructor with empirical data concerning student learning (Angelo & Cross, 1993; Astin et al., 2003; Illinois Online Network, 2010). And although there may be problems with designing effective outcomes, this does not mean we should “throw the baby out with the bathwater.” Indeed creating outcomes seems especially important in the online setting (Astin et al., 2003; Illinois Online Network, 2010; Las Positas College, 2014), to help both students and instructor clearly understand the goals of learning in an environment where vast amounts of information are now readily available by tapping a button on your phone.

The idea of outcomes is linked to the theoretical construct of Benjamin Bloom, known as Bloom’s taxonomy (Agiro et al., 2005; Forehand, 2005). Bloom’s taxonomy proposes a hierarchical set of learning outcomes, with higher outcomes representing more advanced skills and mastery (applying, analyzing, evaluating, and creating) than lower outcomes such as remembering and comprehending (Agiro et al., 2005; Forehand, 2005). It is generally considered desirable for students to achieve higher levels of the taxonomy, but it depends on the content area. For example, in my context, neuroanatomy is a subject area in which higher order skills do not make sense. Is it possible or desirable for students to “create” a brain? In this case, remembering and comprehending seem important and sufficiently difficult. But for other content areas in my classes, such as health psychology, evaluating how different coping mechanisms might impact one’s own stress seems like an appropriate learning outcome.

Interestingly to me, Bloom’s taxonomy seems to be relatively unchallenged in the educational literature. I had no success finding empirical support for many of its premises. Why is creating considered to be more advanced and desirable than comprehending? Does one truly need to master one level of the hierarchy before

"Psychology videos," you can view the instructional animations and videos I created in this and other classes during the sabbatical.

The discussion concerning the use of social media in the classroom was interesting and challenged my belief that professors should avoid using social media with students. Many other professors and teachers in my cohort reported using "Facebook" or "Twitter" in their classes with some success. My conclusion was that opening up a Facebook page for a class or "friending" students may be useful tools for some educators, especially those who feel very comfortable using them. But these tools are not necessary to create an interesting and relevant class in 2015, and remain somewhat controversial as teaching tools. For now, I will continue to avoid using social media as a teaching tool but am open to their use if this becomes the norm.

For my first technology project, I created an instructional video. The subject matter was "object permanence." I wrote a short script, and then got some assistance filming myself and my son, explaining and demonstrating the concept of object permanence. The video was then edited using the video editing program "I Movie." The use of I Movie required viewing tutorials online and teaching myself about the software. Although I would say the quality of this first video is relatively marginal from a movie production point of view, it never the less has instructional value. I will use it and I believe it will be valuable in its own small way in my classes. Please view the video at

<https://vimeo.com/128032612>

For my next project, we were instructed to go to the W3C website (W3C, 2015), where free tutorials are available to learn html programming. This is the most important website for learning html on the web, and a resource used in different classes at both CSUEB and SFSU. We practiced writing short snippets of html code, experimenting with stringing together increasingly complex sequences as we made our way through various tutorials in html. My experience led to a strong curiosity to learn more about html, CSS and other programming languages vital for the web. I later took two courses in web design and Cascading Style Sheets, which greatly enhanced my flexibility and skill using moodlerooms in both my online course and traditional courses (and I am only just getting started!). This exercise also proved helpful later in EDUI 6703 when we built our own websites.

Next we began an intensive project to develop content for our online classes using a technology of our choice. I decided to develop instructional animations with Videoscribe, a whiteboard animation software program that can produce impressive animations, which I had briefly explored in a different class. I wrote 3 scripts, obtained images, created timelines, recorded and synchronized voice -overs and sound effects, and edited my animations. Each animation is between 2 and 5 minutes. Surprisingly, my instructional animations have been viewed by several thousand students outside of my classes on YouTube.

EDUI 6704 began with an analysis of the differences between how information is typically presented in a book or a traditional in-class lecture, versus on the web. The visual layout of a course webpage is important if it is to be most useful to students. For example, people are not used to, and will likely refuse to read simple pages of plain text on the web. On the web, textual information is presented in a columnar fashion, with pictures, animations, videos, and links to related information embedded at the top, within the text, or at the bottom of a page. Also, texted information on the web is highly condensed, and visually chunked to increase understanding. The layout of information in an online course should be similar to what viewers of the web have come to expect to promote understanding and take advantage of conventions viewers of the web have come to expect.

The second project in EDUI 6704 proved very helpful to our understanding of and empathy for individuals with disabilities and the challenges they face accessing information on the web. After viewing a short documentary, we were directed to different websites providing tools that simulate disabilities on one's home browser. From these sites, we could try to "view" different websites (for example using a screen reader) while simulating different forms of disability. I went to Mt SAC's homepage, and although there was the ability to access information, much of the website was far less accessible than I would have hoped.

We were then directed to other websites which provide software tools that analyze compliance with section 508 and W3C guidelines for accessibility (<http://wave.webaim.org> and <http://www.cynthiasays.com>). Again, I examined the homepage for Mt SAC. At that time, there were hundreds of violations of W3C best practices at the MTSAC website. These exercises strongly reinforced the importance of making all learning materials accessible to students, and led to a powerful emotional reaction in most of the class.

For the next project, we were required to take pages of simple text, and present the content using web conventions (columnar, chunked, highly visual, accessible, etc.). This proved to be more difficult than I thought at first, and was very useful for getting the proper mindset before I began designing my online class. The final lessons of converting text to content for the web, combined with our exposure to technology, learning models, accessibility issues, and other pertinent information led very logically to the culminating project.

For my online class, I began by carefully constructing learning objectives for each lesson. These learning objectives were constructed using best practices, such as those outlined by the University of Michigan (2014), University of Illinois (2010), University of Minnesota (2008), Penn State University (2014), and Las Positas College (2015). Once the learning objectives had been specified, I consulted various online activity resource guides to construct learning activities for my online class that would be interesting, challenging, take advantage of the online medium, and fully aligned with each instructional goal (California State University, 2015; Illinois

Lastly, I look forward to employing a similar design process to redesign my brick and mortar classes.

## **Instructional Technologies**

### **Summary of Instructional Technology courses**

A second parallel course of study was undertaken during the sabbatical. Nine classes were taken in the pedagogical areas of Instructional Technologies through San Francisco State University. Dr. Knapp completed the following 9 courses earning a total of 12.4 semester equivalent units:

Fall, 2014

- 1) Instructional design for E Learning (ITEC 9810)
- 2) Writing for Instructional Designers (ITEC 9820)
- 3) E learning Evaluation and Usability Testing (ITEC 9835)
- 4) Photoshop 1 (MULT 9384)
- 5) Photoshop 2 (MULT 9385)
- 6) Multimedia Production in E Learning (ITEC 9815)

Spring, 2015

- 7) Instructional Videography (ITEC 770)
- 8) Web Design Intensive Certificate Program (MULT 9294)
- 9) Cascading Style Sheets (MULT 9331)

### **Learning objectives of Instructional Technology studies:**

Courses in instructional technology were taken during the study sabbatical with three primary learning objectives in mind:

- 1) To increase Dr. Knapp's understanding of the pedagogy and best practices in the design and development of E learning assets.
- 2) To develop technical skills with software useful for the design and development of E learning assets.
- 3) To develop instructional content useful for traditional and online classes using current best practices.

### **Instructional design for E learning**

This course provided an overview of instructional design models (such as Kirkpatrick's model) used in instructional design and their role in designing E learning assets, including online education. The course was offered as a professional development class intended for educators, instructional designers, and others interested in "E learning." The course met in a synchronous and asynchronous online format; live every Monday night for six weeks at 6:30 pm for 60 minutes with additional weekly discussion forums and other asynchronous assignments.



of the process involved peer review as we critiqued and encouraged each other's scripts.

One key point that was raised and discussed every week was the fact that videos provide instructors with two channels of information, auditory and visual. Our instructor insisted that we practice varying the content of the two channels in practice assignments and in our instructional videos to increase interest, suspense, enjoyment, and understanding in our students (if properly executed). Our final scripts were presented in a classic two-column script format, with descriptions of imagery in one column, and accompanying speech in the other.

The instructional script I created in this class (classical conditioning) is now in post production - I am editing an instructional video based on this script.

### **E learning Evaluation and Usability Testing**

E Learning Evaluation and Usability Testing met online in a synchronous online format described earlier in this report, using Blackboard collaborate. The content focused on usability testing of E Learning assets.

First we studied instructional design process models including ADDIE, AGILE, and their deployment in usability testing. The class then began conducting live usability tests. We observed several usability tests during class and then moved on to conducting our own tests over the course of a few weeks. During usability testing, students evaluated various instructional websites and other E Learning assets for the comprehensibility, utility, ease of use, completeness, accessibility, aesthetic qualities, ability to educate, and overall usefulness.

I have used my experience and knowledge from this class to evaluate the characteristics of my own online class, implementing a quick ADDIE type design process to test the usability of my own online class and to implement quick changes based upon the findings of these tests.

### **Photoshop 1 and 2**

Photoshop 1 and 2 turn out to be the most difficult classes that I took during the sabbatical. This was a surprise. The difficulty was due to my relative inexperience with the principles of visual design, image manipulation, and the relative rigor of the class. The Photoshop sequence met twice a week for 3 hours in person for six weeks (1 + 2). We had difficult homework assignments after every class that involved practical hands-on use of Photoshop. Our work was critiqued every week by our professor, who was highly critical of our work. I began to dread my twice weekly humiliations at her hands. I am not used to being the slowest and least competent student in a class, but this was the case in Photoshop 1 and 2. As an aside, being the least capable student in a class was a very useful lesson in humility, and to help me to connect experientially and emotionally to students who struggle in my own classes.

from several distinguished Stanford faculty. We analyzed these videos as case studies of poor examples of instructional videos. We discussed how to improve their videos and classes.

Each student was expected to complete two projects. The first project entailed creating a video that tells a story using 15 different shot types (such as close-up, long shot, etc.). The second was to use a new form of technology (to us) to create an instructional E Learning asset. I chose to create two brain anatomy whiteboard animations using a software program "Videoscribe."

Both animations are in use in my traditional and online classes and are very popular with my students.

Please view Medulla at:

<https://vimeo.com/115127149>

Please view Reticular Formation at:

<https://vimeo.com/115139481>

During this course, I had the opportunity to produce useful instructional content as well as experiment with equipment and software that I have used and will continue to use to create additional content.

I trained psychology faculty in the use of Videoscribe during an instructional workshop held for psychology faculty during Flex Day 2015.

### **Web Design Intensive Certificate Program (WDICP)**

Although my sabbatical proposal had included taking classes in web authoring, my experiences in the Online Teaching and Learning program piqued my interest in pursuing more web authoring skills. I had come to realize that Moodlerooms creates html and CSS code, which was open for me to manipulate if I knew how. I could then customize my online course in ways I had not envisioned when I began the sabbatical. Indeed, at the start of the sabbatical, I had never experimented with html or building a website, had barely heard of CSS, much less thought it might be useful for building my online class.

The WDICP involved an intensive course held three days a week for three weeks, in which a broad range of web authoring and support software (Dreamweaver, Edge animate, html, CSS, website developer toolkits and other software) were used in a series of class projects and homework assignments to create multiple websites. Current and historical trends in devices, authoring and analysis software, and web design were discussed. Multiple websites were built in class projects by each student, which served to meet different instructional goals.

Completion of the course resulted in qualifying for a second professional development certificate (in web design). I have earned the certificate by passing the

available on archive.org. Each exercise helped to develop skills necessary for high quality video production.

All of the work in the class was building towards the final exercise, creating an instructional video. Although we were assigned one video, I decided to make two, to allow me to experiment with different filmmaking techniques, and because I wanted to create as much content for my classes as possible. It was well worth the extra effort.

The first instructional video I created, "The Amygdala" was created using traditional filmmaking technique. I wrote a script (using a process learned in writing for instructional designers), created a "shot list," created storyboards, obtained useful archival footage, filmed myself lecturing, obtained sound effects, and edited together footage, sound effects, special effects, music, and titles, subtitles. The intention was not only to describe the main role of the amygdala but to also use the footage, music, and strange mannerisms in my lecturing to create a disquieting effect in the viewer. I add the last part to explain why I seem so odd- it was intentional- but maybe too believable! This video took six weeks to create.

Please view Amygdala:

<https://www.youtube.com/watch?v=BWSK8clqW-Q>

The second instructional video was created in far less time (about 2 weeks), and viewers have commented, seems more professional. In the case of "Cerebellum," I had a general idea of what I wanted to do (demonstrate the Cerebellum's role in the brain by using the example of surfing), and shot footage of surfers from the beach, in the water, as well as different takes of me lecturing. By the time I was directing this video, I was much more comfortable in front of and behind the camera. I did not use a script, or storyboards, or other techniques of formal filmmaking, but a more informal style, editing my video from 4 minutes to shortly more than 2 minutes.

Please view Cerebellum:

[https://www.youtube.com/watch?v=7Y\\_eGaYVfA8](https://www.youtube.com/watch?v=7Y_eGaYVfA8)

### **Conclusion of Instructional Technology studies**

My sabbatical studies in instructional technology helped me to achieve and exceed my learning objectives:

- 1) To increase understanding of best practices in the design and development of E learning assets.
- 2) To develop technical skills with software useful for the design and development of E learning assets.
- 3) To develop instructional content useful for traditional and online classes using current best practices.

In addition, a fourth important achievement was a significant change in my attitude and self- confidence concerning the use of technologies in my classroom. As mentioned previously in this report, over the past several years I have had trouble

- 1) "Garageband" for producing podcasts, editing voiceovers, sound effects
- 2) Adobe "Audition" for producing podcasts, editing voiceovers, sound effect
- 3) "IMovie" for video editing
- 4) Adobe "After Effects" for compositing video
- 5) Adobe "Premiere" for video editing
- 6) Adobe "Dreamweaver" for web design, html coding
- 7) Adobe "Photoshop" for image manipulation
- 8) Adobe "Edge" for animation
- 9) Videoscribe for whiteboard animations
- 10) Html coding
- 11) CSS coding

### **Benefits of experience as a student**

The experience of being a student is vastly different from that of a professor in numerous ways that are apparently easy for me to forget, but which came rushing back this year. For example, there are differences in mindset, sources of anxiety and stress, feelings of personal power and efficacy, vulnerabilities, openness, personal growth. Although I am an avid reader and enjoy learning, I had not taken any classes in more than 15 years since completing my Ph.D. Having more recent experience as a student will help me to connect more to a student perspective, which in turn will be helpful to my students and teaching.

### **Benefits of changed attitude**

As discussed in more detail earlier in this report, the activities during the study sabbatical led to changed attitude in at least two areas:

- 1) Increased self-confidence and self efficacy in the use of instructional technologies.
- 2) Changed belief in efficacy of online teaching and learning environments.

### **Curriculum design and development during study sabbatical**

As a direct consequence of the activities of this study sabbatical, instructional content was designed and developed including:

- 1) Design and development of online psychology 1a using current best practices in online education and e-learning to inform all design decisions.
- 2) Customization all of the web pages in online psychology 1a using html and CSS coding skills acquired during the sabbatical.
- 3) Completion of 5 instructional animations, using best principles in E learning, already in use in courses. One of the animations uploaded to YouTube has been viewed 5000 times by students outside of Dr. Knapp's classes in a period of 5 months.
- 4) Completion of 4 instructional videos (and counting) using best practices in instructional videography.
- 5) Completion of 2 instructional podcasts using best practices in E learning that are in use in his classes.
- 6) Completion of a website archiving new instructional materials as well as links to resources for Psychology and online educators.

### Course credit for study sabbatical

Dr Knapp completed 13 courses during the study sabbatical in two pedagogical areas; online teaching and learning (OTL), and instructional technologies (IT). OTL courses were held entirely online through California State University, East Bay. IT classes were held in traditional and online classrooms at San Francisco State University. Dr. Knapp earned the equivalent of 24.4 semester units.

#### Online teaching and learning, CSUEB

Fall, 2014

- |              |                                   |
|--------------|-----------------------------------|
| 1) EDUI 6701 | 4.5 quarter units graduate credit |
| 2) EDUI 6702 | 4.5 quarter units graduate credit |

Winter, 2015

- |              |                                   |
|--------------|-----------------------------------|
| 3) EDUI 6703 | 4.5 quarter units graduate credit |
| 4) EDUI 6704 | 4.5 quarter units graduate credit |

**Total CSUEB credit = 12 semester units (18 quarter units/1.5)**

#### Instructional technology

Fall, 2014

- |  |                |
|--|----------------|
| 1) Instructional design for E Learning         | 1.8 CEU        |
| 2) Writing for Instructional Designers         | 1.5 CEU        |
| 3) E learning Evaluation and Usability Testing | 1.2 CEU        |
| 4) Photoshop 1                                 | 1.8 CEU        |
| 5) Photoshop 2                                 | 1.8 CEU        |
| 6) Multimedia Production for E Learning        | 1.5 CEU        |
| <b>Total SFSU credit for Fall, 2014</b>        | <b>9.6 CEU</b> |

Spring, 2015

- |   |                           |
|---|---------------------------|
| 7) Instructional Videography                | 3 semester units graduate |
| 8) Web Design Intensive Certificate Program | 3 CEU                     |
| 9) Cascading Style Sheets                   | 1.8 CEU                   |

**SFSU Credit for Spring, 2015**                      **4.8 CEU + 3 semester units**

#### Cumulative totals for study sabbatical

12 semester equivalent units graduate credit CSUEB
9.6 semester equivalent units CEU credit SFSU (14.4 CEU/ 15)
3 semester units graduate credit SFSU
<hr/>
24.6 semester equivalent units

722. Retrieved from  
<http://search.proquest.com.libris.mtsac.edu/docview/742869616?accountid=1261>  
1

Bull, B. 2013. Eight roles of effective online teacher. Faculty Focus. Magna Publications. Retrieved from: <http://www.facultyfocus.com/articles/online-education/eight-roles-of-an-effective-online-teacher/>

California State University. (2014). Multimedia Educational Resource for Learning and Online Teaching. Retrieved from <http://www.merlot.org/merlot/index.htm>

Chambers, B., Cheung, A. C. K., Madden, N. A., Slavin, R. E., & Gifford, R. (2006). Achievement effects of embedded multimedia in a success for all reading program. *Journal of Educational Psychology*, 98(1), 232-237.  
 doi:<http://dx.doi.org/10.1037/0022-0663.98.1.232>

Chisholm, W., Vanderheiden, G., Jacobs, I. (1999). W3C List of Checkpoints for Web Content Accessibility Guidelines 1.0. Retrieved from <http://www.w3.org/TR/WAI-WEBCONTENT/checkpoint-list.html>

Colvin, S. S., & Myers, E. J. (1907). The development of imagination in school children and the relation between ideational types and the retentivity of material appealing to various sense departments. *The Psychological Review: Monograph Supplements*, 11(1), 85-126. doi:<http://dx.doi.org/10.1037/h0093010>

Foothill College. (2014). Strategies to minimize cheating online. Retrieved from: [http://www.foothill.edu/fga/prevent\\_cheating.php#StrategiestoMinimizeCheatingOnline](http://www.foothill.edu/fga/prevent_cheating.php#StrategiestoMinimizeCheatingOnline)

Forehand, M. (2005). Bloom's taxonomy: Original and revised.. In M. Orey (Ed.), *Emerging perspectives on learning, teaching, and technology*. Retrieved 11/15/2014, from <http://epltt.coe.uga.edu/>

Gardner, 1984. The theory of multiple intelligences.

Graham, C. Cagiltay, K., Lim, B., Craner, J., & Duffy, T. (2001). Seven Principles of Effective Teaching: A Practical Lens for Evaluating Online Courses. The Technology Source. Retrieved from:

[http://technologysource.org/article/seven\\_principles\\_of\\_effective\\_teaching/](http://technologysource.org/article/seven_principles_of_effective_teaching/)  
 Haar, J., Hall, G., Schoepp, P., & Smith, D. H. (2002). How teachers teach to students with different learning styles. *The Clearing House*, 75(3), 142-142+. Retrieved from <http://search.proquest.com.libris.mtsac.edu/docview/196864026?accountid=1261>  
1

Hootstein, E. (2002) Four pairs of Shoes: The Roles of E- learning Facilitators.

Maki, W. S., & Maki, R. H. (2002). Multimedia comprehension skill predicts differential outcomes of web-based and lecture courses. *Journal of Experimental Psychology: Applied*, 8(2), 85-98. doi:<http://dx.doi.org/10.1037/1076-898X.8.2.85>

Mayer, R. E. (2008). Applying the science of learning: Evidence-based principles for the design of multimedia instruction. *American Psychologist*, 63(8), 760-769. doi:<http://dx.doi.org/10.1037/0003-066X.63.8.760>

Mayer, R. E. (2008). Applying the science of learning: Evidence-based principles for the design of multimedia instruction. *American Psychologist*, 63(8), 760-769.

Mayer, R. E. (2008). Applying the science of learning: Evidence-based principles for the design of multimedia instruction. *American Psychologist*, 63(8), 760-769.

Mayer, R. E., & Anderson, R. B. (1992). The instructive animation: Helping students build connections between words and pictures in multimedia learning. *Journal of Educational Psychology*, 84(4), 444-452. doi:<http://dx.doi.org/10.1037/0022-0663.84.4.444>

Mayer, R. E., Hegarty, M., Mayer, S., & Campbell, J. (2005). When static media promote active learning: Annotated illustrations versus narrated animations in multimedia instruction. *Journal of Experimental Psychology: Applied*, 11(4), 256-265. doi:<http://dx.doi.org/10.1037/1076-898X.11.4.256>

Mayer, R. E., Sobko, K., & Mautone, P. D. (2003). Social cues in multimedia learning: Role of speaker's voice. *Journal of Educational Psychology*, 95(2), 419-425. doi:<http://dx.doi.org/10.1037/0022-0663.95.2.419>

Moreno, R., & Mayer, R. E. (2000). Engaging students in active learning: The case for personalized multimedia messages. *Journal of Educational Psychology*, 92(4), 724-733. doi:<http://dx.doi.org/10.1037/0022-0663.92.4.724>

Moreno, R., & Mayer, R. E. (2002). Learning science in virtual reality multimedia environments: Role of methods and media. *Journal of Educational Psychology*, 94(3), 598-610. doi:<http://dx.doi.org/10.1037/0022-0663.94.3.598>

Moreno, R., & Mayer, R. E. (2002). Learning science in virtual reality multimedia environments: Role of methods and media. *Journal of Educational Psychology*, 94(3), Mozart Effect, and Emotional Intelligence Theories. *Educational Psychologist*, 41(4), 247-255.

Murphy, M. J., Levant, R. F., Hall, J. E., & Glueckauf, R. L. (2007). Distance education in professional training in psychology. *Professional Psychology: Research and Practice*, 38(1), 97-103. doi:<http://dx.doi.org/10.1037/0735-7028.38.1.97>

University of Illinois. (2012). Explore teaching strategies. Retrieved from <https://www.cites.illinois.edu/reference/pedagogy/active/active3.html%20>

University of Michigan Center for Research on Learning and Teaching. (2014). Strategies for Online Teaching. Retrieved from <http://www.crlt.umich.edu/tstrategies/tsot>

University of Minnesota Center for Teaching and Learning. (2008). What is active learning? Retrieved from: <http://www1.umn.edu/ohr/teachlearn/tutorials/active/what/>

van Tryon, P., J. Slagter, & Bishop, M. J. (2009). Theoretical foundations for enhancing social connectedness in online learning environments. *Distance Education*, 30(3), 291-315. Retrieved from <http://search.proquest.com/libris.mtsac.edu/docview/217787511?accountid=12611>

Venerable, M. (2011). Grading rubrics and online assignments. OnlineCollege.org. Retrieved from: <http://www.onlinecollege.org/2011/08/08/grading-rubrics-and-online-assignments/>

Vesely, P., Bloom, L., Sherlock, J. (2007). Key elements of building online community: Comparing faculty and student perceptions. *Journal of online teaching and learning*. Retrieved from: <http://jolt.merlot.org/vol3no3/vesely.htm>

Visser, B. Ashton, M. and Vernon, P. 2006. g and the measurement of Multiple Intelligences: A response to Gardner. *Intelligence* (34) 507-510.

Waterhouse, L. 2006. Inadequate Evidence for Multiple Intelligences,

Wilson, M. L. (2012). Learning styles, instructional strategies, and the question of matching: A literature review. *International Journal of Education*, 4(3), 67-87. Retrieved from <http://search.proquest.com/libris.mtsac.edu/docview/1323309431?accountid=12611>

Wilson, M. L. (2012). Learning styles, instructional strategies, and the question of matching: A literature review. *International Journal of Education*, 4(3), 67-87.

Yue, C. L., Bjork, E. L., & Bjork, R. A. (2013). Reducing verbal redundancy in multimedia learning: An undesired desirable difficulty? *Journal of Educational Psychology*, 105(2), 266-277. doi:<http://dx.doi.org/10.1037/a0031971>

## Appendix A: Sabbatical Proposal



In this study sabbatical, I plan to further my education in two pedagogical areas of higher education; first in online teaching and learning, and second in the theory and use of instructional technologies. I propose two parallel courses of study, which I believe provides the greatest possible benefits to the Psychology Department, Mt. San Antonio College, and my own professional development.

First, to improve my expertise and delivery of online teaching and learning, I will take classes in online course design, development, and implementation and obtain an "Online Teaching and Learning" instructional certificate from California State University East Bay. Second, to improve my understanding and skilled implementation of instructional technologies in my courses, I will take classes from instructional technology related programs at San Francisco State University (Instructional Technology Graduate Program and Multimedia Studies Program).

educational value was equivalent to a class taught in a person-to-person environment (Parker, 2011). Furthermore, only a slight majority of the college presidents (51%) believe that online education is of equivalent quality to more traditional classroom settings (Parker, 2011). The general public takes an even darker view, with only 29% of respondents agreeing that online education is equivalent in quality to person-to-person classroom format (Parker, 2011). These recent statistics reveal that there may be some barriers to creating quality online learning environments. Clearly, questions remain concerning the “digital revolution” in the online classroom. For example, what are the best practices for teaching in an online setting (Murphy et al., 2007; van Tryon et al., 2009)? And, how can we leverage technology to create the highest quality online learning environments (Koenig, 2010; Murphy et al., 2007; van Tryon et al., 2009; Yue et al., 2013)?

Most instructors do not have extensive training in online course design and development, and approach their new classroom environment in a similar way to how they approach teaching in a traditional person-to-person classroom (Boling and Robinson, 1999). Of course, many differences exist between teaching in online and more traditional settings. For example, there are differences in location, visual contact with instructor and other students, community building, spontaneity within the teaching environment, access, flexibility, self - pacing, time management, sensory immersion, and other differences between traditional person-to-person instruction and online education. These differences could be leveraged to help, or if not used properly, could be detrimental to the educational experiences of students in online courses. Research reveals that despite the promise of accessible, flexible education in online settings, problems remain with social connectedness (Van Tryon et al., 2009), understanding (Mayer, 2008; Mayer et al., 2003; Wilson, 2012) and, for some populations, grades (Huh et al., 2008).

As just one example, the use of “Discussion Boards” is widespread in online classes as a mode of communication. As a psychologist, I am stuck by the many limitations to this method. Among other problems, there is a lack of nonverbal communication. Without immediate nonverbal feedback – laughter, quizzical looks, a widening or narrowing of the eyes, a sudden look up, people oftentimes do not know when or to what degree they have been understood.

To summarize, this section began with a discussion of the trends involving the increasing use of online environments to educate students (Anderson, 2012; Parker, 2011). The discussion turned to an examination of differences between distance learning and learning in more traditional classroom settings, highlighting potential problems with distance learning.

As an educator, I am struck by these trends, the questions they raise, and my need to know more. I am eager to gain greater understanding of these issues and how to address them during my sabbatical.

### **Trends in Higher Education: Instructional and Multimedia Technologies**

Turning to another example of the “digital revolution” in the classroom, research reveals that the use of instructional technologies such as multimedia (e.g. video, animation, or podcasting) provides exciting and useful tools for instructors to improve the understanding of content in their courses (Moreno and Mayer, 2000,

In this section I discussed advantages to using instructional technologies and multimedia in the classroom (e.g. improved enjoyment, understanding, memory, retention, presence). Next, I turned to research that illuminates why instructional technologies and multimedia offer benefits to learning; including the use of phonological and visual-spatial memory systems, and the relevance of instructional technologies to different learning styles. This research highlights the importance of the proper use of instructional technologies and multimedia in effective teaching.

I am extremely eager to undertake a course of study during my sabbatical that empowers me to use educational technologies and multimedia to their best effect in my courses.

### **Study Plan for Sabbatical**

Given the needs I outlined above, it is crucial that we as educators better understand how we can improve online teaching and the use of instructional multimedia tools in higher education. I propose two parallel courses of study for my sabbatical to improve my pedagogy in the following areas; first, online teaching and learning, and second, the use of educational technologies and multimedia in higher education.

#### **Online Teaching and Learning**

The first goal for this educational sabbatical is to gain a greater understanding of teaching and learning in online environments. I am planning to improve my understanding of the pedagogy of online teaching and learning by taking four or more classes from California State University, East Bay (CSUEB), and to obtain an "Online Design and Development" instructional certificate. Each class is equivalent to 3 semester units (4.5 quarter units).

#### Online Teaching and Learning Program

I intend to take at least four classes from the following list:

- 1) Introduction to Online Teaching and Learning
- 2) Teaching Models for Online Instruction
- 3) Technology Tools for Online Instruction
- 4) Designing Curriculum for Online Instruction
- 5) Research in Online Teaching
- 6) Educational Planning and Development for Online Programs
- 7) Current Issues in Online Learning

These courses (and the certificate program) will provide me with a solid foundation for understanding the different strengths and weaknesses of distance education. I intend to gain greater understanding of teaching models, technology tools, designing curriculum, as well as possibly research, current issues, and educational planning for online environments. This knowledge will enable me to design, develop, and implement "best practices" for my online course(s).

- 13) InDesign 1 (1.8 CEU)
- 14) InDesign 2 (1.8 CEU)
- 15) Photoshop 1 (1.8 CEU)

These courses will provide me with a solid foundation in widely used as well as cutting edge technology for use in my classrooms. First, I am seeking a deeper understanding of the principles of how technology can be harnessed in the classroom and how this understanding can be applied to my classes. Second, I intend to develop basic (and more advanced) understanding and the ability to use graphic illustrating programs, video editing programs, video and audio recording equipment, animation, blogging, and website design programs among other skills.

As outlined in an earlier section of this proposal, research has demonstrated that students in my classes at the Psychology Department at Mt. San Antonio College can benefit from multimedia presentation in at least the following seven ways:

- 1) Increased enjoyment
- 2) Increased motivation
- 3) Increased memory retention
- 4) Increased understanding
- 5) Increased presence
- 6) Ability to capitalize upon two different memory systems
- 7) Increased understanding by students who employ non verbal learning styles

My new pedagogical expertise will also allow me to assist faculty in the Psychology Department and at Mt San Antonio College in the following two ways:

- 1) Offering to work one on one with faculty to assist in the use of multimedia to help them develop content for their classes.
- 2) Staff development course(s) on the use of specific multimedia tools. I will offer classes through POD and/ or on FLEX day.

Following my course of study, I will be able to harness my new skills and knowledge to create higher-quality imagery, animations, blogs, websites, and instructional videos that will be of great use to my students (as outlined earlier). Additionally, I can assist faculty by providing offering one-on-one assistance and by teaching courses to help them develop instructional technology and multimedia competence as well.

### **Anticipated Value and Benefit to My Professional Development**

The benefits to my own professional development overlap with many of the benefits to the Psychology Department and Mt. San Antonio College.

#### **Online Teaching and Learning**

- 1) I will gain a deeper understanding of "best practices" in online education which will ensure that the content, design, and development of my online courses serves my students to the highest possible degree.
- 2) I will gain the experience of being an online student. Most of the courses I am proposing to take at California State University, East Bay (and some at SFSU) will be offered online, giving me the opportunity to experience firsthand both the benefits and limitations of online learning.

#### **Instructional Technologies and Multimedia in Higher Education**

I will gain knowledge of the theories and best practices of use of multimedia in the classroom as well as hands - on experience in the use of the latest cutting edge multimedia tools. This will enable me to:

- 1) Create and manipulate high quality digital images
- 2) Create animations
- 3) Create websites and the ability to create a Blog

### Proposed Timeline

This timeline is based upon scheduling for the current academic year (2013 – 2014). The specific days and times classes are offered could change during academic year 2014- 2015. I have contacted both Universities (CSUEB and SFSU) and all three programs (1. Online Teaching and Learning at CSUEB. 2. Instructional Technology at SFSU. 3. Multimedia Studies at SFSU) and was told that it is likely that classes are offered at approximately the same days and times next year, but not guaranteed. I was also told that some classes at SFSU could be canceled. I have provided many additional class options in case one or more classes are canceled. The schedule is organized by month and further subdivided by program for clarity.

#### August, 2014

Introduction to Online Teaching and Learning	Online
Instructional Design for E -Learning	(Online 8/26-9/30)
Instructional Videography 1	(Thursday nights 8/28-12/16)

#### September, 2014

Introduction to Online Teaching and Learning	Online
Instructional Design for E- Learning	(Online 8/26-9/30)
Multimedia Production for E-Learning	(Friday nights 9/20- 10/18)
Instructional Videography 1	(Thursday nights 8/28-12/16)
Final Cut Pro 101	(Wednesdays 9/11-11/6)

#### October, 2014

Introduction to Online Teaching and Learning	Online
Multimedia Production for E-Learning	(Friday nights 9/20- 10/18)
Developing Content with Captivate	(Friday nights 10/25-11/22)
Instructional Videography 1	(Thursday nights 8/28-12/16)
Final Cut Pro 101	(Wednesdays 9/11-11/6)

#### November, 2014

Teaching Models for Online Instruction	Online
Developing Content with Captivate	(Friday nights 10/25-11/22)
Instructional Videography 1	(Thursday nights 8/28-12/16)
Final Cut Pro 101	(Wednesdays 9/11-11/6)

**Or Adobe Edge**

WordPress

(Tuesday nights 5/6-5/20)

**June 2015**

Prepare sabbatical report

## Course Descriptions for Online Design and Development Program

### California State University East Bay

All information is taken directly from the CSUEB website.

#### **1) Introduction to Online Teaching and Learning (EDUI 6701)**

Design and delivery of online coursework with consideration of principles of teaching and learning, the virtual classroom, synchronous vs. asynchronous teaching and learning, copyright and fair use, accessibility, appropriate learning strategies in onground and online classes, potential for interactivity, and contrast between the principles and practices of onground and online teaching and learning.

#### **2) Teaching Models for Online Instruction (EDUI 6702)**

Teaching models and their relationship to curriculum development, to student learning, to assessment, and to learning psychology. Special attention to the application of models of teaching to online instruction, different learning styles, various teaching and learning situations, needs of learners with accessibility issues, and limitations of current technologies. Prerequisite: EDUI 6701.

#### **3) Technology Tools for Online Instruction (EDUI 6703)**

Design and construction of online environments for teaching and learning. Attention to platform, browser, system differences and limitations as well as to synchronous, asynchronous, and web-based delivery systems. Differences among online delivery providers, emphasis on maximum accessibility. Prerequisites: EDUI 6701, 6702.

#### **4) Designing Curriculum for Online Instruction (EDUI 6704)**

Incorporating onground and online teaching strategies and concepts into the design of an online course, including objectives, assignments, assessment, collaboration, participation, and course materials. Models of teaching and learning outcomes in onground and online courses. Practice in linking appropriate teaching models and designated learning outcomes with attention to differing learning styles. Prerequisites: EDUI 6701, 6702, 6703.



### **3) Developing Content with Captivate: Platform: PC**

Prerequisite: *Instructional Design for E-Learning.*

This course explores content development for e-learning using Adobe Captivate. Students will use Captivate, an industry standard production program, to create media rich deployable content. Common publication and packaging protocols will be discussed, including the value of learning objects, SCORM and AICC standards. This class will survey e-learning content development strategies for blended learning, training environments, screencasting, mobile computing, and student accessibility. This course has three main objectives:

- Deploy and publish content using Captivate.
- Create in-depth assessment and evaluation tools.
- Provide familiarity with publication and deployment standards.

### **4) Writing for Instructional Designers: Lecture/demonstration + open lab time.**

Prerequisite: *Instructional Design for E-Learning.*

This introductory course gives practicing instructional designers and serious students of instructional design a grounding in the basics of effective script writing. The class will focus primarily on developing script treatments, the vehicles scriptwriters use to shape visions for multimedia pieces, then formalize them for review and approval. A worksheet developed specifically for the course will help students gather ideas and guide writing a script treatment. The course will explore many aspects of professional instructional scriptwriting practice, including: the essential steps of the scriptwriting process, the defining characteristics and production possibilities of three major presentational forms (demonstration, documentary, and dramatization), and the various ways you may combine images and words to create the meanings you intend. Course objectives:

- Students will be able to develop effective scripts for instructional multimedia components of various types.

### **5) Instructional Videography (ITEC 770)**

This is a basic skills class aimed at teaching the fundamentals of video production to students in the field of education who have had little or no experience working with video. Its coincident goal is to impart knowledge of the preproduction steps necessary in the instructional video design process. There will be three exercises and one final project. Plan on spending about six to ten hours a week outside of class. Students will be able to:

- Set-up and Operate equipment used in video production and post production, including: camcorders, microphones, lights, control track editors, and the use of iMovie3 for digital, non-linear editing.
- Manipulate equipment to create coherent sequences that “tell a story,” while meeting the fundamental aesthetic criteria covered.

## **8) Theoretical Foundations of Instructional Technologies (ITEC 800)**

This course covers theoretical approaches to media and instructional development; the evolution of the instructional technology field; and social and cultural implications of instructional technology. The goal of this course is to understand the cognitive processes underlying learning and the relation of these processes to Instructional Design. We will look at several different theoretical perspectives on learning; behaviorism, cognitive information processing, cognitive development, meaningful learning, situated learning, motivation, constructivism, social negotiation, and experiential learning theory. By looking at a variety of theoretical perspectives, we can apply instructional models to meet the needs of learners.

### **Goals**

- Become familiar with the underlying assumptions, concepts, and principles of each theory discussed during this course
- Compare and contrast learning theories
- Describe the relationship between learning theory, instructional theory, and the practice of instructional design
- Apply concepts and principles of learning theories in instructional design
- Apply instructional theories, models, and strategies in course design
- Analyze instructional needs in terms of the principles of each of the learning theories
- Design instruction to meet the needs of learners
- Develop curriculum materials based on learning theories from an instructional design perspective.

## **9) Instructional Videography 2 (ITEC 870)**

### *Prerequisite:*

*ITEC 770 or instructor permission. Students should have strong production in skills in at least one area: text, video, multimedia, graphic design.*

Note that ITEC 870 is not being offered as a separate course. Students who have completed ITEC 770 may repeat ITEC 770 once for credit, in place of ITEC 870 Instructional Video II, with the permission of the instructor. The design and production of instructional videos and ancillary materials: scripting, production, editing, and post-production techniques, teaming, and budget development.

## **10) Instructional Multimedia Tools (ITEC 823)**

An applied course to empower ITEC students to apply the theory they have learned, especially in ITEC 800 and 801, with skills in design, planning, and creation of rich multimedia applications/apps. In the past, ITEC 823 has focused mainly on Adobe Flash Professional. This course has been redesigned to include introductions to other multimedia interactive development environments.

## Course Descriptions from Multimedia Studies Program

### San Francisco State University

All of the following information comes directly from the SFSU Multimedia Program web pages: <http://www.cel.sfsu.edu/multimedia/classes.cfm>

#### **1) Graphic Design 1 (Principles of graphic design)**

**Prerequisite:** *Photoshop I or equivalent experience.*

Design is not art. Design is not decoration. Design is about solving a problem. This class provides a practical introduction to the concepts of design history, color theory, composition, contrast, and typography needed to understand and work in design. More importantly, students who complete this course will begin to understand why design goes beyond art and aesthetics. This class is for designers, illustrators, 3D modelers, animators, producers, production artists, and those pursuing careers in design or multimedia.

#### **2) Final Cut Pro 101 (Video editing)**

**Prerequisite:** *Mac Basics (OSX) or consent of instructor.*

This course covers all aspects of editing digital video using Apple's popular Final Cut Pro software. Topics include the FCP interface, keyboard shortcuts, workflow, editing, effects, color correction and output for various release formats. *Includes Apple courseware and Apple-Final Cut Pro certification Exam.*

#### **3) Photoshop: Digital Realism (images)**

**Prerequisite:** *Photoshop I*

This course will explore how advanced features of Adobe Photoshop can create images from scratch with uncanny realism. Photographic images will be manipulated and combined to form entirely new visuals. Explore the new Paint Engine and discover features of Photoshop not covered in other courses or any of the books on the market. Learn to utilize Alpha channels, calculations and layers to produce effects usually achieved only by high-end systems. Combine the power of vector graphics with the flow of raster-based imagery to create a myriad of computer graphic solutions.

### **8) Photoshop 3 (Greater functionality)**

**Prerequisite:** *Photoshop 2*

This course is geared to students who want to take their intermediate knowledge of Photoshop to a new level while simultaneously developing a more efficient production workflow. Topics covered include Smart Objects, Warping, Layer Comps, Advanced Filter Techniques, and Complex Extractions, as well as building custom Actions.

### **9) After Effects (video editing)**

**Prerequisite:** *Mac Basics (OSX) or consent of the instructor.*

This course trains students in industry standard After Effects software. Students start with the basic technical skills and move through a series of projects, taking them to more advanced levels.

### **10) Illustrator II (Digital imagery/ functionality)**

**Prerequisite:** *Illustrator I (or a thorough understanding of everything covered in the Illustrator I course description).*

This class takes you beyond the basics to learn the many capabilities available to you in Illustrator. In this class we explore the Appearance, Transparency, Graphic Styles, Symbols, and Brushes panels. Features such as the Perspective Grid, Live Trace, Warping Envelopes, Blend and Gradient Mesh tools, and surface mapping with 3D effects are also introduced. You will learn advanced tips and techniques with the Pen tool, how to create original patterns, brushes, symbols, and graphic styles. Weekly assignments will guide you toward completion of a portfolio quality piece. Prepress, scripting, and database issues will not be covered.

### **11) Pro Tools 101 (Audio editing)**

### **12) Photoshop IV (Digital imagery/ functionality)**

**Prerequisite:** *Photoshop I, II & III or equivalent experience.*

This fourth course in our series of professional development in Adobe Photoshop, takes your skills to the certification level. It reinforces the skills you developed in our prior courses and adds advanced topics in film and video, high-resolution digital photography and Flash. In addition, Photoshop IV prepares you for both the Adobe Certified Expert (ACE) and the ACA (Adobe Certified Associate) exam.

## References

- Anderson, J. (2012). The Future of Higher Education, *Pew Future of the Internet Project*. Retrieved from <http://www.pewinternet.org/Press-Releases/2012/The-Future-of-Higher-Education.aspx>
- Baddeley, A. D., & Hitch, G. J. (1994). Developments in the concept of working memory. *Neuropsychology*, 8(4), 485-493. doi:<http://dx.doi.org/10.1037/0894-4105.8.4.485>
- Baddeley, A. (1992). Working memory. *Science*, 255(5044), 556. Retrieved from <http://search.proquest.com.libris.mtsac.edu/docview/213552179?accountid=1261>  
1
- Bolliger, D. U., Supanakorn, S., & Boggs, C. (2010). Impact of podcasting on student motivation in the online learning environment. *Computers & Education*, 55(2), 714-722. Retrieved from <http://search.proquest.com.libris.mtsac.edu/docview/742869616?accountid=1261>  
1
- Boling, N. C., & Robinson, D. H. (1999). Individual study, interactive multimedia, or cooperative learning: Which activity best supplements lecture-based distance education? *Journal of Educational Psychology*, 91(1), 169-174. doi:<http://dx.doi.org/10.1037/0022-0663.91.1.169>
- Colvin, S. S., & Myers, E. J. (1907). The development of imagination in school children and the relation between ideational types and the retentivity of material appealing to various sense departments. *The Psychological Review: Monograph Supplements*, 11(1), 85-126. doi:<http://dx.doi.org/10.1037/h0093010>
- Chambers, B., Cheung, A. C. K., Madden, N. A., Slavin, R. E., & Gifford, R. (2006). Achievement effects of embedded multimedia in a success for all reading program. *Journal of Educational Psychology*, 98(1), 232-237. doi:<http://dx.doi.org/10.1037/0022-0663.98.1.232>
- Haar, J., Hall, G., Schoepp, P., & Smith, D. H. (2002). How teachers teach to students with different learning styles. *The Clearing House*, 75(3), 142-142+. Retrieved from <http://search.proquest.com.libris.mtsac.edu/docview/196864026?accountid=1261>  
1
- Huh, S., Yoo, S., Jin, J., & Lee, K. (2008). COMPARISONS OF PERFORMANCES BETWEEN ONLINE LEARNERS AND OFFLINE LEARNERS ACROSS DIFFERENT TYPES OF TESTS. *Academy of Information and Management Sciences Journal*, 11(1), 45-63. Retrieved from <http://search.proquest.com.libris.mtsac.edu/docview/214623006?accountid=1261>

Parker, K. (2011). The Digital Revolution and Higher Education. *Pew Internet and American Life Project*. Retrieved from <http://www.pewinternet.org/Press-Releases/2011/The-Digital-Revolution-and-Higher-Education.aspx>

Spiegel, M. A., Koester, D., & Schack, T. (2013). The functional role of working memory in the (re-)planning and execution of grasping movements. *Journal of Experimental Psychology: Human Perception and Performance*, 39(5), 1326-1339. doi:<http://dx.doi.org/10.1037/a0031398>

Um, E., Plass, J. L., Hayward, E. O., & Homer, B. D. (2012). Emotional design in multimedia learning. *Journal of Educational Psychology*, 104(2), 485-498. doi:<http://dx.doi.org/10.1037/a0026609>

van Tryon, P., J. Slagter, & Bishop, M. J. (2009). Theoretical foundations for enhancing social connectedness in online learning environments. *Distance Education*, 30(3), 291-315. Retrieved from <http://search.proquest.com.libris.mtsac.edu/docview/217787511?accountid=1261>  
1

Wilson, M. L. (2012). Learning styles, instructional strategies, and the question of matching: A literature review. *International Journal of Education*, 4(3), 67-87. Retrieved from <http://search.proquest.com.libris.mtsac.edu/docview/1323309431?accountid=126>  
11

Yue, C. L., Bjork, E. L., & Bjork, R. A. (2013). Reducing verbal redundancy in multimedia learning: An undesired desirable difficulty? *Journal of Educational Psychology*, 105(2), 266-277. doi:<http://dx.doi.org/10.1037/a0031971>

## Appendix C: San Francisco State University unofficial transcripts

[Favorites](#) > [Main Menu](#) > [Self Service](#) > [Student Center](#) > [View My Grades](#)

[Home](#) [Add to Favorites](#) [Sign out](#)



### Class Grades - Fall 2014

Class	Description	Units	Grading	Grade	Grade Points
ITEC 9810	INSTR DES E-LEARN(1.8CEU)	1.80	Non Academic Grades	CR/NC	CR
ITEC 9815	MULTIMEDIA E-LEARN(1.5CEU)	1.50	Non Academic Grades	CR/NC	CR
ITEC 9820	WRITING FOR ID(1.5CEU)	1.50	Non Academic Grades	CR/NC	CR
ITEC 9835	E-LRN EVALUATION(1.2CEU)	1.20	Non Academic Grades	CR/NC	CR
MULT 9384	PHOTOSHOP 1(1.8CEU)	1.80	Non Academic Grades	CR/NC	CR
MULT 9385	PHOTOSHOP 2(1.8CEU)	1.80	Non Academic Grades	CR/NC	CR

### Term Statistics - Fall 2014

	From Enrollment	Cumulative Total
<b>Units Toward GPA:</b>		
Taken		
Passed		
<b>Units Not for GPA:</b>		
Taken	9.600	9.600
Passed	9.600	9.600
GPA Calculation		
<b>Total Grade Points</b>		
/ <b>Units Taken Toward GPA</b>		
<b>= GPA</b>		

[Favorites](#) > [Main Menu](#) > [Self Service](#) > [Student Center](#) > [View My Grades](#)

[Home](#) [Add to Favorites](#) [Sign out](#)



Spring 2015 | Extended Education | San Francisco State University

[change term](#)

### Class Grades - Spring 2015

Class	Description	Units	Grading	Grade	Grade Points
MULT 9294	WEB DES INT CERT(3CEU)	3.00	Non Academic Grades	CR/NC	CR
MULT 9331	CSS(1.8CEU)	1.80	Non Academic Grades	CR/NC	CR

### Term Statistics - Spring 2015

	From Enrollment	Cumulative Total
<b>Units Toward GPA:</b>		
Taken		
Passed		
<b>Units Not for GPA:</b>		
Taken	4.800	14.400
Passed	4.800	14.400
GPA Calculation		
<b>Total Grade Points</b>		
/ <b>Units Taken Toward GPA</b>		
<b>= GPA</b>		

[Printer Friendly Page](#)