Teaching, connecting, and having fun: The interplay between empathy, play, and comics in graphic design higher education

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Teaching, connecting, and having fun: The interplay between empathy, play, and comics in graphic design higher education

by

Cyndi Wiley

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY

Major: Human Computer Interaction

Program of Study Committee:
Debra Satterfield, Major Professor
Sunghyun Kang
Paul Bruski
Anson Call
Ana-Paula Correia

Iowa State University
Ames, Iowa
2014

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DEDICATION

I wish to dedicate this work to Beefy and Bert. Without the relationship you forged, I would not be as happy as I am, or feel as grounded, and for that I am truly thankful. It has been a long and arduous journey for you both.
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ABSTRACT

Existing teaching tools for learning software in undergraduate graphic design programs include videos, lengthy tutorial books, and teacher-led in class demos. Based on several interviews with faculty at differently sized colleges and universities, I ordered the preceding methods by popularity of use. Most instructors in four year graphic design programs expected students to learn Adobe software and HTML/CSS for screen design through video-based learning outside of class. When I interviewed students, their least preferred method for learning software was videos, followed by textbook tutorials. Their most preferred method was teacher-led demos as it created authenticity and trust between themselves and their instructor. They believed that their instructor knew the topic and were there to help when they had questions. However, that method is the least used and considered ineffective by faculty interviewed. These methods are causing a growing disconnect between students and faculty, as expectations are vastly different.

It is imperative, therefore, to create teaching tools that encourage shared power in the classroom between student and instructor. Such tools help students co-create their learning environments, are life giving, and essential to building growth-fostering relationships. Empathy is essential and the foundation in building relationships.

In this study I further develop a rhetorical framework introduced in my MFA thesis work (Wiley 2012). This original framework was for developing and evaluating interaction designs within the context of user experience by incorporating empathy, connectivity, authenticity, and trust (E_CAT) into the process of design. In this dissertation I add spirituality to the framework, as I believe it is essential for college students to experience life giving learning environments in graphic design classrooms, and build meaningful relationships. The framework then becomes: empathy, connectivity, authenticity, trust, and spirituality (E_CATS) to provide a means of better understanding and meeting the needs and wants of undergraduate students in developing teaching tools.
CHAPTER 1. OVERVIEW

1.1 Introduction

The question of “Why am I doing this?” is one I have heard college students in graphic design higher education ask fairly often. After working as a professional designer for 15 years, I didn’t like my own answer when I asked myself that very-important-life-altering-question. After two years of questioning and preparing, I became an “adult learner” when I entered graduate school in fall 2009. I was considered an adult learner because I was beginning a new career path, not necessarily because I was a graduate student. There were many differences that I observed in the classroom between typically aged college students and myself, however, mostly I observed many similarities. I wanted to know how the courses’ content would benefit me, I expected that my professors be knowledgeable about graphic design, industry expectations of software knowledge, and present their topics effectively. I wanted to participate mutually with my professors in the decision-making about assessing needs and goals, and I wanted an atmosphere of collaboration. I was highly motivated to do my best. Many other students wanted all of these things, too. Besides my age and experience in the design industry, I was not that different from other students. My contention is that adult learners are not that different from typically-aged college students, however, these two groups are being treated very differently in learning environments.

I felt the anxiety of being a full-time student again in my mid 30s when I entered the Master of Fine Arts program in graphic design at Iowa State University. I barely had two nickels to rub together on any given day. I tried to balance my schoolwork with my personal life with varying successes and failures. I commuted a total of 90 miles per day to Ames, Iowa, from my home in Des Moines for three years. I was overwhelmed, stressed, exhausted, and at times full of anxiety about projects due. Adding to the stress and anxiety was learning new software and new design methodologies different from what I had experienced as a pro-
fessional designer. I was mainly self-taught in my software skills, and knew that I could learn something if I put my mind and heart in it, and found the right tools.

I shared these experiences with my cohort of graduate students, but also with undergraduate students with whom I had daily interactions. Many of them were going through their own journeys, feeling similar things. A major difference between undergraduate students and myself was my confidence in learning new software. Even through feelings of anxiety, I was able to pick up skills I needed to complete my projects. I had the luxury of not working at a job during my first year back at school. Many of my undergraduate classmates, as I did in my college days 20 years prior, worked part time to support themselves and found little time for learning software outside of class on top of their already demanding coursework.

I began student teaching in fall 2010, graduated with a Master of Fine Arts in graphic design in 2012, and now am a full time graphic design professor on the track to tenure at Grand View University, a small, private, liberal arts, university in Des Moines, Iowa. I have been seeking ways to improve student-learning outcomes based on my time and experience in graduate school and also my time working as a professional designer. I teach courses in interactive media, where students are asked to learn new methods and tools (such as HTML, CSS, and JavaScript) that often cause great fear and anxiety. The additional fear of learning new software is apparent in all levels of graphic design education. I experienced this in graduate school as I spent many late nights working through Lynda.com video tutorials and attempting to follow along with large, text-heavy tutorial books.

I had many advantages and privileges that undergraduate students did not yet have. I had been diagnosed with depression and anxiety the year before starting graduate school, and began taking medication. While this may not seem like an advantage or privilege, I feel grateful for this experience as it brought me to seek a new career path. Medication helped me get out of bed, leave the house, and was the boost I needed to start something new and incredibly risky. With my therapists’ help (there were four) I began feeling emotions that I
had suppressed for years.

Emotional competence is not a subject traditionally learned in school. I certainly did not learn it within the context of the classroom. How then do educators provide an environment where students are challenged not only intellectually, but also physically, spiritually, and emotionally? Perhaps the answer is through play and experimental teaching methods, such as using the medium of comics in the classroom. After elementary school we cease to have recess breaks, and trade in comics for more heavily worded textbooks. Learning through play is an essential developmental stage in every young mammal’s life. As my kittens race through the house in their wrestling matches, I am reminded to enjoy my own time of play. We should not cut this off at any age. Our gift of logic should be balanced with the gift of feeling. This is to achieve our sensing of reason as human beings. Creativity and innovation needs nurturing, and it also needs different kinds of stimulation than what we traditionally experience in school. Ask many children and young adults, as I did, about the difference between school and play and you will probably get something similar to this: “School is boring. Play is fun.”

Marc Prensky remarks (2010),

…there is a huge paradox for educators: the place where the biggest educational changes have come is not our schools; it is everywhere else but our schools. The same young people who we see bored and resistant in our schools are often hard at work learning after school (a term I use to encompass informal learning through peers, the Internet, YouTube, television, games, cell phones, and lots of other emerging opportunities, as well as through organized programs…

In other words, students experience fun and enjoyment in other places outside of school. This does not mean they are not learning. It does mean they are not effectively learning inside the classroom with antiquated teaching methods of “the sage on the stage” and “skill-and-drill” methods. This is passive learning. Recent increases in online courses prefer the “guide on the side” method as the instructor facilitates the class in a collaborative, shared-power classroom. This method has gotten a lot of attention with adult-learners.

College students are caught in a liminal space between pedagogy (from Greek, mean-
ing “child-leading”) and andragogy (from Greek, meaning “man-leading”), a term used for adult learners. Pedagogy is more often used in reference to teaching college students. However, andragogy might be more appropriate given their age. College students are adults, but not what colleges and universities consider “adult learners” because they do not have a plethora of work or life experiences, as most of them enter the university directly after high school. If we do not “technically” refer to this group as “adults” then it’s no wonder faculty, family, and even their own peer group, often marginalize them. Their sense of independence is constantly challenged on campus as they search for differentiation from their families of origin and start building new relationships. During their college journeys, students seek answers to deep questions, “…directly relevant to the development of personal qualities such as self-understanding, empathy, caring, and social responsibility” (Astin 2011).

This study combines consilience and innovation by introducing a pedagogical framework for teaching graphic design incorporating play along with experimental teaching methods and tools, such as using the medium of comics to increase digital literacy. I use the framework of empathy, connectivity, authenticity, trust, and spirituality (E_CATS) to inform the research and gather both quantitative and qualitative data, analyze my findings, and develop a preliminary tool that I named the “Graphic Manual” (Appendix D) to complement existing tools (videos, books) for learning software. This teaching tool was created using Will Eisner’s Preventive Maintenance (2011) comics tutorials for the U.S. Army and Scott McCloud’s Understanding Comics (1997) as inspiration and reference.

The Graphic Manual is a Photoshop CS6 tutorial that walks students through the process of creating an animated GIF using the medium of comics. It was tested in focus groups alongside a video tutorial, and a textbook tutorial on the same subject. The purpose of the Graphic Manual was to narrow down the amount of content to produce an animated GIF using panels with images and limited words, compared to a 10-minute video, and text heavy pages from a tutorial textbook. The version of software used will quickly outdate itself,
however, the process of learning via the medium of comics is timeless. This method can and should be updated as newer technologies become available.

I am intentionally writing in first-person throughout this dissertation. It is important for me to share personal experiences as I claim both successes and failures. This shows vulnerability and transparency in my research process. It is true to my standing as a poststructuralist/feminist researcher and designer. Which is to say, I believe that my personal experiences cannot be separated from the analysis of data. As such, my inferences and interpretations of data are viewed through this lens.

I used the E_CATS framework that I developed as part of my MFA thesis work (Wiley 2012) in both theory and practice. The framework has its main component centered on empathy. Empathy is a gateway to building meaningful relationships (Jordan 2004). Used as a method of teaching and a way of being, the E_CATS framework can lead to wholeness for students and educators alike. As Parker Palmer states, “…intellect, emotion, and spirit depend on one another for wholeness” (Palmer 1998).

Students in the art and design program at Grand View University in Des Moines, Iowa, have not been fully engaged in their educational process in recent years, particularly at outside the classroom events organized by faculty. Learning environments are changing rapidly with the “Internetz” (a reference to a common meme found in popular culture pertaining to the use of online social media.) Why shouldn’t educators use popular culture items such as, social media, games, comics, and graphic novels that our students already use? This adds a level of authenticity for students to co-create their learning environments in mutual collaboration with educators. Prensky (2010) refers to this as “partnering”, I refer to it as mutuality using the context of Relational-Cultural Theory (Jordan 2004) in an effort to achieve trust through empathy and authenticity. In this learner-centered approach, the student shares power with the instructor and more importantly the instructor shares power with her/his students. Thereby, empowering them through empathy to achieve autonomy and share ownership in
their learning. This will hopefully lead to mutual respect and eventually trust between student and instructor.

During the pilot study that I present first, I used the E_CATS framework to gather data related to the beginning design stages of a mobile game app for students enrolled in the art and design program at Grand View University to use outside-the-classroom in hopes of encouraging intrinsic motivation inside-the-classroom. However, what I discovered was a greater need to develop inside-the-classroom tools for learning first. I therefore used the data gathered from the pilot study to perform additional research. Bowers says, “Moving backwards is as common as moving forward,” in research (Bowers 2011), and I certainly moved backwards for a time.

The E_CATS framework informed the entire research and design process. Evaluation instruments (Appendix B) allowed additional data to be gathered from students to assess their relational connection to others in the art and design department and in their lives in general. These relational connections included family, friends, teachers, classmates, acquaintances, and often a higher power. It is these connections, and methods of communication with them, that motivate student performance in the classroom and eventually outside the classroom.

I used mixed-methods of research methodologies, further explored and explained in depth in Chapter 3. Research methods included two different online surveys with students, individual interviews with students, focus groups comparing software learning tools with students, interviews with faculty at Grand View, as well as faculty from other universities, about current teaching methods and tools, and interviews with working professionals about industry trends and their expectations of graduating students.

1.1.1 Background of the pilot study

The pilot study was an attempt to bridge the gap left by the absence of an inclusive theory for interaction and graphic design and is a call for radical change to incorporate empathy, connectivity, authenticity, trust, and spirituality (E_CATS) into all aspects of the design
and research process. This process must begin in the classroom with a critical look into power dynamics. A case study of the beginning design process for development of a mobile game app is presented. These interactions would be used by students and faculty in the art and design department at Grand View University in Des Moines, Iowa, USA, and is an example of how this pedagogical framework can build relationships between these often-polarized groups. Student engagement inside and outside the classroom is of utmost importance. I believe that this engagement builds community and vocationally healthy adults. This pilot study focuses on the initial gathering of data to inform the design of evaluation instruments to assess wants and needs of students through the use of the E_CATS framework. The app will apply game design principles that work to increase student engagement through play within the art and design department at Grand View University. Grand View is a private, liberal arts university with approximately 2,000 students, located in the central United States and affiliated with the Evangelical Lutheran Church in America (ELCA). Although Grand View has a strong Lutheran heritage, spirituality does not always filter into the classroom. Speaking of one’s religious beliefs is taboo in the academic environment, even at a religiously affiliated institution such as Grand View. Separating religion from spiritually is integral in gathering data and an innovative approach to the pedagogy of graphic design.

1.1.2 Theoretical contexts for pilot study

Relationships are synergistic. Relational theories describe how we create and sustain relationships and take into consideration our own experiences, our own social location and include broad cultural signifiers. Spirituality is defined in this pilot study as, “… the diverse ways we answer the heart’s longing to be connected with the largeness of life…” (Palmer, 1998). Part of our development as people is to learn about power; our own power, and others’ power. This pilot study offers the combinational addition of Relational-Cultural Theory (Jordan, 2004) and the Connectivity Model (Kang and Satterfield 2009), (Figure 1, which uses Activity Theory and Kansei Engineering) to the spectrum of interaction and graphic design
through the E_CATS framework. Since interaction design is about designing mediating tools for people and their subsequent behaviors, particular attention is needed into establishing and maintaining relationship between designer and audience. Activity Theory is one way that interaction designers have tried to meet the needs of their intended audience (Kaptelinin and Nardi, 2006). It incorporates mediating tools that account for environment, culture, role of the artifact, motivations, and complexity of real life activity. However, a wide gap exists in how to incorporate “… cognition, emotion, as well as affect” (Norman 2004) by using activity theory alone. The Connectivity Model proposed by Kang and Satterfield (2009), accounts for the emotional gap in using Activity Theory in isolation, by incorporating Kansei Engineering to measure emotional responses to products. They have successfully developed the model for use in product design and brand experiences (Kang and Satterfield, 2009). The model can also be applied to interactive systems and ultimately interaction design.

![Figure 1. The Connectivity Model in relation to activity theory.](image)

Relational-Cultural Theory pushes against typical patriarchal structures and values in the United States. These typical “power over” values/structures include men over women, whites over blacks, logic over emotion, provider over nurturer, teacher over student, and so on (Wiley 2012). Relational-Cultural Theory seeks a flatness of power. It creates a sense of shared power, or “power with” others (Jordan 2004). This idea of shared power can lead to collaborative creation in interaction design to produce useful, good designs that are pleasur-
able with which to interact. Within the classroom, shared power between student and instructor leads to mutual respect, trust, and greater student engagement.

Empathy, mutuality, authenticity, and spirituality, are essential in recognizing our own limits and strengths in connection with others. Building trust requires a mix of all of these tenets, as well as evolution through conflict. Interaction designers and educators can move toward co-creating an inclusive theory for this discipline by becoming vulnerable and sharing power with the people with whom they design interactions in industry, by first designing with and sharing power with students in the classroom.

1.1.3 Purpose of the pilot study

The student group in the art and design department at Grand View University is named Seymour Art. Faculty initiated it approximately twenty years ago as a way to build community among students; host events outside of regularly scheduled classes, attend events in the local Des Moines art community, and take out-of-town trips to other cities. Its general purpose is to encourage students to “see more” art. However, over the past few years student attendance at events has been lackluster at best. After school and evening events have historically shown low participation and has led to faculty requiring that students attend certain events by assigning grades based on their attendance. While the events are relevant to student learning, grading on attendance is purely extrinsic motivation and creates an environment of resistance and resentment (Prensky 2010).

During the 2012-2013 academic year, an additional student group (the Grand View University AIGA student group) was formed as a subgroup of the Seymour Art student group, specifically geared toward graphic design students. The Grand View University AIGA student group is part of the larger organization of AIGA, a national association for design professionals, students, and educators. The art and design program can only have one recognized student group (as with other departments on campus), hence the inclusion of the AIGA
student group within the existing Seymour Art student group.

With the addition of the AIGA student group under the umbrella of the Seymour Art student group, both are experiencing a need to establish strong, linked identities within the art and design department while building community and relationships among students, faculty, and local art and design professionals in Des Moines.

The faculty, along with student leaders of the Seymour Art and AIGA student groups, have been searching for ways to increase student engagement and bring fun into the groups’ events, thereby increasing attendance and participation through intrinsic motivation rather than solely extrinsic factors, such as being graded for attendance (Prensky 2010). Using methods from Kansei Engineering, manual expert methods were used to extract low-level Kanseis, also referred to as Kansei Words (Schütte 2005). Several focus group sessions (Figure 2) and interviews were organized with current and prospective student members of the Seymour Art and the AIGA student groups, along with faculty mentors to assess needs and wants from stakeholder groups. Affinity diagrams (Figures 3 and 4) were used as part of one focus group, along with other manual expert methods of gathering Kansei Words, including twelve individual interviews, searching trade magazines and relevant literature, as well as ideas and vision (Schütte 2005). As Schütte states, “An important point is to translate ideas and visions into Kansei Words because non-existing solutions should also be considered. In this way Kansei Engineering can be used as a creative product development tool, which generates innovative solutions. The task is to describe the domain, not the existing products” (Schütte 2005). The
The interviews were conducted in a peer-to-peer fashion with equal distribution of female to male students of varying levels in the art and design program from freshmen to seniors. The peer-to-peer interviews were intentional in format to help the students feel freer to share with their peers, rather than being interviewed by a faculty member, which might hinder honest responses. More authentic responses are believed to have been recorded as such.
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<td>Progressive</td>
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<td>Fast-paced</td>
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The data gathered from the focus groups and interviews informed the design of statistical evaluation instruments assessed a person’s “…Kansei and what they consider to be the important Kansei” (Schütte 2005). A questionnaire was developed and sent to the stakeholder groups. “Using statistical methods to evaluate the gathered material quantifies the affinity between the different Kanseis” (Schütte 2005).

1.1.4 Findings and discussion of the pilot study

The manual expert methods demonstrated several important findings and insights.
into why student participation has been low, as well as current levels of student engagement. Emphasis was placed on the assessment of emotional and spiritual connection in identifying Kansei Words (Table 1). The most common response stated by students was a lack of time due to their work schedule and the amount of homework from their classes. The average number of hours students work per week varies from 20-40, spread between part-time jobs and internships. Most students take between 15-18 credit hours each semester in classes. In addition to an average of 6-8 hours of homework per week for their general education requirements, art and design students are expected to spend 6-8 hours *per week, per studio class* on project assignments. Studio classes differ from most general education classes that meet for three contact hours per week, by requiring six contact hours per week for the same three credit hours. More than half of the students involved in the focus groups and interviews were enrolled in more than one studio class at the same time. The heavy time requirement of the art and design classes, in addition to part-time jobs and internships, shows to be taxing on the students’ physical energy, mental energy, and overall wellbeing, therefore negatively affecting their connection to the largeness of life or their “spirituality” (Palmer 1998). Students reported feeling overwhelmed and anxious by the amount of work, and said they were depressed that there was not enough time to do everything expected of them. They also showed resentment to instructors that required them (with grades or other extrinsic factors) to attend outside the classroom events. They stated they would be more likely to want to attend if given autonomy in their decision and given enough time to plan their schedule accordingly. Requiring them to attend has not given them ownership of using outside the classroom events to aid in their learning process.

Informal responses from faculty showed a similar feeling of resentment to requiring students to attend. Out of six full-time faculty, four felt that this was the only way to encourage students to show up. Their resentment was aimed toward the students for “making them require attendance” in order for students to go. This mutual feeling of resentment has proved
to be demotivating for both students and faculty.

Another important pattern that was apparent during the focus groups and interviews indicated that students often did not find out about Seymour Art and AIGA events until too late. Some suggestions were to keep a centralized calendar of all events within the community, as well as Grand View events so students could plan more than two weeks in advance to ask off work. The current method for posting events is to email students in a bulk email, as well as post to Facebook. Three-fourths of the students included in the study stated that email was not an effective way to inform them, as they did not check it in time to plan in advance for the event (or they viewed it on their phone and could not view any images or attachments). Three-fourths of the students reported that Facebook was currently the main point of contact for them to track events, however, things seemed to get lost in Facebook’s timeline interface. One-fourth of the students did not know about the two separate Facebook pages for the two groups. Students stated that they needed to be verbally reminded in classes about events, as well as having another way to keep track of the events. They stated it was difficult to keep track of which events were more important than others, and which events were free or had a cost associated. Lack of finances was cited as a major deterrent to attending some events.

One-third of the students interviewed individually did not know the purpose of the Seymour Art student group or the AIGA student group. They were confused as to the mission of each, how to become involved, and which group was appropriate for them. These students also stated that there seemed to be a lack of fun involved with attending events. Based on the student responses, it will be important to determine each student’s range on the introvert/extrovert scale in determining intrinsic motivational factors for attending events.

1.1.5 Conclusions and discussion of pilot study

According to individual interviews and focus groups, art and design students are confused as to how to get involved with Seymour Art and/or the AIGA student group and
the similarities and differences between them. The heavy time requirement and rigor of art and design classes, combined with students’ work schedules does not leave time for students to regularly attend evening and weekend events without much prior planning to adjust their schedules and save money for attendance fees. The lack of fun and sense of play was missing from many of the past events.

An important consideration of inviting the students to offer direct, critical feedback during the focus groups and interviews was a manifestation of using the E_CATS framework. I used empathy to encourage a path to begin building growth-fostering relationships with students by encouraging authentic responses by providing a safe space in which to do so. The statistical evaluations are expected to indicate if trust is being achieved through the use of high-level Kanseis, as well as if the students who have been actively attending events feel more connection to other students, faculty and the local Des Moines art and design community. By using the E_CATS framework, I have modeled the behavior of using empathy in the research and design process.

The Kansei Words gathered during this first phase of research informed the design of the statistical method questionnaire that was sent to the stakeholder groups of students and faculty (Appendix A). This will lead to high-level Kanseis, or Kansei Engineering Words to begin the design process.

After compiling and analyzing the data gathered from the online survey, interviews and focus groups (Appendix B), it became clear that the students were frustrated with several things inside the classroom that were causing them to resist attending after school events. Some felt that their professors, “Were too good,” as one student said, to take time to give them targeted feedback on their work. Another student did not feel connected to her classmates or professors enough to be comfortable attending events. One factor that accounted for the resistance was a large transition of the art and design department earlier that year. Students had been a direct part of that large transition. Three new faculty were hired (myself and
two others) that started in fall 2012. One faculty member retired after 42 years of teaching, and one faculty’s contract was not renewed by the administration. One new line was granted for the third new hire.

There was a mixture of relief, grief, and uncertainty in the student’s responses. All were relieved that one faculty member’s contract was not renewed and felt affirmed that their evaluations over the past couple of years were heard by administration. They also felt grief for the retired faculty member leaving, as he was a beloved teacher. Some also felt grief about graduating that year and not being a part of the excitement the transition caused and renewed sense of energy within the department.

Another strong decisive factor in re-evaluating the original research of developing a mobile game app to increase intrinsic motivation outside the classroom was a discussion with Grand View’s advisory board. The board is made up of eight professional artists, graphic designers and interaction designers. When asked what they thought of the research, they were intrigued, but offered suggestions to address pedagogical matters first. At this point, I decided it was time to use the already gathered research to go in the direction it indicated beginning inside the classroom first.

I revised my research questions completely after conducting further research into pedagogy/andragogy within the graphic design classroom. I used existing data collected by Grand View every three years from the National Survey of Student Engagement (NSSE), I sent out an additional online survey (Appendix A) that was similar in design to the NSSE, but was directed specifically to art and design students instead of university wide. This produced quantitative data to complement the original qualitative data from the pilot study (Appendix B). What I learned from the data, was students ranked their highest choices for what they expect from life as, “A sense of accomplishment,” and “fun and enjoyment.” I identified these two statements as the high-level Kanseis to lead the next phase of research and data gathering.
1.2 Research questions

As part of my search of self, I have thought a lot about my undergraduate college experience (as well as my graduate experience) and the constant pressure to produce creative projects in an art and design program. I often found myself worn out from working at my part-time job and attending classes to do any meaningful work. The time constraints were heavy and the financial burden great. Stress was constant. Fun was few and far between, and often experienced in excess when it was had.

During graduate school, I began to realize that typical college-aged students are marginalized. I often heard faculty complain about students not attending class and assuming they were hung over from partying the night before. While this is certainly true in some cases, most students that I spoke with offered other explanations. They worked as many as 30 hours per week and simply slept through their alarm clocks. Many of the students worked until 1 or 2 am. Others were overwhelmed and felt anxiety about not being prepared for class. They opted to stay in bed and avoid embarrassment and humiliation by their instructor and classmates. Sometimes this happened especially on days where a large group critique was scheduled, and finished work expected.

This research focused on the following questions in relation to high-level Kanseis gathered during the pilot study:

1. How can the E_CATS framework be applied to develop tools to improve affective and experiential outcomes in graphic design pedagogy, leading to a sense of accomplishment for students?
   i. How will learning outcomes be assessed?

2. Will the inclusion of these tools lead also to a sense of fun and enjoyment for students in graphic design?
   i. How will this be assessed?
1.3 Dissertation outline

- Chapter 1 Introduction and Pilot Study Results
- Chapter 2 Review of literature
- Chapter 3 Methods and procedures
- Chapter 4 Research findings
- Chapter 5 Conclusions, discussions, recommendations

1.4 Definition of key terms

- Pedagogy: Typically defined as the process of teaching in an educational setting and directed toward children, but has become a broadly used term to include teaching methods to any age group.
- Andragogy. The field of adult education (Morrison 2011). Andragogy typically refers to adults entering educational settings after working for a period of time after secondary education.
- Quantitative: Method of research that obtains numerical data and generally considered objective (Fitzpatrick 2011).
- Qualitative: “Qualitative measures are not readily reducible to numbers and include data collection methods such as interviews, focus groups, observations, and content analysis of existing documents,” (Fitzpatrick 2011).
- Postpositivist: Fitzpatrick describes postpositivist theory as it refutes logical positivism. He states, “That facts and methods or inquiry choices in research are influenced by the values of the researcher, that knowledge is fallible and changing, that data can be explained by many different theories, and that reality is constructed by people and their experiences,”
• Constructivist: Belief that the human mind gives meaning to knowledge, by focusing on understanding our constructed world (Fitzpatrick 2011). They argued that objectivity was not possible, given that we each see the world through our different lenses and influenced by our own experiences (Fitzpatrick 2011).

• Kansei: Translating a consumer’s feeling and emotional response to inform product and/or service design. It was founded by Mitsuo Nagamachi, Ph.D, Professor Emeritus of Hiroshima University (Schütte 2005).

• Relational-Cultural Theory: Based on the work of Jean Baker-Miller, MD, it is founded under feminist and multicultural perspectives. It embraces social justice by deconstructing power structures and mutually growth-fostering relationships (Jordan 2004).

• Spirituality: “A form of existential engagement that emphasizes individual purpose and meaning-making in the world,” (Astin 2011). In this study, “represents a ‘seeking’ in us that can lead to a better understanding of who we are, why we are here, and how we can live a meaningful life—the ‘big’ questions we all confront, often for the first time as young adults,” (Astin 2011) and specifically during college.
CHAPTER 2. REVIEW OF LITERATURE

I sequentially ordered the research questions in section 1.2 by determining which would come first according to the research findings of the pilot study, and which research question should inform the other. It became evident during the pilot study to develop inside the classroom tools first as a more authentic way to increase intrinsic motivation. The hypothesis being, if students are not connected with one another and with faculty inside the classroom, then they will not be connected outside the classroom either and therefore not feel a sense of accomplishment or fun and enjoyment. I continued with additional data collection at the conclusion of the pilot study. This process began with a meeting of our advisory board for the Grand View University art and design program in the spring of 2013.

After explaining the premise of my pilot study to design a mobile game app, each member seemed unsurprised by my findings to reframe the issue at hand. Since our department had undergone such a huge transition, it made sense to first address what was happening inside the classroom. I reflected on pedagogy and the differences between it and andragogy. I began reviewing relevant literature pertaining to learning theories, multiple intelligences, games and game-based learning, creativity, and the medium of comics.

2.1 The medium of comics

Recently, I have read several articles pertaining to using graphic novels in the classroom, but mostly they are related to secondary education. There have been some recent presentations at Computer-Human Interaction (CHI) conferences. One was titled, “Sequential Art for Science and CHI” by Duncan Rowland and was presented in 2010 at the conference in Atlanta, Ga. There is still not much about using and assessing this medium in higher education, apart from graphic novels to improve literacy.

My first experience with comics was in the early ‘80s with the Sunday Comics section of the St. Louis Post-Dispatch. I remember clearly the weekly installments of The Peanuts, Garfield and Family Circus. Based on this experience as a child, I assumed that comics
were created for children and were referred to as the “funny papers.” As I grew older, I found that I was reading different sections of the newspaper and left the comics section behind. I was attempting to seem more sophisticated in my reading choices and would not dare be seen reading what I perceived to be children’s materials. My understanding of comics was too narrow. *Understanding Comics, The Invisible Art* (2007) is an apt title Scott McCloud’s seminal book. The book is written in the medium of comics with each panel containing an illustration and text working together, following in a sequence starting at the top left and continuing to the right. This is the way in which Western culture reads written works, so it makes sense that comics produced for Western culture also read in this manner.

One of the things that I learned in this first chapter is that the word “comics” is singular. I had always assumed that the word was plural. In attempting to provide a proper and comprehensive definition to the phrase “comic book,” the author begins to address some of the stereotypes and unleash the potential of comics. Realizing that my own definition of comics was too narrow and that I had stereotyped the genre, I was eager to jump into the reading.

While McCloud begins to explain comics, he introduces well-known comics artist Will Eisner’s term “sequential art” as one piece of its definition. Eisner is still considered among the best comics artists and is highly regarded. Born in Brooklyn, Ny., in 1919 his first famous comic book was *The Spirit*, written and illustrated in the 1930s. Eisner was an innovative artist, because of his sophisticated writing style combined with his own illustrations. He was my first look into comics that were geared towards an adult audience.

I quickly realized the potential of the medium in relation to software learning. After reading through Eisner’s works and finding several other textbooks in graphic novel format, it seemed a good fit for learning software in the graphic design classroom. A graphic novel format could help with technical aspects of the software, but my main hope was for students to think critically and apply their new knowledge. This was something missing from many video-based and text heavy tutorial books. I first needed to dig deeper into *Understanding
Comics and sequential art.

I was curious to find out McCloud’s additions to the definition of sequential art. He was not satisfied with the inclusivity of this term, and goes further to separate form from content. He differentiates between the art form as the medium and the ideas, writers, artists, trends, genres and styles. Since the main forms of media, such as written word, music, video, theatre, visual art and film, have been critically examined at one time or another, there exists commonly accepted definitions. Comics have historically been overlooked by much critical examination. Thus, its definition has only recently been the subject of research and examination from a scholarly viewpoint.

In his attempts to create a broader definition of comics, McCloud looks for historical examples of sequential art. He finds these in pre-Columbian art discovered by Cortés (1500s), France’s Bayeux Tapestry (1066) (Figure 5), and ancient Egypt. Of course, there are other examples but the author chooses to limit his focus on just a few of the most significant pieces. He also points out that around the beginning of the 20th century, British caricature magazines created comics in a “steady stream.” The printing press with its ability to mass-produce items in print, was a huge addition to the proliferation of comics. As a result, woodcuts became a necessity to printing pictures in books. McCloud names a few comics artists as unsung heroes
that contributed to the commoditization of comics.

Scott McCloud begins the second chapter of his book *Understanding Comics: The Invisible Art* with René Magritte’s 1928-29 painting titled *The Treachery of Images* (Figure 6). This is an intriguing way to involve the reader into his process of establishing vocabulary for comics, and provides a segway into his discussion about the icon. McCloud’s ultimate
Figure 10. Ally Sloper’s Half Holiday illustration by Charles Henry Ross, 1892.
message in this chapter is commanding audience involvement. He states, “Icons demand our participation to make them work.” This is a way to increase collaboration between artist and viewer. He provides several scenarios in which the reader may engage in his process by presenting options for viewer involvement based on artistic drawing style. At the end of the chapter the author sums up his exploration into visual iconography by introducing the idea of using it as a form of universal communication to embrace our “symbol-oriented culture.” This idea would transcend many boundaries if it is truly universal and facilitate communication and collaboration between multiple cultures worldwide.

In beginning his exploration and introduction of the icon, McCloud draws Magritte’s painting of a pipe in a photorealistic style (Figure 7). He achieves this look by including a drawing of a frame hung on a wall, using shading and crosshatching to produce the image of the pipe and mimicking Magritte’s painted words at the bottom, “Ceci n’est pas une pipe.” The English translation for the text is “This is not a pipe.” In the third panel of the chapter, McCloud begins to explain that, “…indeed this is not a pipe. This is a painting of a pipe.” This leads the reader through a multitude of questions about the seemingly simple image of a pipe. The title of the painting, *The Treachery of Images*, is carried over from the Victorian era’s fascination with images not presenting themselves as they appear. This concept further
developed into Surrealism in 1924 with Sigmund Freud exploring the world of intuition, dreams and the unconscious realm (Meggs, 1983). Most of Magritte’s work follows in the style of Surrealism and is inherently oneiric, meaning that it is dream like.

By including a line of text below the image, Magritte has effectively used text and image together in a collaborative environment. Magritte’s attempt to involve the viewer in the process of interacting with his painting is quite effective in its complexity of message. The picture plane is devoid of background imagery, has one image of a pipe with one line of text placed below the image. This treatment of image with text located below is similar to that of comics drawn by Rudolphe Töpffer (Figure 8), Wilhelm Busch (Figure 9) and Charles Henry Ross (Figure 10). This text and image treatment stemmed from the printing technology available to the early comics artists. Woodcuts were used to create the image and then set
The layout of McCloud’s textbook in graphic novel format helps in fragmenting the questions raised by Magritte’s painting. As the reader flips the page, we are treated to McCloud’s examples of illustrating the concept of the icon. Much as Magritte was intentional with his placement of text in relation to image, McCloud is intentional with his placement of his concepts of icons that involve the reader in flipping the page to view them. The icon is essentially following a reductive style of drawing, which the author refers to as abstraction. It is the process of removing elements, yet the essence of the image remains. McCloud provides the example of a progression of images drawn from the same photorealistic drawing of a
face. He ends this progressive abstraction with a final drawing; the cartoon version of the face (Figure 11).

His “amplification through simplification” process involves abstracting an image through cartooning. The focus then shifts to specific details rather than the elimination of details. For his example of the face, the final drawing contains two lines and two dots. Using a circle outline to represent the simplified shape of a person’s head, two dots to represent eyes and one line to represent a mouth, maintains the specific details that will allow the viewer to recognize this configuration as a face.

McCloud makes the connection that our minds can convert shapes into faces, given the specific details are included in the drawing. Since he states that, “We see ourselves in everything,” it is easy to look around at everyday objects such as the grill of a car and a parmesan cheese container and see a face in the design. He goes further to illustrate examples of his theory that, “We don’t just observe the cartoon, we become it.” The universal identification, simplicity and the childlike features are what he feels is the very essence of why children are fascinated with cartoons.

This fascination with cartoons from our childhood is a form of non-visual awareness that Marshall McLuhan observed in adults interacting with inanimate objects. Humans tend to personify these objects, as they become extensions of our bodies. McCloud provides the
example of driving a car. When one car hits another, the common phrase of the one that is struck is, “Hey! He Hit Me!!” Rather than separating the car from oneself by saying, “He hit my car!” Since our identities are defined by a wealth of inanimate objects, our awarenesses of these extensions become simplified in our minds. The author states that we can separate our experiences in life into two realms, the realm of the concept and the realm of the senses.

In the medium of comics, the realm of concept is the experience. McCloud makes a point to distinguish between several artistic styles within the medium, but the essence of concept is the same. This is accomplished “By de-emphasizing the appearance of the physical world in favor of the idea of form…” Using concepts gives depth to a scene by giving it physical perspective and bringing the characters to life. These characters can include both animate and inanimate objects. Even though the drawing style may be simple, the storyline may be complex. One example of a complex story is the graphic novel, *Maus: A survivor’s tale* (Figure 12). Written and illustrated by Art Spiegelman, from the perspective of his father, it’s a story about Nazi-Germany and the Holocaust.

![Figure 12. Art Spiegelman’s *Maus.*](image)

Furthering the concept experience in comics, is the use of words. McCloud states that words are the ultimate abstraction. Words are a sequence of letters from an alphabet that
represent sounds. Placing spaces between words represents the beginning and end of each word. Punctuation helps a string of words become a sentence. Language itself is full of fragmented sounds, pauses and ideas. Including text with an image creates a visual language of communication. It is this visual communication that involves the viewer along with the artist, and invites participation with the story. In the case of Magritte’s painting of a pipe, that is not really a pipe, only a representation of a pipe, and is really just an icon for a pipe, that the viewer has a concept-related experience with the artist. Comics use this same philosophy in their creation and identification with its intended audience.

In the third chapter of McCloud’s book, he discusses the importance of the gutter space between panels and how it engages the reader. He tells us that our perception of reality is based on faith and imagination. As he states, “Our perception of ‘reality’ is an act of faith, based on mere fragments.”

McCloud introduces the principle of closure, which is “…observing the parts but perceiving the whole…” Closure is a learned ability that occurs in every day life. As such, we can read comics using this principle. It is a medium where the audience is a willing and conscious collaborator where the gutter is at the “heart of comics.” Human imagination takes the separate panels and combines them into ideas within the space of the gutter.

An example that effectively uses the gutter space to interact with the reader is Winsor McCay’s Little Nemo in Slumberland (Figure 13). The reader makes connections between each panel in Nemo’s dream sequences, so that the story makes sense.
Figure 13. Winsor McCay’s *Little Nemo in Slumberland*.
McCloud makes the statement that “comics is closure,” since our minds connect the separate, fragmented, distinct panels with the use of space in between. By encouraging audience participation, the comics artist is in charge of both art and craft.

The author categorizes these panel-to-panel transitions into six categories. These are: 1) moment-to-moment, 2) action-to-action, 3) subject-to-subject, 4) scene-to-scene, 5) aspect-to-aspect, and 6) non-sequitur. He then takes a random sampling of various American and European comics to show a breakdown of which categories they fall into. He came to the deduction that most fell into categories two through four. After looking at Osamu Tezuka from Japan, he determined that there was a high incidence of the fifth type of transition, in addition to strong usage of categories two through four.

McCloud explores reasons why Eastern artists use more of the categories. There is a difference between traditional Western art and Eastern art. Western art is traditionally goal-oriented and the East tends to be cyclical and labyrinthine. In Japan, comics is an art of intervals. McCloud states, “The idea that elements omitted from a work of art are as much a part of that work as those included has been a specialty of the East for centuries.” McCloud says that the art of comic is as subtractive as it is additive.

In addition to the reader having closure between the panels, there is also closure within panels, especially when an artist chooses to show just part of the picture. This triggers the reader’s imagination to finish the story based on the clues given. Each reader then, might have different interpretations of the same story.

McCloud also states that comics is a mono-sensory medium. He gives an example of four panels showing a kitchen scene (Figure 14). He argues that even though we only rely
on one sense to read comics, that all of our senses can be invoked in the in-between space of the panels. The kitchen scene works to spark our imaginations to hear the sound of chopping, smell what is cooking and eventually taste the food.

His last point of the chapter is how closure can be affected by drawing style. The more simple the style, the easier it is for the reader to use closure. As opposed to more realistic drawing styles, that “…have a bumpier ride…which doesn’t pass easily into the realm of ideas.” Ultimately, the medium of comics is unique in its audience involvement and should not be grouped as a “…mere hybrid of the graphic arts and prose fiction.”

McCloud’s fourth chapter is titled, “Time Frames.” In this chapter he focuses on the main points of creating the illusion of time and motion. These are the use of sound, the shape of the panels and portraying specific motions.

McCloud says that panels within comics can be much more than a single moment in time. He uses an example of one single panel with a sequence of events occurring. For instance, the first event on the left indicates the sound of a flash bulb (Figure 15). Although we know that the flash of a camera is brief, it still occupies certain duration of time. Following in the sequence from left to right, are characters reacting to the flash.
This particular panel has many actions and reactions which create the illusion of time, and is “...one panel, operating as several panels.” Another example is a panel from Gasoline Alley by Frank King (Figure 16). Using a bird’s eye view of the characters, King composed this as one background scene with multi-functional panels of the same characters. King also used panoramic scenes divided into panels.
The second point in this chapter is the role of the panel shape. The panel itself is an icon that acts as, “A sort of general indicator that time or space is being divided.” McCloud states that, “The durations of that time and the dimensions of that space are defined more by the contents of the panel than by the panel itself.” The shape of the panel can affect the reading experience, and the relationship of time as depicted, and time as perceived by the reader. Since time and space are one in the same, an artist can use different techniques to control the duration. Adding panels, increasing the gutter width and lengthening the shape of the panel are all ways in which the artist can give meaning to the duration of time. McCloud explains that by using a borderless panel, it “…can take on a timeless quality.” So too, within a silent panel a sense of timelessness can be produced by offering no clues to its duration. When
bles are used, “...time is no longer contained by the familiar icon of the closed panel... and escapes into timeless space.” This technique of setting a lingering, timeless mood is most often seen in comics art from Japan. In further study of *Gasoline Alley*, we find that Japanese woodcuts, or Ukiyo-e, were used as historical precedents. King’s panoramic scenes were based on this tradition. Ukiyo-e often do not have borders and are showing a moment in time. However, they have the timeless quality McCloud speaks of since they do not offer any clues to their duration.

The final point in the chapter is the issue of portraying specific motions. McCloud offers Töpffer’s *M. Crepin* from 1837 as an example of the first use of portraying specific motions from panel-to-panel. The late 19th century saw science attempting to indicate motion, and finally “moving pictures” made their way to the forefront. At this same time, “The Futurists in Italy and Marcel DuChamp in France began the systematic decomposition of moving images in a static medium.” Eventually, DuChamp reduced his concept of motion to a single line to indicate the idea, rather than the sensation. Comics had also been investigating this idea of showing motion through a static medium. Since the single panel can represent a span of time through sound, it can also represent a span of time through pictures. Thus, the comics “motion line” developed. At first they were, “...wild, messy, almost desperate attempts to represent the paths of moving objects through space.” Later, they became “so stylized as to almost have a life and physical appearance all their own.” Many techniques exist to indicate motion through use of action lines. One style is drawing the moving object and background clearly and concisely with the addition of a path of motion imposed over the scene. Another is using multiple images that follow the main moving object. As photography became more prominent, artists like “Gene Colan began incorporating photographic streaking effects,” (Figure 17) and also experimenting with a blurring effect. In Japan, the style that is most popular is what McCloud names as “subjective motion.” This is where the moving object involves the reader to become the object. Backgrounds are drawn with motion lines
and the moving object is drawn clearly and concisely.

Figure 17. Motion lines illustrated by McCloud.

“The face that comics presents to the reader is one of simple normality,” with the illusion of time successfully depicted by breaking sound and motion into two subsets. The two subsets of sound are word balloons and sound effects. The two subsets of motion are panel-to-panel closure and motion within panels. “Both types add to the duration of a panel, partially through the nature of sound itself and by introducing issues of action and reaction.”

The fifth chapter in McCloud’s book is titled, “Living in Line.” The main points in this chapter are dealing with emotional or sensual responses. Comics artists depict these through the use of line in expressionistic, or synaesthetic ways to produce physiological effects. “The idea that a picture can evoke an emotional or sensual response in the viewer is vital to the art of comics.”
Emotions and senses are invisible and can be portrayed either between or within panels. With the development of expressionism in the late 19th century, artists like Edvard Munch (Figure 18) and Vincent Van Gogh (Figure 19) explored a subjective approach to lighting. Wassily Kandinsky (Figure 20) applied science to this approach to find “an art that might somehow unite the senses.” This idea is called synaesthetics. Art historians treat comics artists as “blissfully ignorant of these ideas.” However, in looking at several comics artist’s work, McCloud states that “…all lines carry with them an expressive potential.”

Figures 18-20. From left to right, Munch, Van Gogh, Kandinsky.

An example of this is Dick Tracy, by Chester Gould (Figure 21). McCloud also uses Gould’s treatment of line as an example and says that the use of “…bold lines, obtuse angles and heavy blacks suggest that mood of a grim, deadly world of adults.” McCloud shows several examples of comics artist’s work and details how the use of lines is expressionistic in each. Another example is Roy Crane’s Captain Easy within the Wash Tubbs strip (Figure 22), where he experiments with lighting that set the mood in each of his panels. He used heavy lines and shading techniques to create tenebrism, where the background is shadowy and moody. This was also a lighting technique that the movie industry used to create a film noir feel.
Figure 21. Chester Gould’s *Dick Tracy*.

Figure 22. Roy Crane’s *Wash Tubbs*. 
McCloud connects the use of pictures as icons with another invisible icon, language. To illustrate his connection, McCloud lights a pipe, and draws wavy lines to indicate smoke. He then draws a garbage can with similar wavy lines to depict smell. He says, “Not really a picture anymore, these lines are more a visual metaphor—a symbol. And symbols are the basis of language!” Ways to represent the invisible are continually being developed, in addition to widely used and accepted ways. This constantly growing visual vocabulary has the potential to transcend culture. Frederick Opper was the first artist to use stars and lines as a symbol for hitting one’s head in Happy Hooligan (Figure 23), begun in 1900. In that same Sunday supplement, Opper indicates various movements and directions along the roller coaster that Happy is testing.

Figure 23. Frederick Opper’s *Happy Hooligan*.

“Backgrounds can be another valuable tool for indicating invisible ideas… particularly the world of emotions.” Patterns can produce almost physiological effects, but readers will assign these feelings to the characters in the story. Using expressionism and synaesthetics, the comics artists can distort their subjects. This may foster a greater sense of participation by the reader. However, the artist may have to clarify what is being shown through “the content of surrounding scenes or, of course, through words.”

The word balloon is the most well-known of comics’ synaesthetic icons. No matter the shape, they can represent sound, or non verbal ideas. Words have the most power to describe “the invisible realm of senses and emotions.” Pictures can also produce strong feelings in the reader, but words can often give a clearer “picture” of what is occurring.
George Herriman used words to represent sounds in *Krazy Kat*, either inside a word balloon or outside of it. A strip from 1922 shows Krazy (Figure 24) getting bonked in the head with a brick, thrown by Ignatz the mouse. In addition to the motion lines that Herriman applied, the word “pop” appears at the moment the brick hits Krazy’s head. Herriman also adds words like “pow”, “ziz”, “zip”, and “r-rip” to indicate sound and add to the action of his scenes. These words help apply audio to the ongoing conversation within the word balloons. As such, the viewer interacts with the characters on a deeper level.

![Krazy Kat by Herriman](image)

Figure 24. George Herriman’s *Krazy Kat* from 1922.

The old adage of “what you see is what you get” does not apply to the medium of comics. Dealing with invisible worlds of senses and emotions is the very essence of comics as an “art of the invisible.” McCloud sums up the chapter by saying, “In the end, what you get is what you give.” This idea is solidified in Herriman’s work with Krazy Kat and its self-referential, highly intellectual nature. The viewer is invited to participate on many different levels along with the characters.

The sixth chapter in McCloud’s book is titled “Show and Tell.” His main points surround how words and images interact with one another, their history and how he classifies their interaction within the medium of comics. He illustrates several examples as to the history of text and images and their relationship, as well as in the context of current comics.

McCloud states that traditional thinking keeps words and images separate, and that bringing them together is thought of “…as a diversion for the masses…” or a result of “crass
commercialism.” He illustrates an example of a child reading at different stages during his life. Pictures in the child’s book progress from a very integral part of his books to no pictures at all. Jan Comenius created the first children’s picture book in 1658, titled *Orbis Pictus* (Figure 25). The book was to help children learn Latin with a numbered image corresponding to a word in the child’s native language, as well as the Latin word. Another example is *Max and Moritz* by Wilhelm Busch (Figure 26), first printed in 1865. Busch wrote clever poems to work with the illustrations, where the text greatly enhanced the story and vice versa. Even though text and images were working together, they were still kept separate with the image above the text.

Figure 25. Jan Comenius’ *Orbis Pictus*, 1658.

Figure 26. *Max and Moritz* by Wilhelm Busch.

In ancient times, images were used to both represent pictorial images, as well as
symbols. Since words began as stylized pictures, the earliest examples form a more symbiotic relationship to pictures than they do today. Words have become completely abstract to only represent sound. McCloud shows that even when pictures did appear in print with words they, “…stayed separate, refusing to mix–like oil and water.” An example of this text vs. image treatment is found in Christophe’s *La Famille Fenouillard* strip that appeared in *Le Petit Illustré* (Figure 27) in 1889.

![La Famille Fenouillard](image)

The image is placed methodically on a grid system above the text. A border around each image further separates it from the text. As pictures became more “representational and specific,” words became more abstract. They continued to grow on opposite ends of the spectrum. McCloud shows this separation on a triangular diagram with resemblance (pictures), meaning (writing) and the picture plane at the top. As time went on, after many different styles and periods of art history, the picture became more abstract, while words became more colloquial and direct. McCloud shows pictures and words “heading for collision,” with the
Dadaists and the Futurists “breaching the frontier between appearance and meaning.” Using Töpffer as an example, McCloud states that words and pictures were brought back together and made way for the modern comic.

McCloud specifies categories to distinguish different word-to-image combinations. These seven categories are 1) word specific, 2) picture specific, 3) duo-specific, 4) additive, 5) parallel, 6) montage, 7) interdependent. The most common type, according to McCloud, is the interdependent type. This is where “words and pictures go hand-in-hand to convey an idea that neither could convey alone.” This type of combination is not always an equal balance, for which McCloud shows an illustration of a scale. In a typical episode of Richard Outcault’s *Buster Brown* strip (Figure 28), we find an example of the interdependent type.

![Figure 28. Buster Brown by Richard Outcault, 1906.](image)

The story would not be conveyed as well without the words. However, in Rudolph Dirks’ early work with *The Katzenjammer Kids* (Figure 29), begun in 1897, his work is picture specific and words are absent altogether. Within his six paneled drawings, the story comes through clearly and was intended for a largely immigrant audience that didn’t speak English well, if at all.
His final point in the chapter is an example of showing the same scene, first in pictures alone, then with words in combination, only words and back to different combinations. In his experimentation of combining the images and words, he defines which type of combination is used. For instance, his first experiment is with the most common type of interdependent. He then changes the words and combinations and tips the scale to his next example of only words. He then goes back to illustrating examples with other combinations such as, word specific and amplification.

McCloud brings his ideas to climax by stating, “The mixing of words and pictures is more alchemy than science.” He longs for the time when pictures and words were much more closely related to one another, “when to tell was to show—and to show was to tell.”

The seventh chapter in McCloud’s book is titled “The Six Steps.” His main points in this chapter are breaking down the process of creating art and relating that to the medium of comics. He starts by stating that art is any activity that has nothing to do with the two most
basic human instincts of survival and reproduction. He then lays out the six steps to the path in creating any work of art.

By showing an example of a prehistoric male, we are able to connect what the basic instincts of survival and reproduction are. McCloud first shows the male chasing after a female in his pursuit for reproduction. The male then has to switch to his instinct for survival when a saber-toothed tiger comes after him. At the very end, the male creates a bit of art by showing the tiger his tongue in a mimicking gesture. This one act is art because it does not relate to survival or reproduction directly. McCloud states, “…art is the way we assert our identities as individuals…” We use art in three different ways. The first function is exercise for our minds and bodies, followed by providing an outlet for self-expression and the third is to use art as discovery.

McCloud then brings us to current time and illustrates examples of humans adding an element to art in almost everything we do. From the assembly line worker to bicycle messenger to the way we sign our names, he points out that in all these activities we add our own art. He says that art is not an “…either/or proposition.” Deciding what we want out of art is the purpose of comics, as well as any other form of art. A certain path is followed to create that purpose, composed of six steps; 1) idea/purpose, 2) form, 3) idiom, 4) structure, 5) craft, 6) surface. Giving an example of an apple with each of the steps helps tie these ideas into place, with the idea/purpose at the core. Sometimes the surface can be deceiving and lead to a hollow apple. By breaking down some aspiring comics artists by which step they concentrate on, McCloud shows how difficult the process can be to bring it all together. For instance, he shows one particular artist that has very good craft (the fifth step), but does not have much in the way of idea or purpose. She can most likely get a job as an assistant to an artist that is calling the shots, but not be able to take charge herself at this point.

Sometimes, an artist will ask the question, “Why am I doing this?” This can lead to exploring the idea/purpose or the form of the artist’s chosen medium. McCloud names a few
artists that were pioneers and revolutionaries in the field of comics and equates them to pioneers and revolutionaries within other areas of art. One comics artist that he named is George Herriman. Herriman created the comic strip *Krazy Kat* beginning in 1913 for Hearst’s *New York Journal* (Figure 30). The highly intellectual and self-referential nature of the strip led to Herriman’s fame as a pioneer within the medium. The idea/purpose of *Krazy Kat* centered on the basic love triangle between Krazy, Ignatz and Officer Pup. However, it was how Herriman used each character to interact with one another that created irony. Readers were highly involved in the conversations of the characters. His drawing style also fit in with the modernist era. Sharp angles, diagonals and simple geometric forms reflected art deco and also synthetic cubism. Herriman used this form to present his work within the medium of comics and to bring respect as a more intellectual art.
McCloud summarizes the chapter by saying, “The order of the six steps is innate. Like the arrangement of bones in a dinosaur’s skeleton, they can be discovered in any order, but when brought together, they will always fall into place!” Most artists approach the path from end to beginning, from surface to core, which leads them to the question of “Why am I doing this?”

Exploring further forms that comics have taken, McCloud walks us through a diagram on an airplane, stained glass windows, photo-comics and a single panel that has been lumped...
into sequential art. He believes that the definition of comics is an on-going process that sees no end. As new generations emerge and reject prior generations’ work, as with the Dadaist, Futurist and other movements in art history, the definition of comics will continually change and hopefully be the subject of scholarly debate.

### 2.2 Learning theories

Students must feel the sense of shared power between themselves and their teacher in order to become part of and accept ownership of their learning environment. Liberation is a mutual process as the work of Paulo Freire states. In *Pedagogy of the Oppressed*, Freire talks of the “banking” system of education (Freire 2000). Although he worked with illiterates in Third World totalitarian regimes, his work can and should be applied to technologically advanced societies.

Sadly, many doctoral programs in education (and HCI for that matter) do not require reading his work (Macedo 2000). Most likely, it is the very “banking” system of dominant culture in the United States that prevents his work from being embraced. His work calls into question the educators as oppressors within this system. Students within this system “struggle to recover their lost humanity” (Freire 2000). However, since this system is individualistic in nature for both women and men, “they have no consciousness of themselves as persons or as members of an oppressed class” (Freire 2000). This is just one of the contradictions found in Freire’s work. Without freedom, students cannot exist authentically (Freire 2000). Here is where fear enters in. We do not often think of students as a marginalized culture (Palmer 1998). Particularly in the United States as a First World, technologically advanced country. I have witnessed faculty treatment of students as such. They use student stereotypes (Palmer 1998) that appear in their dialogue with students and with other faculty members. I have resorted to using and participating in banter of this nature, only to realize that I have not shared power with my students. Rather, I have upheld the “banking” system of education by doing so. I found myself saying things like, “I don’t know how to reach these students, or
how to keep them engaged. They just want to get on Facebook during class and send texts to their friends.” This view only “widens the disconnection between students and their teachers” (Palmer 1998).

Freire believed that classes are in existence in every society. He discounted the neoliberal belief that classes have been abolished. Further, Freire’s dialogical methods of teaching must be upheld with “epistemological curiosity” to connect theory with practice. Neither can be separated from the other.

As educators, our beliefs about college students’ development vary widely. Developmental psychology and work of Piaget and Vygotsky have historically been used in Western classrooms and focus on early childhood development. Some of their work can be applied to typically aged college students, but mostly this is the grey area between pedagogy and andragogy where students are caught. There are two important aspects of their work that can be directly applied in college classrooms. Piaget believed that children should be autonomous agents in their own learning (Cannella 2004), and Vygotsky brought attention to social and cultural aspects of cognition (Cannella 2004). Each student is different and brings with them “…diversely gendered voices, people of color, and human beings who view the world from a variety of cultural…lenses,” (Cannella 2004).

Many of the learning theories in practice today are based on cognitive-developmental psychology and Eurocentrism. This model upheld by Freud and Piaget is one where women are deficient (Gilligan 2011). It is a model that discourages emotional responses as compromising thinking rationally and objectively. In Carol Gilligan’s book Joining the Resistance (2011), she revisits and builds upon her seminal work (In a Different Voice) in gender and human development studies.

Over the past forty years, a confluence of evidence in the human sciences, coming from developmental psychology and sociology, neurobiology and evolutionary anthropology, has shown that we are, by nature, responsive, relational beings, born with a voice and into relationship, hard-wired for empathy and cooperation, and that our capacity for mutual understanding was—and may well be—key to our survival as a species,” (Gilligan, 2011).
In the early 1980s, Howard Gardner presented work called Multiple Intelligence (MI) theory. In summary there are eight separate types of intelligence functioning somewhat separately. They include: linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, naturalistic, intrapersonal (knowledge about ourselves), and interpersonal (knowledge about other people) (Gardner 2011). This theory spread quickly in early childhood classrooms adopting Gardner’s techniques. Educators had high hopes that MI theory would “…facilitate inclusion of students from marginalized groups whose talents and capabilities had been mis-measured by traditional psychological instruments,” (Kincheloe 2004). Gardner’s MI theory seemed to be the fuel for the liberal pedagogy movement during the ‘80s and ‘90s. However, the theory falls flat in several important areas. MI theory is sociopolitical. Progressive educationalists believe MI theory has contributed to Education’s (Education with a capital ‘E’) descent into irrelevance (Kincheloe 2004). MI theory was at first an alternative to the psychometric educational psychology establishment; however, it has failed in its democratic promise.

In the book *Multiple Intelligences Reconsidered* (Kincheloe 2004), Gaile S. Cannella presents a postmodern feminist/poststructural perspective of Howard Gardner’s work on Multiple Intelligence theory. Voices that have influenced Western psychology are representative of dominant culture (male, white, heterosexual, Christian, middle-class), and tend toward just “…one cultural construction of human life,” (Cannella 2004). Gardner’s theory is no different. Cannella argues that although many postmodern educators champion Gardner’s intent to foster cultural diversity and varied human experience and skill, “…the underlying Enlightenment/Modernist assumptions of the theory cannot be denied,” (Cannella 2004).

Marianne Bloch, as Cannella (2004) presents, shows how the belief in the “power of science to reveal human structural truths has lead to the unchallenged assumption that younger humans are a distinct group of beings (designated “children”) who are not as advanced
as those who are older (designated ‘adults’).” MI theory supports this structural value. It presents that children must be guided by older adults. The subsequent power structure that is developed is one that works against our ability to connect with one another. Power structures in the classroom are debilitating for student learning and autonomy. The tendency is then for these power structures to follow students from elementary school all the way into higher education.

Evidence of this phenomenon is apparent in ways that students sometimes want to be passive learners, as they were trained to be. The skill-and-drill expectations of their prior 12 years of education are tough to reverse. Many universities promote this type of coursework in pursuit of the position of scientific truth. In this type of instruction, the instructor is all-knowing and expects students to absorb each word said and be able to spit it back on command (Herbert 2010). If a student fails to answer correctly, that student is penalized with a low grade. The instructor then resents the students that do not respond to this type of instruction, and the students resist.

Skill-and-drill instruction is counter to developing growth-fostering relationships and an enemy to creativity. For students in graphic design, it is important to feel connected and valued as co-creaters of their learning environments. Particularly when it comes to creative endeavors. Creativity can be fickle, and many students have said they do not experience or feel creative in the context of a class. In a studio-length class, students are typically in class for six hours per week. That’s a good amount of time to get creative things accomplished if tasks can be more communal and educators take a more active role in creating community, rather than simply waiting for creativity to strike.

2.2.1 Creativity

In the movie Ratatouille (2007), Chef Auguste Gusteau’s cookbook is named, Anyone Can Cook. The plot is centered on this concept and is taken quite literally by the two main
characters. Remy, along with his at-first-reluctant human sidekick Linguini, conspire to cook delicious food. Remy applies Gusteau’s “anyone” to himself, a rat. Not much of a cook himself, Linguini sows the seeds of Remy’s labor in secret to produce wonderful dishes. After all, you can’t have a rat cooking in a gourmet restaurant, or any restaurant for that matter. Remember this is an animated film, so we are to believe this rat to be safe and clean and root for him as the protagonist. After the big reveal, much conflict, and disbelief, the movie ends. It’s a Pixar film, so of course there is a happy ending. The famous food critic character Anton Ego gives one of the last lines that further explains Chef Gusteau’s “anyone can cook.” He says, “Not everyone can become a great artist, but a great artist can come from anywhere.” This applies to creativity as well.

If we ignore the anthropomorphic rat, this is still an amazing story. I’m elated that children and their adult companions at the movies experienced this democratic concept. I believe that anyone can be creative in a supportive environment. This statement will inevitably create conflict among some readers. There is a stark contrast in the community of graphic design educators and practitioners as to how to define creativity and who innately possesses it.

Creativity is difficult to define. It is a word spoken every day in our classrooms. However, it should be defined differently for each student. One student may exhibit creativity in visions of grandeur, another might show creativity in accomplishing tasks.

E. Paul Torrance suggested in 1977 that creativity can be defined as, “the process of sensing problems or gaps in information, forming ideas or hypotheses, testing and modifying these hypotheses, and communicating the results.” Torrance, an American psychologist, is best known for his studies of creativity. He developed the Torrance Tests of Creative Thinking and enjoyed a long career applying his finding to the field of education. It has been almost 40 years since Torrance published his first creative research findings, and still there are many educators that adhere to educational assessment tools from a bygone era. Many of the measures and objectives used to track student success in higher education, simply require the
students to regurgitate memorized factoids. This sort of assessment does little to encourage a learner-centered environment.

Even in the creative field of graphic design, tests and quizzes are often given out of a feeling of obligation to have students memorize mundane details. I took part in such assessments while in graduate school. More meaningful ways of applying what is being learned should be incorporated. Not only are these ways more challenging for the students, because they are asked to think and apply knowledge, it is harder for the instructor and takes longer to grade. I think this is one big reason that educators resort to skill-and-drill. It’s easy. It’s accepted. At the same time, it’s unchallenging and boring.

In her book *The Pedagogy of Creativity* (2010), Anna Herbert presents a poststructuralist argument looking at creativity in relation to pedagogy, “There is a long tradition of research inspired by Lacanian theory within psychology and the human sciences. Pedagogic research, however, has largely been dominated by Anglo-Saxon traditions involving pragmatists such as Dewey and Mead,” (Herbert 2010). She compares and contrasts psychoanalysis and pedagogy in an effort to develop creativity in the classroom. Once again, college students are caught in the liminal space of adulthood.

Herbert argues that creativity is often stifled by repetition of “old-cherished ‘truths’” that have been learned over and over again in primary and secondary education. She also argues that educators get stuck in old arguments as well. Many factors work against creativity, particularly in the classroom. Students have feelings of inadequacy and fear of the unknown (Herbert 2004). Building relationships with those that are different than us can be a spark to creativity. However, as Herbert says, our narcissism gets in the way and presents itself as competitive jealousy and aggression. “The importance of student-teacher relations for the development of a creative organizational climate,” should be the main focus of the classroom and in particular graphic design classrooms.
2.2.3 Pedagogy of the 21st century learner

The term “Digital Native” has been used to describe those born after 1980 (Thomas 2011). The term is met with contention in academia, because of its creep into marketing through mass media where “Digital Natives” are perceived as a fickle demographic group. There are many myths pertaining to “Digital Natives” and their counterpart “Digital Immigrants.” The immigrants were born prior to 1980 and have experienced the rise of technology through computers differently. There are widespread generational misconceptions assumed by faculty who are “Digital Immigrants” that mainly contribute to what Neil Postman termed, “a conceit of wisdom” (Postman 1992).

Neil Postman is restless; and dead. You might be wondering how he could be restless, yet dead? Allow me to clarify; his legacy lives on through his writing. He wrote several books on teaching and the effects of technology on our culture in the United States. His views of public discourse shaped by television comprise his best-known book, Amusing Ourselves to Death (1985). His views and arguments are applicable to how the World Wide Web has been shaping a new public discourse since its inception by Tim Berners-Lee in 1991. Postman is restless (alright, I’m assuming he would be restless and writing if he were alive) because digital culture in the United States has gone the way of the MTV culture he wrote about in the ‘80s.

Postman’s writing is opinionated, unflinching, and most of all succinct. In his book Technopoly (1992), he begs the question of how we have become tools of our tools (as he uses Thoreau’s words). He cites the example of King Thamus from Plato’s Phaedrus to illustrate the impetus of his argument. Thamus questions the god Theuth’s presentation of the invention of writing by saying that students will now be filled with the “conceit of wisdom.” Meaning, that they will be led to believe they know more about the technology of writing, than possessing the wisdom to discern its sanctifications and its malevolence (Postman 1992).

This “conceit of wisdom” can easily be applied to the technology of computers and
the pedagogy of graphic design. However, the way in which faculty typically view this conceit is that “Digital Natives” think they know more than they do. I see the problem reversed. We should not marginalize students or pigeonhole them as one homogeneous group. With their varied interests, their use of technology (computers and smart devices) is mainly as communication tools (Thomas 2011). “Digital Immigrant” faculty (which includes myself) have assumed students are not paying attention in class when their laptops are open or cell phones out. My observations and assessments in the classroom show that students are accustomed to multitasking multiple distractions. The success of their multitasking, however, has varying results. Most times, I find that I have to repeat things that I have said which leads to resentment and frustration.

2.2.3.1 The multiplayer classroom

Gaming the classroom could be seen as discounting traditional pedagogy. However, meeting students where they are (online, Facebook, videogames, etc.) makes their learning environment their own (Prensky 2010). Taking risks is essential to being creative and to being innovative. More than lecturing this to students, using principles of game design could increase attendance, grades, and intrinsic motivation.

Some problems that I have observed of students in the classroom are arriving on time, attendance, paying attention, low grades, and general apathy. Students in the classroom show disrespect by reading the newsfeed on Facebook to see what their friends are having for breakfast, texting while I am talking and performing software demos, and not engaging in class critiques. With the inhibition of teaching in a computer lab with each student placed in front of an iMac, the question is how to get the students out from behind the box, working together, and engaging in class activities? When I reflect on these issues in the classroom, it is not the fault of the students. Rather, I have misdirected and not met their needs as learners. As Prensky (2010) states, “Despite what you may hear, or even observe, today’s students don’t have short attention spans or the inability to concentrate that they are often accused of
having.” Rather than point to their attention span as deficit, he calls attention to their changing tolerance and needs (Prensky 2010). He goes further to say, “They have learned to focus only on what interests them and on things that treat them as individuals rather than as part of a group or class (as we so often do in school).” What I have come to realize is a breakdown of communication between myself and students. I have been treating them as a whole; a class. What I have learned through this experience is to reassess my methods of teaching, and the rules of engagement within the classroom. So what do students want? Prensky’s (2010) list includes:

- They do not want to be lectured to.
- They want to be respected, to be trusted, and to have their opinions valued and count.
- They want to follow their own interests and passions.
- They want to create, using the tools of their time.
- They want to work with their peers on group work and projects (and prevent slackers from getting a free ride).
- They want to make decisions and share control.
- They want to connect with their peers to express and share their opinions, in class and around the world.
- They want to cooperate and compete with each other.
- They want an education that is not just relevant, but real.

Prensky (2010) cautions, “It is possible, of course, to view this list as a narcissistic or unrealistic set of expectations on the part of students. But to do so would be a big mistake.” This list does not mean that students’ responsibilities as an active learner get thrown out the window, or that rigor goes by the wayside. It does mean that traditional pedagogy is no longer applicable. Instructors should create an environment of mutuality. One technique that I have incorporated into my classes comes from Lee Sheldon’s work.

In his book, The Multiplayer classroom: Designing coursework as a game, Sheldon (2012), introduces a way to “level up” to the grade of A by grading with “experience points.” He provides a chart with 12 levels and a total of 1860 XP. He includes plus and minus grades, which does not apply to the Grand View University grading system. There are no plus and
minus grades in use at Grand View. The book itself is written using levels, rather than the traditional chapters. I find that this motivates my own sense of challenge to read and “level up” like students in Sheldon’s classes. Another aspect of pleasurable reading in this book is that Sheldon provides definitions inline with the text. Usability is increased immensely by this practice, creating an “onboarding” experience of reading.

I suspect that this technique or pedagogy will continue to meet great resistance. I can no longer teach using traditional methods and expect students to feel engaged and motivated.

Part of the leveling-up process in my classes is to complete software tutorial work. Once the tutorial work is completed with just enough knowledge and skills, I ask the students to apply what they have learned in a project. It is the project where they have choice and autonomy of subject. Sometimes, there is a list of subjects from which to choose. Other times, each student writes down a word or phrase on a piece of paper and they draw topics from a hat. Either way, they take ownership and create their own project within some parameters.

In my first year of teaching, I required a subscription to Lynda.com video tutorials and assigned a great many for students to complete on their own outside of class. What I discovered was a grave error on my part. I did not spend time modeling behavior on how to work along with this type of instruction. Rather than working through the tutorials, the students merely watched and then complained they did not learn well from videos. I had wondered why they did not demonstrate the slightest competence in using the software during class, after having been asked to work through a set. Once I discovered this error, it was late in the process of the semester and the students had already built up resentment against Lynda.com. My set of expectations were extraordinarily different from theirs. I expected they would take notes, pause the videos and work through the steps covered with the exercise files included. Instead, just watching the videos created a very passive experience that was not successful and left them feeling frustrated and dumb. Only a very few did well on this part of the leveling up quests. More than a few students broke down in class, shed tears, and were angry
at failing. Making mistakes must be part of learning. As Sheldon says, “… because failure in play is rarely catastrophic, they acquire the confidence necessary to try new approaches to the world around them.”

In future classes, I have altered how I present material and assign leveling up quests. I first model the behavior I am expecting, and allow time in class for students to practice in small groups with one another while I check their progress. This change has helped immensely in their motivation and engagement level. What I still observed was some trouble with video-based learning. Another change I made was to require a tutorial textbook. This proved an even more epic failure than the original video tutorials. Students found the books very difficult to understand and were overwhelmed with large amounts of text and jargon. Even the sheer size of the books were intimidating. In an effort to reassess learning outcomes of software training, I developed a tutorial based on the medium of comics. I am calling this a “Graphic Manual” and tested it against video and book tutorials.
CHAPTER 3. METHODS AND PROCEDURES

3.1 Introduction

In this chapter, I present the overall research methodology, describe the participants, delineate the data gathering and management procedures, and provide the analytic strategies I used. I employed mixed-methods of research methodologies, including both qualitative and quantitative methods. “Methodologies and processes can aid in the understanding of the connections and relationships,” (Bowers 2011).

I decided to focus the study specifically on Grand View University art and design students to narrow the scope. I wanted to gather data from existing literature, an online survey (quantitative), focus groups (qualitative), and interviews (qualitative). Using these methods, I was able to triangulate data. I based the evaluation instruments on the summary of findings in the pilot study. The sample sizes of my study were modest. Grand View has a total of 150 students in the art and design department, 80 of which are graphic design students. I did not design this study to be nationally representative, but rather targeted understanding student experience of this specific group. However using the methodology, the study could be replicated.

3.1.1 Background of the study

The question that I asked our advisory board of eight members, as well as those in positions hiring interns and recent graduates was: “What are your expectations of recent graduates in graphic design?” This left the door open for them to state if they wanted technical skills like knowledge of HTML/CSS, or theoretical knowledge of design, or a combination of both. All stated the same three qualities (although in slightly different order): (1) Possess good aesthetic; (2) Possess the capacity to function as part of a team; and (3) Possess the ability to think critically. In addition to these three central expectations, each added that recent graduates are expected to know certain technical skills, such as appropriate software, basic computer hardware troubleshooting, HTML/CSS, some knowledge of jQuery for interactivity
and screen design, and motion graphics with the ability to storyboard a narrative. The ability to create a compelling narrative is also imperative to game design and comics. They assumed this was part of their education in a four-year undergraduate graphic design program, and intentionally wanted to hire recent graduates because of these expectations.

Technical courses are kept separate from design courses at Grand View. These courses are considered lecture-based, rather than studio-based, courses. A lecture course consists of three contact hours per week, with the expectation of six hours outside of class homework. This contrasts a studio course with six contact hours per week and an expectation of twelve hours of work outside of class.

In studio courses, students are given a project statement and have to figure out how to produce the final product with little technical help with software from the instructor. One instructor interviewed said, “I don’t know Photoshop or how to build a website, but I expect my students to know it.” This is a case of “do as I say, not as I do.” Students are less motivated in classes where instructors did not know the software they were expected to use. “When I know more about the software than my professor, that’s a problem. What am I paying for?” is a question one student asked. Another student said, “When I ask my professor a software question, he just tells me to ‘Google it’. He’s lazy and doesn’t want to learn how to use the software, but expects us to.”

In Marc Prensky’s book *Teaching Digital Natives: Partnering for Real Learning* (2010), he states that, “... to be the most successful at using technology in their classrooms, teachers do not need to learn to use it themselves.” I disagree. I believe that to establish a truly mutual learning environment, teachers absolutely need to know the technology being used in their classrooms. If the instructor does not know, it creates a point of disconnection in the student-instructor relationship as I experienced directly in the classroom. In essence of establishing trust through authenticity and connectivity, an instructor must know the technology. Perhaps not be the all-knowing expert, but a healthy knowledge is what students expect. It is
much more meaningful to then produce real-world projects with guidance from the instructor.

A balance between theory and practical understanding is extremely needed by instructors and students alike in graphic design higher education. We can no longer accept this grave disconnectedness between software knowledge and no software knowledge. It leads to an “us versus them” mentality for both students as well as instructors. Fear and anxiety are major issues for both groups when learning software. Instructors are afraid their students will put them on the spot and they will look stupid in front of their class. Students are afraid they don’t know enough of what is expected from them and will fail a class because of it, and ultimately not get a job.

Expectations of one art director interviewed was, “An expert-level knowledge is needed in the Adobe Creative Suite programs, as well as a great understanding of HTML and CSS to build websites. We expect students to know this already. We don’t have time to teach them, we need them to work on projects and know how to work the software. I need them to know the software better than I do.” Even though I prefer to use different terminology than “expert” since it implies there is no further learning needed, the point of his statement is that he hires interns and recent graduates with the expectation that they are learning software in their classes. There is a vast disconnect between academia and industry at this point in time, as I suspect there always has been. Industry moves much faster and decisions are made quickly. Students are not getting sufficient software training in combination with analytical thinking to meet the demands of industry. Students expect to learn this in their graphic design program, and resent being told to learn it on their own or to simply “Google it.” I believe that we should teach the current software in graphic design courses that emphasize research and design, along with appropriate software training. This would be a mixture of theory and praxis, in that students would research, design, and implement their work in a finished, working, industry-suitable format. They would then receive more practice in their education of being able to deliver a working product. This would be a massive step beyond just prototyping. Too
often, design educators focus on the research and design without implementation of a finished product. This means that student work is still in theory and not fully realized and not an authentic prototype.

In focus groups with students, all expressed a need to know the fundamentals of industry-appropriate software programs. However, most were unclear how much they would be expected to know on the job, or even the vast capabilities of each program. Most exhibited fear of not knowing enough and the lack of easy-to-understand learning materials. Many shared their horror stories of instructors’ attempts to teach software.

Too many of the tutorial textbooks are cumbersome to them with enormous amounts of text and hard to carry in their backpacks since they are very large and heavy (I weighed one at over five pounds). One student referred to these books as “bricks.” Not all books are available digitally and not all students have access to digital tablets or laptops on which to read e-books. Students complained that missing one seemingly tiny item in the book tutorial would cause the entire exercise to fail. Most of their time was spent troubleshooting and retracing steps through pages and pages of the step-by-step instructions. Prensky says, “Interestingly, textbooks—most of which reflect the old, telling pedagogy—have gotten things completely backward from the point of view of partnering (and, generally, student interest). Textbooks put the answers (i.e., the content) up front and the questions in the back. Partnering reverses this, putting the questions first, which, as it turns out, is far more motivating to students.” This arrangement is true of most tutorial books with questions in the back.

Video tutorials (i.e. Lynda.com, YouTube, or TutsPlus), worked well for only a few of the students, with most feeling frustrated at the amount of time devoted to work through them and the enormous amount of items covered in each chunk. For instance, one student shared that each 10-minute video was equal to an hour of work. This time requirement seems in line with my own experience with Lynda.com and TutsPlus and other video tutorials. The time of each video listed is rather misleading to the actual amount of time it takes for real learning to
take place.

In a studio-length freshman graphic design course, the two instructors assigned multiple sections of videos to be completed by the students that contained 10-12, approximately 10-minute long videos after each class session. The students were required to purchase a Lynda.com or TutsPlus subscription for the semester at a cost of $100. The instructors failed to realize the time commitment needed for students to be able to work through them and that it would take approximately 10-12 hours of time per section. In this case, students simply watched the tutorials, without working through them in an effort to complete the assignment. They then complained that the video tutorials did not work. This led to instructor and student frustration, instructor and student resentment, and instructor and student resistance. Since the students were expected to learn this on their own outside of class, there was no one to ask questions when something did not work as expected. It was observed that the instructors did not complete the tutorials themselves, therefore this did not create an authentic environment where trust between student and instructor could be built, or the behavior appropriately modeled as to how to work through and along with video tutorials. It then played on the instructor’s fear of looking stupid when students asked questions specific to a tutorial that the instructor could not answer because the instructor had no personal experience of actually working through the tutorial.

These issues seem to be a regular occurrence in many graphic design classrooms. There is quite a large disconnect between expectations of students and faculty. Instructors feel students need to learn software on their own, while students have the expectation that their instructor know the software needed to complete their course projects. Some instructors feel they simply do not have time to learn with the large time commitment of their faculty responsibilities and service to the university, among attempts at the work-life balance. One conclusion I draw upon as a faculty member and instructor is to use empathy to better use existing tools, model appropriate learning behavior, and develop new tools that might lessen
time of learning through communal tasks. This can lead to a more thorough understanding of learners by creating a learner-centered environment using the E_CATS framework.

One severely underused tool that could be applied to software training in particular is the medium of comics. Comics have gotten a bad rap since the Catholic Church instituted their attack in the 1950s, citing concerns over decency. This led to the Comics Code Authority and many parents siding with the Church. Schools even hosted comic book burning parties to demonize the medium. The industry is still recovering over 60 years later, however, graphic novels have gained recent popularity in teaching literacy.

Will Eisner was a pioneer in the medium of comics. Eisner devoted his life to earning respect for comics. By coining the term “sequential art” to refer to the medium and constantly exploring different forms his art could take, he has made a great impact on other artists. His work with graphic novels has opened a new genre within the medium and has solidified the idea that comics can take on serious subject matter.

Eisner worked very hard to use comics to educate others. Long before he taught classes at the New York School of Visual Arts, he drew illustrations for army manuals (Figure 31) and for Robert’s Rules of Order. This cross over into other industries has earned Eisner great respect as an artist and an educator. In 2011, Eddie Campbell published a compilation of the U.S. Army’s PS Magazine: The Best of the Preventive Maintenance Monthly in book format. All images in the book were scanned from original prints of the magazine that were drawn by Eisner.
In the introduction, General Peter J. Schoomaker, USA (Ret.), opens with a description of the publication, “Created as a postscript to the standard technical manuals issued by the U.S. Army, PS Magazine was conceived as a simple means of communicating to soldiers—in easy-to-comprehend and often humorous cartoons—how to take better care of their equipment” (Schoomaker 2011). The magazine had an emphasis on pictures over words and informal writing to decrease the time in learning the techniques (Schoomaker 2011).

Given the time in which Eisner was producing the magazine, women were not allowed to serve on the front lines and were not maintaining equipment. His audience was mainly young men. Eddie Campbell points out that, “Eisner’s female characters, when they were not spoiled brats or overbearing wives, were sexier (and more aggressively so) than any other artist’s sexy girls…” The recurring character of Connie Rodd shows up in provocative clothing (or lack thereof) and seductive poses quite often (Figure 33). Clearly, Connie’s purpose was to give the “boys” eye-candy. She is purely visual entertainment, and unfortunately promotes many negative stereotypes of women that we are still battling. Looking beyond
the gratuitous use of the unattainable female archetype, Eisner’s manuals have many merits as teaching tools. Eisner’s purpose in producing the preventive maintenance manuals was to complement “…the hard, technical information supplied by the military writers and present it in a way that regular GIs would understand,” (Campbell 2011).

Students (as well as professionals) in graphic design experience ever-changing software technology and computer equipment. Although it’s not a matter of life and death as it is for soldiers to maintain their equipment properly, we can learn from this type of teaching tool. Eisner engages the reader with stories, humor, and recurring characters. “Clearly, PS works, or it wouldn’t have lasted over seven hundred issues and continue to be issued on a monthly basis,” says Schoomaker (2011).
Figure 34. Pages from *PS Magazine* cover no. 1 by Will Eisner, June 1951.
Using Eisner and McCloud as my primary comics-theorists, I developed a brief tutorial in graphic format using the medium of comics, that I named the “Graphic Manual” (Appendix D). I didn’t feel that my own technical skills of drawing would lend itself well enough to this pilot version, so I opted to download an app called Comics Life to create the panels and images. Of course, an app cannot create a well-drawn comic from a set of predetermined templates and the standard comics font. In future iterations, it will be imperative to partner with an artist for an authentically hand-drawn product with more visual impact and narrative quality.

Using focus groups, I compared the tutorial I created in the medium of comics with a textbook tutorial (Appendix E) and a video tutorial (Appendix F). I relied on comics’ non-visual awareness, simple drawing style, visual communication, gutter space in between panels, and the principle of closure.

### 3.1.2 The making of the Graphic Manual

Comics have historically been overlooked from a critical perspective and there is a paucity of scholarly research into the medium. I do see this paucity beginning to change with research into visual literacy for secondary education, fueled by Scott McCloud’s graphic textbooks *Understanding Comics* and *Reinventing Comics*. Authors such as Marjane Satrapi (*The Complete Persepolis*, 2003) and Alison Bechdel (*Fun Home: A Family Tragicomic*, 2006) have created masterpieces of their graphic novels, and have been reviewed and critiqued in depth in the fields of literature and visual literacy studies. They are both underrepresented minorities. Satrapi is female and Iranian, writing about Tehran during the Islamic Revolution and Bechdel is female and lesbian, writing about her family life.

However, higher education still does not have much critical research from primary sources or much representation from underrepresented groups. When I began the process of creating the Graphic Manual, I relied heavily on few sources. My primary source was Scott McCloud and his work into establishing comics as a credible medium. He has been the main
instigator for redeeming comics’ image that was severely damaged by the Comics Code Authority in the 1950s. Referencing McCloud, I used comics to invite participation from students in graphic design learning to animate a GIF using Photoshop.

I started with screen shots from Photoshop (Figure 35) with appropriate menus toggled open and the word that needed to be clicked was highlighted. This was to display where the students should click and what their own documents would look like, without extraneous words. I encouraged students in the focus group to take three photos of themselves (referred to as selfies in college vernacular) using the PhotoBooth program and camera on their computer lab iMac. This was to add a level of authenticity, and fun and enjoyment to their work. It also showed that an animated GIF can be made with any group of two or more images.

After compiling all the screen shots in Photoshop, I used the Comic Life app to assemble the pieces, add text and create the panels. Using McCloud’s research of panel transitions, I used mainly moment-to-moment and action-to-action transitions. Moment-to-moment has very little closure happening between each panel, so it requires less deductive reasoning than another type of transition, such as scene-to-scene. The first page of
the Graphic Manual uses a non-sequitur transition (McCloud 2007) where the two images are completely unrelated to one another outside of the context of this manual (Figure 36). This type of transition would not be appropriate for other panels in this tutorial since making connections between the panels correlates to desired actions in Photoshop. It was important to keep deductive reasoning at a minimum for the tutorial.

The moment-to-moment panels (Figure 37) demonstrated where to click in the Photoshop interface for the desired outcome by highlighting areas with speech balloons. The scene-to-scene panels (Figure 38) demonstrated visually what would happen once something was clicked, by highlighting the word on the menu. They also show different areas of the
Photoshop interface to look at closely. The complete tutorial is five pages in length with 14 panels. The length of the tutorial corresponded to five pages of instruction on creating an animated GIF from a tutorial textbook (Appendix E), however, with much less text, larger images, and panel-to-panel transitions.

Figure 38. Scene-to-scene panels from Graphic manual.

### 3.4 Delimitations

Since one of the aims of this study was to add to our understanding of pedagogical issues related to students in graphic design, I chose participants who were currently attending college. More specifically, participants were students attending Grand View University in the art and design program and by majority were graphic design majors.

### 3.5 Participants in the study

Participants in the study were undergraduate students in the art and design program at Grand View University in Des Moines, Iowa, as well as faculty in art and design, and professionals on the Grand View advisory board. Other participants were faculty members at other
universities in the United States that were interviewed in a journalistic manner. A total of nine interviews were conducted with faculty and professionals. There were 22 students that completed the online survey, and 41 students took part in six focus groups.

### 3.6 Consent procedures

Focus groups using software tutorials and interviews were conducted with informed consent from the participants, as outlined in the approved research plan of the IRB form. I explained to students that the study and their performance in the focus group would have no effect on their grade or performance in classes. I explained that the purpose of the study was not to coerce their participation and the choice was up to them if they wanted to participate. Although they would not benefit directly from the study, their participation would help future students in graphic design at Grand View.

To assure participants’ anonymity, I told them that I would provide each with a pseudonym in all the written material derived from their participation. In addition, I told participants that I would not use other identifying characteristics that were not crucial to participants’ stories related to the focus of the study.

Signed informed consent was obtained from those that participated in online surveys (Appendix A), and recorded as a signature check box before the survey could begin.

### 3.7 Data collection

“Mixed methodology is an integrated approach that has increased in use and desirability over the past twenty years,” (Rocco 2011). Along with any gathering of data, there are philosophical assumptions to consider. Qualitative research is generally aligned with constructivism and tends to be inductive (Rocco 2011). In contrast, quantitative research is often associated with positivism or postpositivism (Rocco 2011) and usually uses deductive techniques.

More specifically, I employed conversion mixed methods in this study. I started with
multiple purposes and research questions (Rocco 2011). Once the pilot study was concluded, new research questions emerged. The pilot study had mainly qualitative data, that then was quantified and reanalyzed as quantitative data. Since there were multiple sources, the term meta would apply for meta analysis (Rocco 2011).

I started this study by gathering quantitative research through an online survey (Appendix C) to complement the qualitative results of the pilot study (see Chapter 1). The results of the pilot study were intended to inform the design of a mobile game app for use by Grand View University students and faculty. However, unanticipated results indicated the need to gather additional data and to focus on inside the classroom learning tools first, rather than an outside the classroom tool.

The qualitative portion of the subsequent research, particularly common in the humanities (Bowers 2011), was gathered through interviews with faculty and professionals, and focus groups completing software tutorial exercises. The study was conducted under exempt research (see Appendix A) according to the Iowa State University’s Institutional Review Board and Grand View University’s Institutional Review Board since it was conducted in established or commonly accepted education settings involving normal education practices, such as:

• Research on regular and special education instructional strategies; or
• Research on the effectiveness of, or the comparison among, instructional techniques, curricula, or classroom management methods.

A modification to the original IRB (approved 08/24/2012) was submitted to both ISU and Grand View prior to sending out the online survey and approved (08/29/2013).

I used various methods of data collection for this study to utilize what is referred to as a mixed-methods approach. I gathered quantitative data related to student and faculty experience with art and design courses through the online survey. No identifying factors were gathered during the online survey, interviews, or focus groups. Individual interviews (Appendix
A) of approximately 30 minutes each were conducted with three faculty members at various universities, as well as six professionals on the Grand View University advisory board. An online survey sent to students in the art and design department at Grand View University had 22 respondents complete it, with 32 beginning the survey but not finishing. The drop out rate was noted at 31%.

The purpose of the focus groups was to complete three software tutorial methods and to compare each method’s experiential and affective responses of the students. All three methods were to create the same end product, an animated GIF using Photoshop CS6. This allowed for direct comparison among effectiveness and efficiency of methods. The time taken to complete an entire tutorial was measured for each focus group, as well as body language and facial expressions observed. Students were encouraged to talk aloud during the tutorial. Each focus group worked through a different type of tutorial, and the focus groups compared.

Each focus group completed the tutorials in the Grand View University Mac lab in the Rasmussen building, room 123. A total of 50-minutes was allowed for each focus group to complete the tutorials. Each student was seated at their own iMac and all students in a given focus group were assigned the same type of tutorial as to not bias the other methods.

Each focus group worked through two of the methods of software tutorials. By alternating the first tutorial that the groups worked through, the data could be more valid. Since there were three methods, none of the groups worked through all of them. Only two were measured for each group. This was done in an effort to keep each group’s participation under an hour and also to not bias the task of creating an animated GIF further by having them do three tutorials on the same thing.

The first focus group of seven students worked through the video-based tutorial and then the book tutorial, the second group of seven students worked through the book tutorial and then the Graphic Manual, the third group of eight students worked through the Graphic Manual and then the video tutorial, the fourth group of seven students worked through the
book tutorial and then the Graphic Manual, the fifth group of six students worked through the book tutorial and then the video-based tutorial, and the sixth group of six students worked through the video-based tutorial and then the Graphic Manual. There was a total of 41 students that participated in the six focus groups.

3.8 Researcher’s role

As the researcher, I interviewed participants, conducted focus groups, and organized, interpreted, described, and analyzed the data generated. Above all in the interviewing process, I asked open-ended questions, and was an active listener.

Though I attempted to develop a colleague-type relationship with the participants by sharing some information about myself and my background, I strove to keep my opinions and assumptions on the topic of the study out of the interview process and out of the relationship between myself and the participants.

I believe that it is impossible to completely separate myself from the data and its interpretation. Therefore, it is not possible for a completely objective study. This is a post-structuralist view. I am also a feminist and look into the data to see what is missing related to equal representation of gender. Historically, female voices have been few and far between in graphic design. I made every attempt to keep a gender balance of participants to insure many different voices were heard as, “The aim of data analysis is to reduce and synthesize information—to make sense of it—and to allow inferences about populations,” (Fitzpatrick 2011). It also became apparent that the art and design department has more students from underrepresented groups than the institutional averages at Grand View.

3.9 Data management, reporting, and analysis of selected findings

I first used demographic information about Grand View students. According to institutional data publicly available for fall 2013, Grand View’s demographic make up is summa-
rized by the following (Table 2):

- total students = 2129
- total undergraduate students = 2096
- full time undergraduate students = 1726
- 55% females
- 45% males
- up to age 24 = 1393
- over 90% white/caucasian
- 86% of students are from Iowa = 1833
- 150 students in the art and design program
- 80 students in the graphic design major

<table>
<thead>
<tr>
<th>Gender</th>
<th>FT</th>
<th>Day</th>
<th>CPAL</th>
<th>Grad</th>
<th>Total</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>879</td>
<td>334</td>
<td>22</td>
<td>1235</td>
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<td>Males</td>
<td>709</td>
<td>174</td>
<td>11</td>
<td>894</td>
<td>42%</td>
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<tr>
<td>Total</td>
<td>1588</td>
<td>508</td>
<td>33</td>
<td>2129</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
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<th>Day</th>
<th>CPAL</th>
<th>Grad</th>
<th>Total</th>
</tr>
</thead>
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<tr>
<td>Up to 24 years</td>
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<td>148</td>
<td>3</td>
<td>1544</td>
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<tr>
<td>25-30 years</td>
<td>106</td>
<td>134</td>
<td>8</td>
<td>248</td>
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<tr>
<td>31-40 years</td>
<td>58</td>
<td>128</td>
<td>7</td>
<td>193</td>
<td>9.1%</td>
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<tr>
<td>41+ years</td>
<td>31</td>
<td>98</td>
<td>15</td>
<td>144</td>
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<tr>
<td>Average Age</td>
<td>22.1</td>
<td>31.8</td>
<td>38.5</td>
<td>24.3</td>
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<td>White</td>
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<td>346</td>
<td>30</td>
<td>1581</td>
<td>80.5%</td>
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<tr>
<td>Black or African American</td>
<td>114</td>
<td>52</td>
<td>1</td>
<td>167</td>
<td>8.5%</td>
</tr>
<tr>
<td>American/Alaskan Native</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>10</td>
<td>0.5%</td>
</tr>
<tr>
<td>Asian</td>
<td>47</td>
<td>21</td>
<td>1</td>
<td>69</td>
<td>3.5%</td>
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<tr>
<td>Hispanic</td>
<td>47</td>
<td>15</td>
<td>0</td>
<td>62</td>
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<tr>
<td>Hawaiian/Pacific Islander</td>
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<td>1</td>
<td>0</td>
<td>3</td>
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<td>Two or More Races</td>
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<td>9</td>
<td>0</td>
<td>71</td>
<td>3.6%</td>
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<tr>
<td>Not Designated</td>
<td>105</td>
<td>60</td>
<td>1</td>
<td>166</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1588</td>
<td>508</td>
<td>33</td>
<td>2129</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 2. Grand View demographics.

Grand View is affiliated with the Evangelical Lutheran Church of America (ELCA), and is therefore a private, religious institution. The information about students’ religious affil-
iations are capture in Table 3. There is a large portion in the Other category and the Not Designated category. However, the majority of students fall under religions considered Christian.

<table>
<thead>
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<th>FT Day</th>
<th>CPAL</th>
<th>Grad</th>
<th>Total</th>
</tr>
</thead>
<tbody>
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<td>Catholic</td>
<td>247</td>
<td>64</td>
<td>9</td>
<td>320</td>
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<tr>
<td>ELCA Lutheran</td>
<td>101</td>
<td>22</td>
<td>2</td>
<td>125</td>
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<td>Methodist</td>
<td>90</td>
<td>24</td>
<td>2</td>
<td>116</td>
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<td>Baptist</td>
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<td>2</td>
<td>84</td>
</tr>
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<td>Missouri Synod</td>
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<td>3</td>
<td>0</td>
<td>31</td>
</tr>
<tr>
<td>Other Lutheran</td>
<td>35</td>
<td>14</td>
<td>0</td>
<td>49</td>
</tr>
<tr>
<td>Disciples of Christ</td>
<td>12</td>
<td>2</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Presbyterian</td>
<td>13</td>
<td>10</td>
<td>1</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 3. Religious demographics at Grand View.

3.9.1 Online survey

I used Qualtrics online survey software for sending out the survey, as well as producing reports of the quantitative data. This survey was based on the NSSE survey, but modified to be specific to art and design students at Grand View. The main findings were related to student engagement levels with faculty and peers in the art and design program at Grand View. I did not gather much demographic data, as I used the publicly available demographics published by Grand View. Within the survey there were four main domains covered that I coded and listed below. A summary of overall engagement levels are in Table 4, with all but
the student-self engagement showing.

1. Student-faculty engagement, coded as (SF)
2. Student-peer engagement, coded as (SP)
3. Student-self engagement, coded as (SS)
4. Student-institution engagement, coded as (SI)

Table 4. Three of four domains with overall data.

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Poor, 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<th>Mean</th>
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<td>6</td>
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<td>2</td>
<td>1</td>
<td>7</td>
<td>10</td>
<td>21</td>
<td>6.10</td>
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<td>3</td>
<td>9</td>
<td>9</td>
<td>22</td>
<td>6.14</td>
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<tr>
<td>Max Value</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Mean</td>
<td>5.68</td>
<td>6.10</td>
<td>6.14</td>
</tr>
<tr>
<td>Variance</td>
<td>1.37</td>
<td>1.39</td>
<td>0.98</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>1.17</td>
<td>1.18</td>
<td>0.99</td>
</tr>
<tr>
<td>Total Responses</td>
<td>22</td>
<td>21</td>
<td>22</td>
</tr>
</tbody>
</table>

3.9.1.2 Student-faculty engagement

Grand View is a teaching focused institution and the data in Table 4 shows that student-faculty engagement is mostly excellent. However, the student-peer engagement is lower. Faculty encourage students to spend significant amounts of time on projects (Table 5), while providing quite a bit support to help students succeed in learning appropriate software. However, use of learning support services such as tutoring, writing center, etc., has not as encour-
aged. Some faculty encourage contact among students from different backgrounds, although Grand View’s population is somewhat homogeneous in ethnicity and religious background. There showed to be more opportunities for students to attend events, rather than purely social involvement. Student responses for faculty providing support for their overall well-being ranged from very much (45%), quite a bit (32%), and some (23%). As far as helping students manage non-academic responsibilities the range was very much (14%), quite a bit (36%), some (27%), and very little (23%). Faculty encouragement for students to attend events that address important social, economic, or political issues ranged from very much (23%), quite a bit (23%), some (36%), and very little (18%).

Table 5. Student-faculty engagement.

Student-faculty engagement in class where instructors clearly explained course goals and requirements very often (67%), often (27%), and sometimes (9%). The data showed that instructors mostly taught courses in an organized way, used examples or illustrations to explain difficult points, provided feedback on a draft or work in progress, and provided prompt and detailed feedback on completed projects.

Part of the process in the art and design program is to take part in large group and small group critiques of student work. Sometimes students led critiques (very often 32%,
often 45%, sometimes 18%, and never 5%). This data showed 5% of students believed faculty humiliated them during critique very often. The largest segment of this question showed that 86% of students never felt humiliated, and 9% sometimes felt humiliated. When asked if faculty said inappropriate things during critique, 5% of students reported this happened very often, while 23% said sometimes and 73% said never. When asked if faculty encouraged the students during critiques, 36% said very often, 55% said often, and 9% said sometimes.

Students reported talking about their career plans with a faculty member only sometimes (45%), and discussing course topics, ideas, or concepts with a faculty member outside of class sometimes (59%). They often (36%) spoke with faculty about their academic performance.

**3.9.1.3 Student-peer engagement**

This domain shows that students are not engaged well with one another socially in the art and design program at Grand View, meaning they indicate not spending time with their classmates outside of class. In class, 41% of students asked one another for help understanding course material, 32% asked very often, and 27% asked often. When explaining course material to one or more students, 45% did this often, 32% sometimes, and 23% very often. Preparing for exams or discussing or working through course material with other students showed that most students did this sometimes (36%). While students working with other students on course projects or assignments showed that 45% did this often and 23% very often.

**3.9.1.4 Student-self engagement**

This was the largest domain in the survey and a way to begin to assess whether students are connected and engaged intrinsically in their lives. This portion of the survey is the largest in relation to spirituality. The number of hours students worked per week at part-time jobs and internships, in addition to the number of hours spent in class and doing coursework was reported. Students also reported on their outside of school time requirements in relation
to family, clubs or organizations.

The number of hours students reported spending on their art and design projects had some variance (Table 6).

Table 6. Hours per week students spent preparing for art and design classes.

<table>
<thead>
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<th>#</th>
<th>Answer</th>
<th>Response</th>
<th>%</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>0 hours</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>2</td>
<td>1-5 hours</td>
<td>4</td>
<td>18%</td>
</tr>
<tr>
<td>3</td>
<td>6-10 hours</td>
<td>4</td>
<td>18%</td>
</tr>
<tr>
<td>4</td>
<td>11-15 hours</td>
<td>3</td>
<td>14%</td>
</tr>
<tr>
<td>5</td>
<td>16-20 hours</td>
<td>5</td>
<td>23%</td>
</tr>
<tr>
<td>6</td>
<td>21-25 hours</td>
<td>5</td>
<td>23%</td>
</tr>
<tr>
<td>7</td>
<td>26-30 hours</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>8</td>
<td>More than 30 hours</td>
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<td>0%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>22</td>
<td>100%</td>
</tr>
</tbody>
</table>

Students have varied time commitments. Most students (36%) spent 16-20 per week preparing for their classes or other academic activities. Some (45%) participated in co-curricular activities (organizations, campus publications, student government, or intercollegiate or intramural sports) between 1-5 hours per week. Working for pay off campus accounted for 11-15 hours for 27% of students, 16-20 hours for 14%, and more than 30 hours for 9%. Relaxing and socializing (time with friends, video games, TV or videos, keeping up with friends online, etc.) accounted for 1-5 hours per week for 32% of students, 11-15 hours per week for 23% of students, 6-10 hours per week for 18% of students, and more than 30 hours per week for 9%.

Part of the survey in this domain asked students to rank who/what motivates them.
Overwhelmingly, 55% reported self as their first choice. The other choices were family (ranked 2nd by 50%), teacher (ranked 3rd), friends (ranked 4th) and spirituality, faith, religion with 59% choosing to rank this lowest.

3.9.1.5 Student-institution engagement

The results showed that out of the 22 respondents, 50% felt their courses had challenged them very much (Table 7).

<table>
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<th>Answer</th>
<th>Response</th>
<th>%</th>
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</thead>
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<td>Not at all</td>
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<td>0%</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
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<td>3</td>
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<td>0%</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
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</tr>
<tr>
<td>5</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>4</td>
<td>18%</td>
</tr>
<tr>
<td>7</td>
<td>Very Much</td>
<td>7</td>
<td>32%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>11</td>
<td>50%</td>
</tr>
</tbody>
</table>

Table 7. Data sampling.

Grand View’s art and design program encouraged students to think critically and analytically very much (45%), and quite a bit (45%), as reported by students. The program also encouraged students to work effectively with others quite a bit (45%). However, understand-
ing people of other backgrounds (economic, racial/ethnic, political, religious, nationality, etc.) was only reported as some (45%). The art and design program’s responsibility to prepare students in solving complex real-world problems was low with the majority of students reporting only some (41%). Being an active and informed citizen is not currently emphasized by the program with most (36%) of students reporting only some exposure.

Overall, students reported their entire educational experience in art and design at Grand View as excellent (54%), good (41%), and fair (5%) respectively.

3.9.2 Interviews

During each interview, I kept notes to track salient points the participants raised. I also wrote down any subsequent interview questions that occurred to me. Following the individual interviews, I made verbatim written transcriptions and then coded the responses. “A code in qualitative inquiry is most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data” (Saldana 2008).

The five codes I used to categorize the data were Trends, New Media, Future Directions, Software Learning, and Student Preparedness (Table 8). I also coded the participants to indicate gender as female (F) or male (M), and if that person was a professor (P) or profes-
sional(p) or both (Pp).

<table>
<thead>
<tr>
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</thead>
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<td>Design</td>
<td>UX Interactive Screen</td>
<td>UX Interactive Screen</td>
<td>UX Interactive Screen</td>
<td>UX Interactive Screen</td>
<td>UX Interactive Screen</td>
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<td>Student Videos</td>
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<td>Instructor Videos</td>
<td>Instructor Videos</td>
<td>Instructor Videos</td>
<td></td>
</tr>
</tbody>
</table>

Table 8. Interview coding.

Within the five categories were the domains of Motion Graphics (mogo), Mobile design (screen), Interactive, User Experience (UX), New Software (software), Software learning through books (books), Software learning through videos (videos), Software learning through instructor led in class exercises and demos (instructor), and Software learning through student responsibility on their own (student).

### 3.9.3 Focus groups

During the focus group studies I used direct observation to study each participant’s body language, facial expressions, and measure time on task, as well as listen to conversation. The sessions were audio recorded and transcribed to capture qualitative responses so I could be free to observe rather than take stringent notes during the sessions. This allowed me to be more engaged with the participants as I conducted the groups, and added an ethnographic dimension to the focus groups with an emphasis on user-centered issues. Especially important, was the physical environment in which the focus groups took place. It was the actual location students learn technology and software use during their classes. The students were very familiar with the lab as they spend much time there, and seemed to feel comfortable. The interactions among the students during the focus groups was imperative to understanding how each tutorial method either enhanced conversation, or discouraged it. It
is important for students to be encouraged to interact with one another as, “Human beings are shaped by culture, their minds are deeply influenced by language, and they are not alone when interacting with the world.” (Kaptelinin 2006). After each focus group, the students completed two word-pairing exercises to compare the two methods of tutorials they had just worked through.

The list below contains information regarding which focus group performed what tutorials and in which order.

- The first focus group compared video-based tutorials (V) to book tutorials (B) in that order. (V-B)
- The second focus group compared book (B) tutorials to the Graphic Manual (G) in that order. (B-G)
- The third focus group compared the Graphic Manual (G) to video-based tutorials (V) in that order. (G-V)
- The fourth focus group compared book (B) tutorials to the Graphic Manual (G) in that order. (B-G)
- The fifth focus groups compared book tutorials (B) to video tutorials (V) in that order. (B-V)
- The sixth focus group compared video tutorials (V) to the Graphic Manual (G) in that order. (V-G)

The average time to complete the video was 40 minutes, as compared to 25 minutes for the book, and 10 minutes for the Graphic Manual. The results of the word-pairings are located in Table 9, Table 10, and Table 11.
Table 9. Likert scale video-based tutorial rankings.

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<td>1</td>
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<td>-</td>
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<td>1</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
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<td>-</td>
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Table 10. Likert scale book tutorial rankings.

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<th>4</th>
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</table>

Table 11. Likert scale graphic manual rankings.

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<td></td>
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<td>Happy</td>
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<td>-</td>
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</tbody>
</table>
3.10 Ethical considerations

When gathering data I adhered to the IRB guidelines for human subject involvement. All subjects that participated in the online survey signed the informed consent form prior to data collection. The online participants indicated their electronic signature by checking a box to agree and then were able to begin the survey. The participants in the focus groups and interviews were given copies of the informed consent form and given the choice of whether to continue after reading it before beginning.
CHAPTER 4. SUMMARY AND DISCUSSION

4.1 Summary of findings

“People often end up feeling that their lives have been wasted, that instead of being filled with happiness their years were spend in anxiety and boredom,” (Csikszentmihalyi, 1990). My contention based on the research findings, is that students are not at their happiest inside the classroom. Connecting with the largeness of life is partly being in the classroom, but mostly comes from outside of school experiences with family and friends.

4.1.1 Survey selected findings

The findings of the survey indicate a greater need for students to connect with one another outside of class on a social basis to form more meaningful and growth-fostering relationships. The survey did show that students were generally working together in class and helping one another. This might be where the mobile game app could come in as a mediating tool to encourage social involvement, as one aspect of the pilot study’s findings.

Another solution might be to set up a live-learn community with incoming freshmen to encourage ways for them to interact socially while living in close proximity with one another, as well as attending classes together. The community would have a faculty mentor and hopefully increase the domains of student-self, student-peer, student-faculty, and student-institution engagement, by building mutual trust. These relationships would then carry through their time at Grand View and beyond.

One concern that the survey shows is that students generally do not have a healthy work-life balance. They’re spending most of their hours between class and part-time work, then preparing for their classes through project work and homework. Based on my observations of students in class, they are generally worn out and might be physically present but emotionally drained. This makes it more difficult to achieve what Csikszentmihalyi calls op-
timal experience or “flow.” Mihaly Csikszentmihalyi (1990) refers to flow as the “…positive aspects of human experience—joy, creativity, the process of total involvement with life…”

The live-learn community, in cooperation with the Seymour Art group could then work on building community. We as humans are relational beings. We crave mutual experiences through the diversity of human contact (Oldenburg 1989). Before World War II, informal public gathering places—what Ray Oldenburg has named “third places”—were a vital part of daily life for most U.S. Americans (Oldenburg 1989). These places were cafés, coffee shops, community centers, beauty parlors, general stores, bars, and soda fountains (Oldenburg 1989). All locally owned and operated. Oldenburg compares them to the American TV show Cheers, whose theme was “Where everybody knows your name,” (Oldenburg 2001). They were places where one might go alone or with family to visit with neighbors, friends, and acquaintances, often just after work before arriving at home. Third places were for leisure, relaxation, and sharing of common experiences in the company of others through the art of conversation. They were “focal points of community life” (Oldenburg 2001). Grand View lacks this community life as the students indicated in the four domains of student-self, student-peer, student-faculty, and student-institution.

### 4.1.2 Focus group selected findings

In the focus group findings, the overall ranking of three methods of software tutorials tested were high to low: 1) Graphic Manual; 2) book tutorial, and; 3) video-based tutorials; This was true in the word pairs of personal, interesting, relevant, empowering, functional, educational, comforting, happy, and comprehensive. In the word pairs for informative, trustful, clear, efficient, functional, and educational the rankings were high to low: 1) book tutorial; 2) Graphic Manual, and; 3) video-based tutorial. The video-based tutorials ranked the lowest in the word pairs and also took the most time for students to complete. Based on these findings, video-based tutorials prevent students from achieving flow by their ratings of the word pairs
as boring, restrictive, generic, and sad.

Since the students were not able to achieve a state of flow while working through the video-based tutorials, there is little positive feedback and more anxiety-causing factors (Csikszentmihalyi 1990). In the Graphic Manual and the book tutorial, the students were able to achieve flow, “When the information that keeps coming into awareness is congruent with goals, psychic energy flows effortlessly. There is no need to worry, no reason to question one’s adequacy,” (Csikszentmihalyi 1990). This leads to a greater sense of accomplishment, and can also lead to fun and enjoyment.

Compared with data from the interviews with faculty and professionals, the most popular teaching tool is video-based tutorials, yet this was the least effective method for software tutorials. One faculty member that used books instead of videos had remarked his student preparedness level was high. Some of the others had remarked that their students wanted more exposure to software in classes, but they had access to video-based tutorials to learn on their own. Thereby, causing a disconnection between student-faculty engagement and student-institution engagement. Another point from the interviews was that almost all believed that motion graphics is remarkably important to the field of graphic design. I believe this makes sense in that the Graphic Manual worked well with student learning. Motion graphics are based on sequential images, as is the medium of comics.

4.2 Discussion on selected findings

The first research question was:

1. How can the E_CATS framework be applied to develop tools to improve affective and experiential outcomes in graphic design pedagogy, leading to a sense of accomplishment for students?
   • How will learning outcomes be assessed?

Using the E_CATS framework, I developed the Graphic Manual to test against two other methods of software training. This was a tool to improve affective and experiential outcomes. The research findings were strong in some areas and ambiguous in others. The
average time to complete the video-based tutorial was 40 minutes, as compared to 25 minutes for the book, and 10 minutes for the Graphic Manual. In two of the three methods, students were able to achieve a state of flow, which led them to feel a sense of accomplishment when finished. Students working through the Graphic Manual and the book tutorial were less frustrated by the experience of learning something new.

The learning outcomes for the Graphic Manual were to see if students completed the tutorial correctly by producing the end product of an animated GIF using Photoshop CS6. Each of the three methods proved to have met this learning outcome. The evaluation measures for the Graphic Manual tool was a word pairing exercise at the completion of the tutorial, and also based on ethnographic observation of the classroom in which the study was conducted. If this method is used as part of the class, then the evaluation measures will need to be altered and made relevant to learning outcomes for the course as stated in the syllabus.

The focus groups pointed to the Graphic Manual as the most personal, happy, relevant, functional, comforting, and comprehensive method. I was surprised by this finding. I had anticipated that the book tutorial would be the selected one as comprehensive.

Trustful ranked low in the Graphic Manual with the book tutorial ranking highest of the three methods tested in that domain. The word pair companion to trustful was deceitful, and many of the students found the Graphic Manual to be closer to that end of the scale.

The most trusted method overall was the book tutorial. This method was frustrating when something went wrong and the students had to retrace their steps several times to troubleshoot. However, the students that completed it without missing any steps were satisfied and felt a sense of accomplishment.

The second research question:

1. Will the inclusion of these tools lead also to a sense of fun and enjoyment for
students in graphic design?

• How will this be assessed?

Students that worked through the Graphic Manual felt empowered, comforted, and happy. These emotions are included in a sense of fun and enjoyment and flow (Csikszentmihalyi 1990). After they completed the word pairing exercise, there were several open-ended questions to help assess the answer to this research question. One student said in regards to the Graphic Manual, “It’s different, keeps attention, and doesn’t suck egg.” This statement leads me to believe the students had fun with this tutorial. The visual examples in the Graphic Manual were seen has extremely helpful. Another student said, “It was easier to find information.” I observed this factor as well. When students missed a step, it was easier for them to retrace prior steps simply because there was much less information contained in the Graphic Manual.

Students that preferred the book tutorial said, “We preferred it because it was a format that was familiar and simple to understand.” Although they didn’t seem to enjoy the book tutorial, they did feel a sense of accomplishment once completed.

Since the video tutorial took the most amount of time and created the strongest sense of frustration, it did not lead to flow or fun and enjoyment. It was not the best method of software tutorial for students.

The two methods that were successful in terms of the research questions were the Graphic Manual and the book tutorial. However, the book tutorial fell short on the second research question of creating fun and enjoyment for students.
CHAPTER 5. CONCLUSIONS AND FURTHER RESEARCH

5.1 Conclusions

The implications of this study disrupts the status quo in graphic design higher education. Moral panic is happening in relation to technology in the classroom at Grand View, as I suspect it is happening in other universities. “Moral panic is a term that has arisen to describe conditions in which an identified group in society is portrayed as a threat to social values and norms,” (Thomas 2011). Digital natives perform this role in universities (Thomas 2011), since they are often marginalized. The changes that digital natives, as students in the university classroom, are demanding “permeate existing structures and operating models” of the university (Thomas 2011). This is a generational conflict and it creates much debate. The difference between the banking system of education as Friere describes, and students requesting more online and blended online courses to meet demands on their time, is another source of conflict. Online and blended learning models are based mostly on an asynchronous nature and are not as collaborative as typical face-to-face class meetings (Thomas 2011). An empathic response would be for universities to fund support for different types of online courses and research best practices to meet the needs of their current and prospective student populations. It seems the typical college student enrollment is dwindling at private universities, while state schools are experiencing steady enrollment. More research into this phenomenon is needed. Particularly, if video-based tutorials are proven to be not as effective as other teaching methods, then we must seriously reassess learning outcomes and evaluation for these types of courses. I believe that it’s a combination of methods that work best.

In studio length classes, I often see students bored and chatting online with others, or playing games. These courses have turned into study hall type classes with students not seeing the value of communal learning because it is not being encouraged or modeled. Instructors often sit secluded waiting for students to approach them for help or feedback on
their work. This is a source of disconnection between instructor and other students as well. It simply does not work to the student’s benefit and needs to be changed. This has become a model of the banking system of education, when historically, the very purpose of a studio class was to work together for an extended period of time, exchange ideas, converse with one another, and enhance creativity by entering a state of flow.

Students need time, which is a precious commodity for them. Balancing their work life, school life, family, and friends, is an arduous task. Instructors in graphic design are asking for too much work to be completed outside of class, which lends itself to seclusion. Instead of assigning traditional “homework” we should ask them to experience life together outside of class. We should ask them to play and seek fun and enjoyment, both as part of their work and aside from it. We should give them time and space to see more art and design in the company of others. We should maintain high expectations and high rigor. We should have more communal tasks in the classroom as to not squander class time, and experience the benefits of learning in community with one another and co-creating learning environments.

5.2 Implications for further research

The medium of comics could help in approaching intimidating subjects, such as learning new software and be used in conjunction with online courses for a “unique, intimate relationship” (McCloud 2000). It can also create a sense of accomplishment and fun and enjoyment for students. When used in combination with other teaching tools and methods, it can break down some barriers to student learning outcomes. Using comics for software training shows empathy by meeting wants and needs of students in graphic design. Only the medium of comics can permeate and represent the “invisible world of emotions” (McCloud 2000). “Comics’ place in society is vital... as one of the few forms of personal communication in a world of committee-built automatons and corporate mass marketing,” (McCloud 2000).

Another domain of future research is this medium of comics used in combination with blended and online learning. When video is a large component of instruction, it is im-
Important to ask students for their preferred methods of learning software and assess learning outcomes. Video-based learning was the lowest method of learning in this study, but mixed with other methods it might work well for other classrooms. Every classroom is different depending on the learners involved and constant user experience research is imperative for instructors to perform.

Since the Graphic Manual ranked low in the trust domain during the study, partnering with an artist to illustrate and produce a narrative might be a better way of engaging students in the medium. Trust is an essential component of using the E_CATS framework, and this first version of the Graphic Manual did not perform well building trust with students. Building trust will increase intrinsic motivation of completing software tutorials based on their needs of a sense of accomplishment and fun and enjoyment in life.

I suspect the lack of trust with the Graphic Manual relates partly with stereotypes of the medium and resistance to innovation. There is much work to be done in dismantling the embedded negative connotations related to the medium of comics. Some of these include:

- Comics are a waste of time.
- Comics are for boys.
- Comics are for children.
- Comic art is lowbrow.

Some ways that we can begin the work of legitimizing and authenticating the medium is more exposure to sources of authority using them for training. Will Eisner and the Army successfully produced training manuals in graphic format for almost two decades. Raising awareness of the value of this teaching tool is imperative. Artists such as Satrapi and Bechdel (and others) are adding to the canon of graphic novels by using their voices in this powerful format.

By focusing on the future and going against mainstream dominant culture, comics can, “overcome popular prejudice” within institutions of higher learning (McCloud 2000).
Scott McCloud also states ways of reinventing comics as an area worthy of study by adding gender balance, minority representation, and diversity of genre. I appreciate his statement, “that comics could appeal to and be made by more than just straight white upper-middle class males.”

The E_CATS framework is composed of empathy, connectivity, authenticity, trust, and spirituality. E_CATS used empathy as its main component to assess wants and needs of students learning software in the graphic design program at Grand View University. Empathy is central to user experience research and design. Listening to students as users of learning tools, such as video-based learning and tutorial textbooks, led to development of a new tool named the Graphic Manual. Connectivity in the framework was demonstrated by students working together in the computer lab to achieve a common goal of completing a software tutorial. Authenticity was achieved in sharing power with students so they became co-creators of their learning environment. Trust and spirituality were not fully realized, but the foundation for steady increase will be seen over time.
APPENDIX A. IRB IOWA STATE UNIVERSITY

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
1110 Frankam Hall
Ames, Iowa 50011-2207
515-294-5565
FAX 515-294-4407

Date: 8/24/2012
To: Cynthia L Wiley
    2912 61st St
    Des Moines, IA 50322

CC: Debra Satterfield
    277 College of Design
    Sunghyun Kang
    282 Design

From: Office for Responsible Research

Title: Empathy, connectivity, authenticity, and trust: A pedagogical framework for teaching interaction design

IRB ID: 12-407

Study Review Date: 8/24/2012

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

1. Research conducted in established or commonly accepted education settings involving normal education practices, such as:
   - Research on regular and special education instructional strategies; or
   - Research on the effectiveness of, or the comparison among, instructional techniques, curricula, or classroom management methods.

2. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures with adults or observation of public behavior
   - Information obtained is recorded in such a manner that human subjects cannot be identified directly or through identifiers linked to the subjects; or
   - Any disclosure of the human subjects’ responses outside the research could not reasonably place the subject at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation.

3. Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified directly or through identifiers linked to the subjects.

The determination of exemption means that:

- You do not need to submit an application for annual continuing review.
- You must carry out the research as described in the IRB application. Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any modifications to the research procedures (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the inclusion of participants from vulnerable populations, and/or any change that may increase the risk or discomfort to participants. Changes to key personnel must also be approved. The purpose of review is to determine if the project still meets the federal criteria for exemption.

Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

Detailed information about requirements for submission of modifications can be found on the Exempt Study...
Modification Form. A Personnel Change Form may be submitted when the only modification involves changes in study staff. If it is determined that exemption is no longer warranted, then an Application for Approval of Research Involving Humans Form will need to be submitted and approved before proceeding with data collection.

Please note that you must submit all research involving human participants for review. Only the IRB or designees may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

Please be aware that approval from other entities may also be needed. For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. An IRB determination of exemption in no way implies or guarantees that permission from these other entities will be granted.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.
APPENDIX B. IRB GRAND VIEW UNIVERSITY

IRB Number__________

Grand View University Institutional Review Board
1200 Grandview Avenue, Des Moines, IA 50316
Phone: 515-263-6092
Email: lkimpel@grandview.edu

Application for
Exempt Review

1. Contact and Study Information
Date of report: ___8/27/2012________________________
Study Title: __Empathy, connectivity, authenticity, and trust: A pedagogical framework for teaching interaction design________________________
Principal Investigator: __Cyndi Wiley________________________
Phone: ___515.263.2893_____________Email: __cwiley@grandview.edu________________________
Department: __Art & Design________________________
Person Responsible for Regulatory Documents: Lu Kimpel, RN, PhD
Phone 263*6092 Email: Lkimpel@grandview.edu

All other study personnel* (those involved with direct care and as PI designates):
_____None________________________

* All personnel who are not Grand View University personnel must provide curriculum vitae with this Application.

2. Conflict of Interest Statement
Can the results of the study provide a potential financial gain to you, a member of your family, or any of the co-investigator that may give the appearance of a potential conflict of interest?

If YES, provide a copy of your completed conflict of interest statement to the IRB, and include a provision in the informed consent document notifying potential subjects of your conflict of interest.

3. Designate the category that qualifies this proposal for an exempt review (see the web site under research for Categories of Research that Apply for Exemption document)
Category Number: ____1____

4. Justify this category by responding to the questions under the designated category:
This research will be conducted in the classroom and involve normal educational practices, such as research on the effectiveness of or the comparison among instructional techniques and curricula.
Attachment 1. Word of Mouth Script to interactive design classes (Arts 245, 335, 375, 425) at Grand View University

I am looking for participants for my PhD research at Iowa State University. I am studying teaching methods for interaction design. I will send you surveys to complete online and interview you.

Participation is completely voluntary. All of the information participants provide will be kept strictly confidential and reported in summary form only. No individual will be identified, nor will participants’ names be attached to any data. At the project's end, researchers will destroy any identifying personal information.

If you are interested in participating this study, please contact me via email: cwiley@grandview.edu
Attachment 2 Follow up Email script to interactive design classes (Arts 245, 335, 375, 425) at Grand View University

Dear xxxx,

Thank you for agreeing to participate in surveys and individual interviews about your experience in interaction design! There will be a total of two surveys during the semester; one at the beginning and one at the end. I really appreciate your time.

Here is the link http://linkhere to an online survey with an informed consent for your review before beginning the survey.

You may choose to withdraw from participating at any time without penalty.

If you have any questions or concerns, feel free to contact me at any time.

   Cyndi Wiley, Principal Investigator
   Email: cwiley@grandview.edu

Thank you for your time.
Attachment 3: Informed Consent

Informed Consent Document

Title of Study: **Empathy, connectivity, authenticity, and trust: A pedagogical framework for teaching interaction design**

Investigators:  Principle Investigator: Cyndi Wiley, BA, MFA, PhD candidate

This is a study about your experience with interaction design. Please take your time in deciding if you would like to participate. Please feel free to ask questions at any time. No identifying factors will be gathered during the interview and all information will be reported anonymously. At the conclusion of the study, all data will be deleted.

**INTRODUCTION**

The purpose of this study is to develop a pedagogical framework to teach interaction design. Since interaction design is about designing mediating tools for people and their subsequent behaviors, particular attention is needed into establishing and maintaining relationship between designer and audience. There is no one accepted theory for interaction design and subsequently, no one theory for teaching it. Part of developing an inclusive theory of interaction design begins in the classroom.

Empathy, mutuality, and authenticity are essential in recognizing our own limits and strengths in connection with others. Building trust requires a mix of all three of these tenets, as well as evolution through conflict. Interaction designers can move toward creating an inclusive theory for this discipline by becoming vulnerable and sharing power with the people with whom they design interactions. Therefore, the pedagogical framework of empathy, connectivity, authenticity, and trust (e-CAT) is presented as a means of teaching interaction design and its curriculum effectiveness will be studied.

**DESCRIPTION OF PROCEDURES**

If you agree to participate in this study, participation will last approximately 60 minutes for phone/in-person interviews and approximately 20 minutes for online surveys.

During the study you may expect the following study procedures to be followed:

For interviews:

1. The researcher will contact you for a mutually agreeable time for a phone interview or in-person interview at a public place.
2. The researcher will ask you questions about your experience with interaction design including your education and work experience.

For online surveys:

1. If you agree to participate, by clicking the “I Agree” box at the bottom of this page, you will complete a survey regarding your experience with interaction design and some demographic information.

**RISKS**

There are no foreseeable risks in this study. However, you may leave the study at any time without penalty.
BENEFITS
Participation in this research will not benefit the participants directly. However, the knowledge of information gathered in this research will help to develop teaching methods for interaction design.

COSTS AND COMPENSATION
There are no costs associated with participating in this study and you will not be compensated for your participation.

PARTICIPANT RIGHTS
Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to not participate in the study or leave the study early, it will not result in any penalty.

CONFIDENTIALITY
Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, federal government regulatory agencies and the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis. These records may contain private information.

To ensure confidentiality to the extent permitted by law, the following measures will be taken.

The participant’s identity will be anonymous all throughout the survey. Only the researcher will have access to the data. The data will be entered and kept in a password-protected computer located on the Principal Investigator’s computer. All data files will be destroyed once transcribed and entered in the computer for analysis.

QUESTIONS OR PROBLEMS
You are encouraged to ask questions at any time during this study. For further information about the study contact Cyndi Wiley, Principal Investigator, phone 515-263-2893, email cwiley@grandview.edu.

If you have any questions about the rights of research subjects or research-related injury, please contact IRB Administrator, 1200 Grandview Avenue, Des Moines, IA 50316, Phone: 515-263-6092, Email: lkimpel@grandview.edu

SUBJECT SIGNATURE
If you check “I Agree” below that indicates that you voluntarily agree that you will participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You must be over 18 to participate.

Online survey:
- [ ] I Agree
- [ ] I do not wish to continue with this survey

Phone/In-Person Interviews (informed consent will be signed and emailed to Cyndi Wiley cwiley@grandview.edu):

Subject’s Name (printed) __________________________________________________________

(Subject’s Signature) __________________________ (Date) __________________________
Dear xxxx,

Thank you for agreeing to participate in an interview about your experience in interaction design! I really appreciate your time.

I have attached the informed consent for your review. If you are willing to continue, please sign, date and return via email to me.

I have included some possible dates/times for our interview below. Please indicate your first and second choices. If none of these suggested times work, let me know and we can work out alternatives.

<date><time>
<date><time>
<date><time>

You may choose to withdraw from participating at any time without penalty.

If you have any questions or concerns, feel free to contact me at any time.

   Cyndi Wiley, Principal Investigator
   Email: cwiley@grandview.edu

Thank you for your time.
Attachment 5: Survey questions for interactive design classes (Arts 245, 335, 375, 425) at Grand View University (beginning of semester)

**Q4**

Do you have a part-time job?

- [ ] Yes
- [ ] No

**Q5**

How many hours do you work per week?

- [ ] 1-5
- [ ] 6-10
- [ ] 11-20
- [ ] 21-30
- [ ] more than 30

**Q6**

How often do you use the following?

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<th>Not at all</th>
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<th>Once a week</th>
<th>2-3 times per week</th>
<th>Daily</th>
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**Q7**

Do you own a laptop?

- [ ] Yes
- [ ] No
If yes, what kind of laptop do you own?

- Mac
- PC
- both

Do you solely use the computer labs on campus to complete all of your design work that requires use of the Adobe Creative Suite?

- Yes
- No

How much time do you plan to spend on this class per week?

- 1-3 hours
- 4-6 hours
- 7-10 hours
- 11-15 hours
- more than 15 hours

What do you expect to learn from this class?

What do you expect from your professor?

What can you do to improve your learning in this class?

What can your professor do to improve your learning in this class?

What field of design do you plan to work in?

How would you define graphic design? There is no right or wrong answer, I'm just looking for your opinion.
Q12 How would you define interaction design? Again, no right or wrong answer.

Q13 What is your major?

Q14 Why did you choose that major?

Q15 Who is a designer? No right or wrong answer, just your opinion.

Q16 What do designers do? No right or wrong answer, just your opinion.

Q17 What are your hobbies and interests outside of art and design?

Q20 People look for or want different goals out of life. Please study this list carefully and then rate each item in terms of how important it is to you in your daily life on the scale indicated.

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<td>Self-respect</td>
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</table>

**Q22**  

**Of the above set of 9 values, which one is **most** important to you?**

**Q24**  

**Below is a list of statements. Please indicate how you feel about each statement by indicating your degree of agreement or disagreement with each statement.**

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<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
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<tr>
<td>My social status is an important part of my life.</td>
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<tr>
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</tbody>
</table>

**Q31**

What is your primary language (i.e., the one you speak most of the time)?

- English
- Dutch
- Spanish
- Japanese
- Chinese
- Hebrew
- French
- Swedish
- German
- Other (specify)

**Q33**

Are you currently registered to vote?

- [ ] Rather not say
- [ ] No
- [ ] Yes
What is your gender?

- Female
- Male

What is your current marital status?

- Rather not say
- Divorced
- Living with another
- Married
- Separated
- Single
- Widowed

How many children under 16 years old live in your household?

- None
- 1
- 2
- 3
- 4 or more

How old are you?

- 18-25
- over 25

How frequently do you access the web from the following locations?

<table>
<thead>
<tr>
<th>Location</th>
<th>Daily</th>
<th>Weekly</th>
<th>Monthly</th>
<th>Less than once a month</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>From home (including a home office)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>From work</td>
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<tr>
<td>From school</td>
<td></td>
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</tr>
<tr>
<td>From a public terminal (e.g. library, cybercafe, etc.)</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>
Q45

**Who pays for your Internet access?**
- Self/spouse
- Parents
- Work
- School
- Other
- Don't know

Q47

**What is your primary computing platform?**
- Macintosh
- Unix
- Linux
- Windows
- Terminal
- WebTV
- Do not know
- Other
Attachment 6: Interview questions

1. How do you define interaction design?
2. In your opinion, how closely is interaction design related to graphic design?
3. How do designers work with clients?
4. What do you think about clients?
5. How important is money to
6. Are there changes that you think need to happen in the field of design?
7. What about education of designers? What was your education like?
8. How did your education prepare you for the working world?
9. What do you think colleges and universities should be teaching to better prepare students?
10. What do you think colleges and universities are good at in terms of design education?
11. What advice do you have for beginning designers?
Attachment 7: Survey questions for interactive design classes (Arts 245, 335, 375, 425) at Grand View University (completion of semester)

How often do you use the following?

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Once a month</th>
<th>Once a week</th>
<th>2-3 times per week</th>
<th>Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>iPad</td>
<td></td>
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<tr>
<td>Smartphone</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Digital camera</td>
<td></td>
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<tr>
<td>Scanner</td>
<td></td>
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<tr>
<td>Digital drawing tablet</td>
<td></td>
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</tbody>
</table>

Q7 Did you buy a laptop during the semester?

- [ ] Yes
- [ ] No

Q25 If yes, what kind of laptop did you buy?

- [ ] Mac
- [ ] PC
- [ ] both

Q8 How much time did you spend in the computer lab specifically for this class per week?

- [ ] 1-3 hours
- [ ] 4-6 hours
- [ ] 7-10 hours
- [ ] 11-15 hours

Q9 How much time did you spend working on this class per week?

- [ ] 1-3 hours
- [ ] 4-6 hours
• 7-10 hours
• 11-15 hours
• more than 15 hours

Q26
What did you do to improve your learning in this class?

Q27
What did your professor do to improve your learning in this class?

Q28
What could you have done to improve your learning in this class?

Q29
What could your professor have done to improve your learning in this class?

Q10
What field of design do you plan to work in?

Q11
How would you define graphic design? There is no right or wrong answer, I'm just looking for your opinion.

Q12
How would you define interaction design? Again, no right or wrong answer.

Q13
Who is a designer? No right or wrong answer, just your opinion.

Q16
What do designers do? No right or wrong answer, just your opinion.
Q20

People look for or want different goals out of life. Please study this list carefully and then rate each item in terms of how important it is to you in your daily life on the scale indicated.

<table>
<thead>
<tr>
<th></th>
<th>1 Extremely Important</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9 Extremely Unimportant</th>
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</thead>
<tbody>
<tr>
<td>Sense of belonging</td>
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<td>Fun and enjoyment in life</td>
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<td>Warm relationships with others</td>
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<td>Self-fulfillment</td>
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<td>Being well respected</td>
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<td>Excitement</td>
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<td>A sense of accomplishment</td>
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<td>Security</td>
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Q22

Of the above set of 9 values, which one is most important to you?

Q24

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Attachment 2

Focus Group Questions

Which design is most Informative?
Which design is most Confusing?

Which design is most Trustful?
Which design is most Deceitful?

Which design is most Interesting?
Which design is most Boring?

Which design is most Clear?
Which design is most Ambiguous?

Which design is most Relevant?
Which design is most Useless?

Which design is most Simple?
Which design is most Complicated?

Which design is most Efficient?
Which design is most Time Consuming?

Which design is most Empowering?
Which design is most Manipulative?

Which design is most Functional?
Which design is most Useless?

Which design is most Personal?
Which design is most Generic?

Which design is most Educational?
Which design is most Impractical?

Which design is most Comforting?
Which design is most Restrictive?

Which design is most Happy?
Which design is most Sad?

Which design is most Comprehensive?
Which design is most Limited?
Attachment 4

On a scale of 1-5, please rate the method using the phrases below, place an x in the box.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3 (uncertain)</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informative</td>
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<tr>
<td>Trustful</td>
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<tr>
<td>Interesting</td>
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<td>Clear</td>
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<td>Relevant</td>
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<td>Simple</td>
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<td>Efficient</td>
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<td>Empowering</td>
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<td>Personal</td>
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<td>Comforting</td>
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<tr>
<td>Happy</td>
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<tr>
<td>Comprehensive</td>
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</tr>
</tbody>
</table>

Confusing       Deceitful  Boring     Ambiguous  Useless   Complicated Time Consuming Manipulative Useless  Generic  Impractical Restrictive Sad  Limited
Attachment 6

Post focus group survey:

1. Which method did you prefer overall? Why?
2. What would make the method better?
3. Do you think you would read or refer back to this method at a later time?
4. Do you prefer a printed version of the steps?
1. What trends do you see happening now in the field of Graphic Design?
2. How do you incorporate new media into your curriculum?
3. How important are motion graphics to the field of Graphic Design? Why?
4. Where do you see the industry focus of Graphic Design in the next 5 years?
5. How important is it for undergraduates to learn the software that industry uses?
6. How do you teach software competency? (Lynda.com, books, other methods, etc.)
7. Do you think that software needs to be taught in the classroom with an instructor?
8. In your opinion, which methods for learning software work the best?
9. How many classes in your program are devoted to learning software?
10. What feedback have you heard from students in regards to their preparation for a job in the design industry?
APPENDIX C. IRB MODIFICATION

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
1351 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

Date: 8/29/2013
To: Cynthia L Wiley
   2912 61st St
   Des Moines, IA 50322
CC: Dr. Debra Satterfield
    277 College of Design
    Dr. Sungyun Kang
    282 Design

From: Office for Responsible Research

Title: Empathy, connectivity, authenticity, and trust: A pedagogical framework for teaching interaction design
IRB ID: 12-407

Study Review Date: 8/28/2013

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

1. Research conducted in established or commonly accepted education settings involving normal education practices, such as:
   - Research on regular and special education instructional strategies; or
   - Research on the effectiveness of, or the comparison among, instructional techniques, curricula, or classroom management methods.

2. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures with adults or observation of public behavior where
   - Information obtained is recorded in such a manner that human subjects cannot be identified directly or through identifiers linked to the subjects; or
   - Any disclosure of the human subjects' responses outside the research could not reasonably place the subject at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation.

3. Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified directly or through identifiers linked to the subjects.

The determination of exemption means that:
- You do not need to submit an application for annual continuing review.
- You must carry out the research as described in the IRB application. Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any modifications to the research procedures (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the inclusion of participants from vulnerable populations, and/or any change that may increase the risk or discomfort to participants. Changes to key personnel must also be approved. The purpose of review is to determine if the project still meets the federal criteria for exemption.

Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

Detailed information about requirements for submission of modifications can be found on the Exempt Study...
Modification Form. A Personnel Change Form may be submitted when the only modification involves changes in study staff. If it is determined that exemption is no longer warranted, then an Application for Approval of Research Involving Humans Form will need to be submitted and approved before proceeding with data collection.

Please note that you must submit all research involving human participants for review. Only the IRB or designees may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

Please be aware that approval from other entities may also be needed. For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. An IRB determination of exemption in no way implies or guarantees that permission from these other entities will be granted.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.
Attachment 2

Focus Group Questions

Which design is most Informative?
Which design is most Confusing?

Which design is most Trustful?
Which design is most Deceitful?

Which design is most Interesting?
Which design is most Boring?

Which design is most Clear?
Which design is most Ambiguous?

Which design is most Relevant?
Which design is most Useless?

Which design is most Simple?
Which design is most Complicated?

Which design is most Efficient?
Which design is most Time Consuming?

Which design is most Empowering?
Which design is most Manipulative?

Which design is most Functional?
Which design is most Useless?

Which design is most Personal?
Which design is most Generic?

Which design is most Educational?
Which design is most Impractical?

Which design is most Comforting?
Which design is most Restrictive?

Which design is most Happy?
Which design is most Sad?

Which design is most Comprehensive?
Which design is most Limited?
Attachment 4

On a scale of 1-5, please rate the syllabi design using the phrases below, place an x in the box.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3 (uncertain)</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trustful</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interesting</td>
<td></td>
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<tr>
<td>Clear</td>
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<td>Simple</td>
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<td>Efficient</td>
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<td>Empowering</td>
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<td>Functional</td>
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<td>Personal</td>
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<tr>
<td>Educational</td>
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<tr>
<td>Comforting</td>
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<tr>
<td>Happy</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Comprehensive</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Confusing       Deceitful   Boring       Ambiguous   Useless       Complicated  Time Consuming Manipulative    Useless       Generic      Impractical  Restrictive  Sad  Limited
Attachment 6

Post focus group survey:

1. Which syllabus did you prefer overall? Why?

2. What would make the syllabus design you preferred better?

3. Is there anything missing from the syllabus design that you would like added?

4. Do you think you would read and refer back to the syllabus you have chosen during the semester?

5. Do you normally read the course syllabus for your classes? Why or why not?

6. Do you prefer a printed version or online version of a course syllabus?
### Attachment 7

**Online survey:**  
2013-2014 PhD research

Q1 During the current school year, about how often have you done the following in your graphic design and/or studio arts classes?

<table>
<thead>
<tr>
<th></th>
<th>Very often (1)</th>
<th>Often (2)</th>
<th>Sometimes (3)</th>
<th>Never (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asked questions or contributed to course discussions and critiques (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Prepared three or more drafts of a project before turning in (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Come to class without completing sketches or assignments (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Attended an art exhibit, play or other arts performance (dance, music, etc.) (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Asked another student to help you understand course material (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Explained course material to one or more students (6)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Prepared for exams by discussing or working through course material with other students (7)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Worked with other students on course projects or assignments (8)</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>Gave a course presentation (9)</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>Lost digital files due to technical failures (10)</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
</tbody>
</table>
Q2 During the current school year, about how often have you done the following in your graphic design and/or studio arts classes?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Very often (1)</th>
<th>Often (2)</th>
<th>Sometimes (3)</th>
<th>Never (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined ideas from different courses when completing assignments (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Connected your learning to societal problems or issues (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or projects (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Examined the strengths and weaknesses of your own views on a topic or issue (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Tried to better understand someone else’s views by imagining how an issue looks from his or her perspective (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Learned something that changed the way you understand an issue or concept (6)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Q3 During the current school year, about how often have you done the following?

<table>
<thead>
<tr>
<th></th>
<th>Very often (1)</th>
<th>Often (2)</th>
<th>Sometimes (3)</th>
<th>Never (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talked about career plans with a faculty member (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Worked with a faculty member on activities other than coursework (committees, student groups, etc.) (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Discussed course topics, ideas, or concepts with a faculty member outside of class (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Discussed your academic performance with a faculty member (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Q4 During the current school year, how much have your graphic design and/or studio arts classes emphasized the following?

<table>
<thead>
<tr>
<th></th>
<th>Very often (1)</th>
<th>Often (2)</th>
<th>Sometimes (3)</th>
<th>Never (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memorizing course material (1)</td>
<td>○</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Applying facts, theories, or methods to practical problems or new situations (2)</td>
<td>○</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Analyzing an idea, experience, or line of reasoning in depth by examining its parts (3)</td>
<td>○</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Evaluating a point of view, decision, or information source (4)</td>
<td>○</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Forming a new idea or understanding from various pieces of information (5)</td>
<td>○</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Q5 During the current school year, to what extent have your graphic design and/or studio arts instructors done the following?

<table>
<thead>
<tr>
<th></th>
<th>Very often (1)</th>
<th>Often (2)</th>
<th>Sometimes (3)</th>
<th>Never (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearly explained course goals and requirements (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Taught course sessions in an organized way (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Used examples or illustrations to explain difficult points (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Provided feedback on a draft or work in progress (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Provided prompt and detailed feedback on completed projects (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Q6 During the current school year, to what extent have your graphic design and/or studio arts instructors done the following?

<table>
<thead>
<tr>
<th></th>
<th>Very often (1)</th>
<th>Often (2)</th>
<th>Sometimes (3)</th>
<th>Never (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have students lead in class critiques (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Have students work in small groups during class to critique one another's work (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Humiliated you during critique (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Encouraged you during critique (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Said inappropriate things during critique (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Been creative in teaching methods (6)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Q7 During the current school year, how often has the following occurred in your graphic design and/or studio arts critiques?

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Felt anxious during large class critique (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Felt anxious in small group in class critique (2)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Felt under prepared for in class critique (3)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Felt humiliated during critique by other students (4)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Felt proud to show your work during critique (5)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Instructor was creative in varying methods of critique (6)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Bored (7)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Q8 During the current school year, about how many projects have you been assigned in your graphic design and/or studio arts classes?
- None (1)
- 1-2 (2)
- 3-5 (3)
- 6-10 (4)
- 11-15 (5)
- 16-20 (6)
- More than 20 projects (7)
Q9 During the current school year, about how often have you had discussions with people from the following groups?

<table>
<thead>
<tr>
<th></th>
<th>Very often (1)</th>
<th>Often (2)</th>
<th>Sometimes (3)</th>
<th>Never (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>People of a face or ethnicity other than your own (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People from an economic background other than your own (2)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>People with religious beliefs other than your own (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People with political views other than your own (4)</td>
<td></td>
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</tr>
</tbody>
</table>

Q10 During the current school year, to what extent have your graphic design/studio arts courses challenged you to do your best work?
- Not at all, 1 (1)
- Slightly, 2 (2)
- Moderately, 3 (3)
- Quite a bit, 4 (4)
- A great deal, 5 (5)
- More than enough, 6 (6)
- 7, Very Much (7)
Q11 Which of the following have you done or do you plan to do before you graduate?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Done or in progress (1)</th>
<th>Plan to do (2)</th>
<th>Do not plan to do (3)</th>
<th>Have not decided (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participate in an internship, co-op, field experience, student teaching, or clinical placement (1)</td>
<td></td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>Hold a formal leadership role in a student organization or group (2)</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>Participate in a learning community or some other formal program where groups of students take two or more classes together (3)</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>Participate in a study abroad program (4)</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>Work with a faculty member on a research project (5)</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>Complete a culminating senior experience (capstone course, senior project or thesis, comprehensive exam, portfolio, etc.) (6)</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>Work on a student publication (ALT Magazine, The Grand Views, Bifrost, etc.) (7)</td>
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<td>---------------------------------------------------------------</td>
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</tbody>
</table>

Q12 About how many of your graphic design and/or studio arts courses at this institution have included a community-based project (service-learning)?
- All (1)
- Most (2)
- Some (3)
- None (4)

Q13 Indicate the quality of your interactions with the following people in the Art & Design department.

<table>
<thead>
<tr>
<th></th>
<th>Poor, 1 (1)</th>
<th>2 (2)</th>
<th>3 (3)</th>
<th>4 (4)</th>
<th>5 (5)</th>
<th>6 (6)</th>
<th>Excellent, 7 (7)</th>
<th>Not applicable (8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students (1)</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Academic advisors (2)</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Faculty (3)</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Q14 How much does the Art &amp; Design faculty at Grand View emphasize the following?</td>
<td>Very much (1)</td>
<td>Quite a bit (2)</td>
<td>Some (3)</td>
<td>Very little (4)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Spending significant amounts of time working on projects (1)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td></td>
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<tr>
<td>Providing support to help students succeed in learning appropriate software (2)</td>
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<td>Using learning support services (tutoring services, writing center, etc.) (3)</td>
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<td>Encouraging contact among students from different backgrounds (social, racial/ethnic, religious, etc.) (4)</td>
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<td>Providing opportunities to be involved socially (5)</td>
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<tr>
<td>Providing support for your overall well-being (6)</td>
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<tr>
<td>Helping you manage your non-academic responsibilities (work, family, etc.)</td>
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<tr>
<td>(7) Attending campus activities and events (performing arts, athletic events, etc.) (8)</td>
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<tr>
<td>Attending events that address important social, economic, or political issues (9)</td>
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</tbody>
</table>
Q15 About how many hours do you spend in a typical 7-day week doing the following?

<table>
<thead>
<tr>
<th>Activity</th>
<th>0 (1)</th>
<th>1-5 (2)</th>
<th>6-10 (3)</th>
<th>11-15 (4)</th>
<th>16-20 (5)</th>
<th>21-25 (6)</th>
<th>26-30 (7)</th>
<th>More than 30 (8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparing for class (Sketching, working on computer, printing)</td>
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<tr>
<td>Participating in co-curricular activities (organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.)</td>
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<tr>
<td>Working for pay on campus</td>
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<tr>
<td>Working for pay off campus</td>
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<td>Doing community service or volunteer work</td>
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<td>Relaxing and socializing</td>
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<td>Activity</td>
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<td>(time with friends, video games, TV or videos, keeping up with friends online, etc.) (6)</td>
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<tr>
<td>Providing care for dependents (children, parents, etc.) (7)</td>
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<tr>
<td>Commuting to campus (driving, walking, riding bus, etc.) (8)</td>
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</tbody>
</table>

Q16 Of the time you spend preparing for class in a typical 7-day week, about how many hours are on assigned graphic design or studio arts projects?
- 0 hours (1)
- 1-5 hours (2)
- 6-10 hours (3)
- 11-15 hours (4)
- 16-20 hours (5)
- 21-25 hours (6)
- 26-30 hours (7)
- More than 30 hours (8)

Q17 How many hours per week do you spend attending graphic design and/or studio arts classes?
- 0-2 hours (1)
- 3-5 hours (2)
- 6-8 hours (3)
- 9-11 hours (4)
- 12-14 hours (5)
- 15-17 hours (6)
- 18-20 hours (7)
- More than 20 hours per week (8)
Q18 How many graphic design and/or studio arts classes are you taking this semester?
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- More than 5 (6)

Q19 In which extra-curricular activities are you involved? Check all that apply.
- Seymour Art (1)
- AIGA Student Group (2)
- Theater (3)
- Music (4)
- Athletics (5)
- Student Government (6)
- Campus ministry (7)
- Student Group (Which one(s)?) (8)
- Other (9)
- None (10)
Q20 How much has your experience in Art & Design at Grand View contributed to your knowledge, skills, and personal development in the following areas?

<table>
<thead>
<tr>
<th></th>
<th>Very much (1)</th>
<th>Quite a bit (2)</th>
<th>Some (3)</th>
<th>Very little (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing clearly and effectively (1)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Speaking clearly and effectively (2)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Thinking critically and analytically (3)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Analyzing numerical and statistical information (4)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Acquiring job or work related knowledge and skills (5)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Working effectively with others (6)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Developing or clarifying a personal code of values and ethics (7)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Understanding people of other backgrounds (economic, racial/ethnic, political, religious, nationality, etc.) (8)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Solving complex real-world problems (9)</td>
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<td>----------------------------------------</td>
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</tr>
<tr>
<td>Being an informed and active citizen (10)</td>
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</tr>
</tbody>
</table>

Q21 How would you evaluate your entire educational experience in Art & Design?
- Excellent (1)
- Good (2)
- Fair (3)
- Poor (4)

Q22 How important is your education?
- Very important (1)
- Important (2)
- Neither important or unimportant (3)
- Unimportant (4)
- Very unimportant (5)

Q23 Please rank your priorities on a scale from 1 to 5, with 1 being the most important to you and 5 being the least important.
- School (1)
- Work (2)
- Family (3)
- Friends (4)
- Spirituality, faith, religion (5)

Q24 Please rank who or what motivates you to complete your daily tasks on a scale from 1 to 5, with 1 being the most important to you and 5 being the least important.
- Self (1)
- Teacher (2)
- Family (3)
- Friends (4)
- Spirituality, faith, religion (5)

Q25 What is your primary major?
- Graphic Design (1)
- Studio Arts (2)
- Graphic Journalism (3)
- Art Education (4)
- Other (5)

Q26 How many majors do you plan to complete? (Do not count minors)
- One (1)
- More than one. Please fill in your other major(s). (2)
Q27 Which minors do you plan to complete?
- Art (1)
- Interactive Media (2)
- Other (3)

Q28 What is your class level?
- Freshman/first-year (1)
- Sophomore (2)
- Junior (3)
- Senior (4)
- Unclassified (5)

Q29 Thinking about the current academic term, are you a full-time student?
- Yes (1)
- No (2)

Q30 How many courses are you taking for credit this current academic term?
- 0 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- 6 (7)
- 7 or more (8)

Q31 What have most of your grades in Art & Design classes been?
- A (1)
- B (2)
- C (3)
- D (4)
- F (5)

Q32 Did you begin college at Grand View or elsewhere?
- Started here (1)
- Started elsewhere (2)

Q33 Since graduating from high school, which of the following types of schools have you attending other than Grand View? (Select all that apply)
- Vocational or technical school (1)
- Community or junior college (2)
- 4-year college or university other than Grand View (3)
- None (4)
- Other (5)

Q34 Which is the highest level of education you ever expect to complete?
- Some college but less than a bachelor's degree (1)
- Bachelor's degree (B.A., B.S., etc.) (2)
- Master's degree (M.A., M.F.A., etc.) (3)
- Doctoral or professional degree (Ph.D., M.D., etc.) (4)
Q35 What is the highest level of education completed by either of your parents (or those who raised you)?
  ○ Did not finish high school (1)
  ○ High school diploma or G.E.D. (2)
  ○ Attending college but did not complete degree (3)
  ○ Associate's degree (A.A., A.S., etc.) (4)
  ○ Bachelor's degree (B.A., B.S., etc.) (5)
  ○ Master's degree (M.A., M.F.A., etc.) (6)
  ○ Doctoral or professional degree (Ph.D., M.D., etc.) (7)

Q36 What is your gender?
  ○ Male (1)
  ○ Female (2)

Q37 Enter your year of birth (e.g., 1990):

Q38 Are you an international student or foreign national?
  ○ Yes (1)
  ○ No (2)

Q39 What is your racial or ethnic identification? (Select all that apply)
  ○ American Indian or Alaska Native (1)
  ○ Asian (2)
  ○ Black or African American (3)
  ○ Hispanic or Latino (4)
  ○ Native Hawaiian or Other Pacific Islander (5)
  ○ White (6)
  ○ Other (7)
  ○ I prefer not to respond (8)

Q40 Are you a member of a social fraternity or sorority?
  ○ Yes (1)
  ○ No (2)

Q41 Which of the following best describes where you are living while attending college?
  ○ Dormitory or other campus housing (not fraternity or sorority house) (1)
  ○ Fraternity or sorority house (2)
  ○ Residence (house, apartment, etc.) within walking distance to Grand View (3)
  ○ Residence (house, apartment, etc.) farther than walking distance from Grand View (4)
  ○ None of the above (5)

Q42 Are you a student-athlete on a team sponsored by the Grand View athletics department?
  ○ Yes (1)
  ○ No (2)

Q43 Are you a current or former member of the U.S. Armed Forces, Reserves, or National Guard?
  ○ Yes (1)
  ○ No (2)
Q44 Have you been diagnosed with any disability or impairment?
☐ Yes (1)
☐ No (2)
☐ I prefer not to respond (3)

Answer if Have you been diagnosed with any disability or impairment? Yes is Selected
Q45 Which of the following have been diagnosed? (Select all that apply)
☐ A sensory impairment (vision or hearing) (1)
☐ A mobility impairment (2)
☐ A learning disability (e.g. ADHD, dyslexia) (3)
☐ A mental health disorder (bipolar, schizophrenia, anxiety, depression, etc.) (4)
☐ A disability or impairment not listed above (5)

Q46 Which of the following best describes your sexual orientation?
☐ Heterosexual (1)
☐ Gay (2)
☐ Lesbian (3)
☐ Bisexual (4)
☐ Questioning or unsure (5)
☐ I prefer not to respond (6)
APPENDIX D: GRAPHIC MANUAL FOR VISUAL LEARNING

CREATE ANIMATED GIFs

THE GRAPHIC MANUAL®
for visual learning

Cyndi Wiley
TO CREATE AN ANIMATED GIF, YOU WILL NEED TO TAKE TWO OR MORE IMAGES. IN THIS TUTORIAL, YOU WILL USE PHOTOSHOP CS6 TO PRODUCE THE END PRODUCT. IT HELPS TO HAVE A HEALTHY IMAGINATION TO CREATE SOMETHING INTERESTING. I TEND TO USE MY CORNISH REX CAT, CHICKEN. SHE IS ALWAYS A WILLING PARTICIPANT AND IS NOT CAMERA SHY.

LET'S GET STARTED!

TOOLS I USED FOR THIS TUTORIAL:
1 KITTEN
1 CAN OF SODA
1 IPHONE (TO TAKE PICTURES)
PHOTOSHOP CS6
Open the first image. "Place" each additional image on its own layer.

This example uses 3 images. There are 3 layers, one for each image.

Show the "Timeline."
In the timeline, choose "Create frame animation."

You should now see one "frame" in the timeline. The next step is to add more frames.
At the bottom of timeline panel, click the "duplicate selected frames" icon.

It looks like a piece of paper with a folded corner.

Lather, rinse, repeat for each image layer in your document.

Wow! That was probably too fast. Each image is set to zero seconds by default.

Click the arrow at the bottom of the each image to adjust its timing.

Test your animation so far by clicking on the "play" button.
You can also set the loop to play "forever" for the image to repeat indefinitely.

The image can then gif-out!

Finally... publishing for web

In the dialog box, choose "GIF" and change any settings like the image size before you "save."

Test by opening the newly saved GIF in a browser, like Firefox. GIF-out!
APPENDIX E: BOOK TUTORIAL

all the settings in this dialog box to the last ones you saved (in other words, what they were the last time you clicked the Save button). Clicking Remember makes Photoshop use your current settings the next time you open the "Save for Web" dialog box (whether you click Save or not).

- Animating a GIF

You may think that creating an animation is a complicated process, but it's really not. In Photoshop, all you do is create a slideshow that plays automatically. You can control which images the program uses, the amount of time it displays each one, whether it loops the slideshow (automatically starts over), and so on. This kind of control is really handy when you're making website ads. For example, if you're designing a 140×140 pixel ad for your costume shop, you need to include a logo, a few costume

POWER USERS' CLINIC

Matching and Snatching Colors on the Web

If you're designing an image destined for an existing web page, you may find yourself in a color-matching conundrum. If you need to match the color scheme or colors in a company logo, you can do that by finding out the colors' hexadecimal values.

Hex numbers, as they're affectionately called, are six-digit, alphanumeric programming codes for color values. The first two digits represent red, the next two represent green, and the last two represent blue. Since your image will appear only onscreen, RGB values are the only ones that matter. You can find a color's hex number in several different ways:

- Grab the Eyedropper tool by pressing I and then click a color in an open Photoshop document to load it as your foreground color. Next, choose Window→Color to open the Color panel and then, from the panel's menu, choose Copy Color's Hex Code. You can also choose "Copy Color as HTML" from the same menu; it does the same thing except that it adds the HTML tag "Color" to what's copied to your computer's Clipboard.

- Using the Eyedropper tool, click a color in an open Photoshop document and then click the foreground chip to open the Color Picker. The color's hex number appears at the bottom of the dialog box in the field labeled #.

- Choose Window→Info and, from the panel's menu, choose Panel Options. In the dialog box that appears, from the Mode menu, choose Web Color and then click OK. After that, when you mouse over a color in your Photoshop document, its hex number appears in the Info panel no matter which tool is currently active.

- Snatch color from anywhere on your screen, whether it's on your desktop or in a web browser. In Photoshop, click the foreground color chip to open the Color Picker, mouse over to your document, and then click and hold your mouse button down while you're in the Photoshop window and keep it held down as you mouse outside Photoshop. Paint to the color you want to snatch, and then release your mouse button. As long as you first click within Photoshop, your cursor remains an eyedropper no matter where you drag it. (You can do the same thing with the Eyedropper tool or by pressing and holding Option [Alt] while using the Brush tool.)

Once you've captured the hex number, you can enter it in the field marked # at the bottom of the Color Picker dialog box, or use it in your favorite HTML editor when you're building the web page (just choose Edit→Paste).
samples, and a 10% off coupon. Since you'll never fit all that into a tiny space, you can make an animated GIF that cycles through several images automatically. Here's how:

1. **Create the images you want to string together, putting each image on its very own layer within the same Photoshop document.**

2. **Open the Timeline panel by choosing Window→Timeline (named Animation in previous versions), and create a frame animation.**

   At the bottom of the Application Frame or near the bottom of your screen if you've got the Application Frame turned off, Photoshop displays a long horizontal panel called Timeline. This panel also has controls for video editing (see Chapter 20), so you need to switch it to animation by clicking the downward-pointing triangle to the right of the Create Video Timeline button (Figure 17-5, top). Choose Create Frame Animation and then click the Create Frame Animation button to the menu's left. Photoshop then displays one frame representing what's currently visible in the Layers panel (each frame serves as a placeholder for the image you want to show onscreen).

3. **Add another frame.**

   At the bottom of the Timeline panel, click the "Duplicate selected frames" icon (it looks like a piece of paper with a folded corner) as shown in Figure 17-5 (middle) to create a new placeholder for the next image in your animation. Initially, it contains the same image as the starter frame (don't worry; you'll fix that in the next step).

4. **In the Layers panel, use the visibility eyes to display only the layer containing the next image in your animation.**

   When you turn off the visibility of every layer except the one you want to show next, Photoshop displays the visible layer in the frame you created in step 3. That's all there is to it! There's no dragging or dropping, just showing and hiding using the layers' visibility eyes.

5. **Repeat steps 3 and 4 until you've made all the frames of your animation.**

6. **Press the Play button to see the slideshow.**

   Photoshop displays your animation in the main document window. The images flash by quickly, but don't worry—you'll learn how to make 'em stick around longer in the next section.

You just created your first animated GIF! There's still some work to do, but you're more than halfway there.

---

**NOTE** Photoshop lets you open animated GIF files and preserve the individual frames from which they're made. This is extremely helpful when you need to edit an existing animation and don't have the original files because it keeps you from having to start from scratch.
Editing Your Animation

Once you've made all the frames in your animation, you can edit it in the following ways:

- **Frame delay.** To control the length of time each image is visible, use the pop-up menus at the bottom of each frame (Figure 17-5, middle). These menus include options ranging from No Delay to "10 seconds." If you want to use a duration that's not listed, choose Other and then type a number in the Set Frame Delay dialog box. You can set the duration for each frame individually, or change several at once by Shift- or Ctrl-clicking (Ctrl-clicking) to activate them and then changing the duration of one of 'em.

- **Set Loop Count.** To make the animation play over and over, you can set it to loop a certain number of times. Click the down-pointing triangle at the bottom left of the Timeline panel and then choose Once, 3 Times, Forever, or Other from the pop-up menu. If you choose Other, Photoshop opens the dialog box shown in Figure 17-5 (bottom), where you can enter any number you want.

---

**FIGURE 17-5**

Top: The Timeline panel does double-duty for both video and animation, so you have to tell it which one you want to work with, using the menu shown here. Click the button to its left to apply your choice, and Photoshop sets up the panel accordingly.

Middle: Use the playback buttons at the bottom of the Timeline panel to move through your animation frame by frame. Photoshop highlights the active frame, as shown here. You click a different frame to activate it.

Bottom: Open this dialog box by clicking the Set Loop triangle (labeled, top) and then choosing Other. This dialog box lets you determine how many times the animation plays. If you want it to keep playing without stopping, choose Forever.
**Rearrange frames.** To change the frames’ order, simply drag them into place (easy peasy!).

**Delete frames.** Just like most panels in Photoshop, this one has its own little trash can icon. To zap a frame, activate it and then click the trash can or drag it onto the trash can. To delete more than one frame, activate them first by Shift- or Ctrl-clicking (Ctrl-clicking) them and then click the trash can. In the resulting “Are you sure?” dialog box, click Yes. Alternatively, choose Delete Frame from the Timeline panel’s menu.

**Tween frames.** At first, there isn’t any transition between your frames; the animation works just like a regular slideshow, with one frame abruptly giving way to the next. To make the frames fade in and out, you can add **tweening** (short for “in-betweening”). Just tell Photoshop which frames to tween, along with how many frames of fading you want, and it adds the new frames for you. When you play the animation, the frames blend softly into one another. Figure 17-6 has the details.

---

**FIGURE 17-6**
Top: To fade the first frame (shown in Figure 17-5) into the second, activate the first one and then click the Tween button (circled, bottom). In the Tween dialog box, choose Next Frame from the Tween With pop-up menu, enter 5 in the “Frames to Add” box, and then click OK.

Bottom: Here, Photoshop has added five additional frames (numbered 2–6) that gradually change opacity. When you play the animation, it’ll look like the text and Chihuahua photos fade together. For a more gradual fade, enter 10 in the “Frames to Add” box.

---

**NOTE** Once you start adding tweened frames, you may need to speed up the whole animation’s frame duration so it doesn’t take forever to play!
You can create all kinds of special effects using tweening, though you'll need to play around with it to learn what you can do. It's all about setting up a layer for each frame, creating the frames, and then adjusting what you want to happen between each frame. For example, if you move the contents of a layer in one frame, you can use tweening to make it look like the object is moving. You can also turn layer styles on or off, add solid-colored frames to make the animation look like it fades into that color, and so on. The creative possibilities are endless.

**Saving Your Animation**

When you've got the animation just right, you need to do just a couple of things before you post it on the Web. Save it as a Photoshop (PSD) document so you can go back and edit it later, and then do the following:

- **Optimize it.** Choose Optimize Animation from the Timeline panel's menu to create a slightly smaller file, which makes the animation download faster and run more smoothly. The resulting Optimize Animation dialog box has two settings:
  - **Bounding Box** crops each changed frame to the part that's different from the previous frame. This is like running the Trim command on each frame, so that each one is cropped closely to the content.
  - **Redundant Pixel Removal** makes unchanged pixels transparent in subsequent frames, making the file a little smaller.

Both settings are turned on straight from the factory, but Photoshop doesn't apply them until you choose Optimize Animation and then click OK.

- **Save it as an animated GIF.** Last but not least, choose File → "Save for Web" and, in the upper right of the resulting dialog box, choose GIF from the unlabeled format pop-up menu (below the Preset menu). When you do, Photoshop activates the Animation section at the bottom right of the dialog box, giving you one last chance to change the Looping Options and preview your hardwork. When you've finished, click Save and exclaim with gusto, "I'm an animator!"

**Designing a Website Favicon**

You know those tiny little icons on the left edge of your web browser's address bar (see Figure 17-7). They're called **favicons** (short for "favorites icons"), and they're great for adding a bit of branding to web pages. They show up not only in web browsers, but also in news feeds (clickable headlines from your favorite websites that you can access through a newsreader program or your browser). Creating them in Photoshop is a snap, and you'll be designing them like a pro after you read this section.

The first step is to spend some quality time looking at other sites' favicons. Your goal is to brand your website with a graphic that's exactly 16x16 pixels—no more, no less. It's tough to design anything that small that's recognizable, but it can be done. For example, you might use a portion of your logo rather than the whole thing or your company's initials rather than its full name.
APPENDIX F: YOUTUBE VIDEO

Photoshop Tutorial: Make an Animated Gif -HD-

Published on Oct 12, 2012

In this tutorial, you will learn how to make an animated gif in Photoshop CS6.
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