Learning to Be in the Digital Era:
A Holistic Learning Framework for Design Education

Thesis

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Abstract

Design education is in an interesting place. Design as a discipline is currently and continually in a state of transformation due to ever changing societal contexts. How we go about educating and preparing the designers of the future needs to be constantly evaluated and collaboratively explored to continue to be relevant and increasingly nimble in our methods. Add to this the fact that design educators are now welcoming to their classrooms a new type of student without existing precedent. The “Net Gen” students are simultaneously highly digitally connected yet still interested in the physicality of the traditional design spaces. To address the changing needs of the design discipline, design educators (and educators in general) need tools that will facilitate the sharing of ideas and methods across disciplines and reframe the ways we understand the learning needs of our students. This thesis proposes two such tools.

The first tool, Meta-Keyword Phrases, seeks to be a relatively simple idea to implement that is made possible by digital search tools and the increasingly connected nature of web-based information. The Meta-Keyword Phrases have the potential to increase the opportunities for serendipitous discovery of teaching and learning resources by flipping the orientation of traditional keyword searching. The Meta-Keyword Phrases are based on a holistic framing of the types of learning which every student must achieve throughout their education;
Learning to Know, Learning to Do, Learning to Work Together, and Learning to Be.

The second tool, the Learning Map Framework, is a scalable way to understand and visualize the relationships between the above-mentioned types of learning as they apply to any particular learning activity or series of activities. This thesis first uses a series of Web 2.0-based learning activities as a toolbox to demonstrate how the Learning Map Framework can be used to understand, evolve, and reinterpret learning activities across various academic disciplines. Second, the Learning Map Framework is demonstrated as a tool for fostering a holistic approach to course and curriculum design.

Together, these two proposed tools have the potential to help create learning experiences that are lasting and effective for our students, while allowing educators to more easily share and collaborate on ways to foster holistic student learning.
Dedication

This thesis is dedicated foremost to my loving partner, Kate, who has patiently supported my academic pursuits and to my children, Isabella and Ezra, who drive me to want to do my part to create a better world to hand off to them.

Additionally, this thesis is dedicated to the many outstanding educators from whom I have had the privilege of learning. While there have been many, two stand out in particular:

To my high school history teacher and Academic Decathlon coach, Mr. James Ebert, who taught me how to embrace my curiosity, take efficacy in my learning, and that “learning” and “fun” are not mutually exclusive conditions.

To my high school band director, Mr. Larry Busching, who taught me the importance of passion for our pursuits, what could be accomplished through rigor and perseverance, and showed me what an educator who truly cared about students and loved his job looked like. Rest in Peace: August 12, 2004.

Finally, to my Grandfather, William “Bill” F. Belling, who passed on the day I finished writing this thesis. He was a man who’s commitment to God, Country, Community, and Family were without precedent. He was an inventor, a designer, and a craftsman. Among many other things, he taught me that “if something is already broken, you can’t break it more, you can only fix it.” Rest in Peace: June 3, 1932 — July 20, 2012.
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I am indebted to my many colleagues in the MFA Program in the Department of Design at The Ohio State University whose discussions and support provided me with the roadmap for this endeavor.

Finally, I cannot find words to express my gratitude to the students who have allowed me to be their guide in their discovery of design over the last three years. It has been this experience of sharing design with them that has given me focus and allowed me to discover where my passion for design will best serve the discipline.
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Chapter 1: Introduction

1.1: A Research Journey

This thesis is the result of a research journey that started in one place and ultimately found itself in another, completely unexpected place. At the onset of this journey, I knew a few things. I knew that I was interested in the possibilities opened up to design education by the relatively recent prominence of the web, Web 2.0 technologies, and the digitally connected era we have entered. I knew that changes in the “Net Generation” of students provided an interesting opportunity to reconsider the ways we approach design education. I knew that the prominence of Maker, Hacker, & D.I.Y. communities complimented the fact that I was not interested in total online options for design education. There was and still is a strong need and interest in the physicality of design. I knew that with the recent discussions surrounding the role of design beyond the traditional service and making scope, design education must begin figuring out how to retain the “old” while preparing students for the “new” scope of design professions.

Armed with this, I set forth to attempt to understand more fully the ways in which the potential of Web 2.0 technologies could be exploited to facilitate learning within the studio-based learning environment at the collegiate level of design education. It was my hypothesis that by understanding the educational
needs of design students and matching these to a set of Web 2.0 tools that are suited to supporting these needs, studio-based learning environments could be created that have increased levels of interaction and engagement between students, their peers, and their instructors. By embracing the communication preferences and expectations of the next generation of students, educators would be able to use the efficiencies of these technologies to instill more content in increasingly dynamic contexts.

In Chapter 4, I cover more fully the efforts that I went through in pursuit of that hypothesis. While today I would still stand behind that hypothesis and intend to explore it more in my academic future, in the process of pursuing an understanding of Web 2.0 as it may apply to design education I stumbled upon a more pressing and important concern.

There seems to me to be a disconnect between the ways that design educators approach the work they do as designers and the work they do as educators. As designers, we tend to be very good at sharing our own expertise and seeking out expertise from others outside our discipline when needed. As educators though, we do not seem to share as readily the work we do in the education space. Additionally, we do not as readily seek the expertise of our teaching colleagues within or outside of the design discipline. Why is this? What conditions have led to this? What can be done to change this? While these conditions are not fully explored within the following document, it is these
questions that led to the proposed tools in this thesis that seek to begin to address that final question.

The tools proposed in this thesis are built upon the need to understand learning concisely and then facilitate the sharing of learning knowledge, not just in design education but throughout the education space generally. The tools proposed are not so much about Web 2.0 in education, though Web 2.0 tools will serve as a toolbox to be used for examples and as broader ideas. The tools proposed in this thesis are ideas that are made possible by the relatively recent prominence of the web, Web 2.0 technologies, and the digitally connected era we have entered.

1.2: Problem Statement

Design educators are being faced with challenges from many sides. A new demographic of students, Generation-C or the “Net Gen”, are challenging the methods and expectations of instruction. The design discipline is shifting identities towards roles of service and systems-thinking while trying to retain its roots in skills-based practice. The world is getting flatter economically while cultural sensitivity and understanding are getting more complex (in a good way). Design educators cannot afford to keep reinventing the wheel and must find ways to share their collective knowledge and increase the levels of efficiency, efficacy, and engagement.
Design educators need tools to facilitate sharing that work to unite their efforts with other educators within and outside of design, while respecting the diversity of design specializations. Additionally, they need new ways to approach understanding and analyzing learning activities, courses, and curriculums that move beyond the traditional design roles of making and doing to providing a more holistic view that embraces educating the complete learner.

1.3: Aim & Scope

The aim of this thesis is to develop and propose a set of possible tools and a framework for thinking about and graphically representing various learning experiences to facilitate the sharing of education related research and promote a holistic view of design education that embraces educating the complete learner beyond traditional notions of fact-based knowledge and technical skills.

The scope of this thesis will strive to focus on undergraduate design education, predominantly within the United States and other industrialized world economies.

1.4: Thesis Overview

1.4.1: Research Question

How can a framework be developed to facilitate the understanding of the learning needs of current and future design students?
How can this framework then be used to begin to visually explore the potential ways in which we may reframe and evolve assignments, courses, and curriculums to facilitate broader learning goals within learning environments at the collegiate level of design education?

**1.4.2: Hypothesis**

It is my belief that once a framework is developed for reframing our understanding the educational needs of design students, it can then be visualized in a manner that can be used to explore the ways in which our assignments, courses, and curriculums can be evolved through the utilization of various digital and analogue technologies and methods to help create learning environments that have increased levels of interaction and engagement between students, their peers, and their instructors. Additionally, the use of these technologies and methods can be easily shared within the education community to assist educators in developing course and curriculum content that improves learning and provides students with more holistic learning experiences.

**1.4.3: Proposed Contribution**

As suggested in the abstract above, this project seeks to provide a framework for understanding learning that can be used by design educators to continue the development of a design education discipline. Using a broad understanding of the types of learning a student must attain: Learning to Know,
Learning to Do, Learning to Work Together, and Learning to Be, the framework can be applied to any number of learning experiences. These can then be shared in a way that stands outside of the specifics of tools, methods, and/or academic discipline, thus allowing educators to have a common way to discuss and document the work they do in the classroom, and compare differing approaches using a common set of criteria.

To exemplify the proposed framework, I will use case studies of Web 2.0 technologies from many differing classroom types, both inside and outside of design, to explore possible benefits. The choice to explore Web 2.0 technologies is based on my interest in these technologies and my personal assertions of their importance, but this is intended to be just one of many possible applications of the framework.

The needs of design education cannot be filled by any one person and it is understood that Web 2.0 technologies will not be the only ways, or always best ways, to address the issues involved in preparing design students to be the designers of tomorrow. Therefore, the framework will be provided also as a “call-to-action” for other design educators to begin using it in support of their interests, tools, and methods.

1.4.4: Definition of Audience

This thesis is intended for design educators who teach at the Post-Secondary Level. While the assumption could be made that this will primarily
include educators at the University level, given that many have a requirement
towards research already established, I intend this to be a framework that, if
adopted, could also be used at any academic level, within any academic
discipline, as a resource for seeking out tools, methods, and/or strategies that can
be used to address the issues they may face in their classrooms and curriculums
as well.
Chapter 2: Cultural Context

2.1: Chapter Overview

Every investigation needs to start somewhere. Often, the case is such that the best place to start is unclear; fuzzy at best. Such is the case here as well. That stated, it would seem logical, the designerly thing to do, that before attempting to dive into the deep trenches of understanding design education, we should first try to discover and identify the constraints involved. While the following chapter will dig into the context of design and education, and the complex considerations at their intersection, first we need to unveil a few key threads that are running through our greater societal framework that will help guide the future discussion that is to follow.

While this thesis is being written for a reading audience of educators, it is important to keep in mind that it is actually being written for the benefit of design students. The students entering colleges in the most recent years are a fundamentally different cultural generation of people than we have seen before. We will spend this chapter understanding this new generation and the tools, technologies, and ideologies that they are bringing to their expectations about learning, making, and doing.
While there are certainly many specific threads that result from an understanding of this new generation, in the following pages we will look more closely at just a few key ideas that seem to be particularly relevant to the space of design education. What follows will be a brief identification of the importance of understanding the tools and technologies of Web 2.0 and the subcultures they enable of “Do It Yourself” (D.I.Y.), hacking, highly targeted social groupings, and expectations on sharing and open-information cultures. With that, let’s get into it.

2.2: Net Generation & The Need for New Teaching Methods

The undergraduate students in college now are part of a unique generation. The demographic following Generation X, born between 1981 and 1999 (or thereabout), is commonly being referred to by scholars as Generation Y, Millennial Generation, Generation Next or Net Generation (Business Week) (PBS). Its members are often referred to as Millennials (Strauss & Howe, p. 324) (Washington Post) or Echo Boomers (USA Today). More recently, Nielsen has dubbed this demographic Generation-C to reflect the degree to which they are digitally connected (Fox). All of these differing titles speak at least to how different this generation is from the previous generations.

Generation Y is more radically and culturally tolerant than previous generations (Oberlin College). The majority of Generation Y is culturally liberal with many favoring same-sex marriage rights for the LGBT community among other politically liberal stances (CIRCLE).
Depending on social and economic conditions, this generation is generally marked by an increased use and familiarity with communications, media, and digital technologies. In their 2007 book, Junco and Mastrodicasa provided research-based information about the personality profiles of Millennials, especially relating to higher education. They conducted a large-sample (7,705) research study of college students. They found that Next Generation college students were frequently in touch with their parents and they used technology at higher rates than people from other generations. In their survey, they found that 97% of students owned a computer, 94% owned a cell phone, and 56% owned an MP3 player. They also found that students spoke with their parents an average of 1.5 times a day about a wide range of topics. Other findings in the Junco and Mastrodicasa survey included that 76% of students used instant messaging (IM), 92% of those reported multitasking while IMing, and 40% of students used television to get most of their news and 34% the Internet. This generation spends at least 3.5 hours a day online. The rise of instant communication technologies made possible through use of the internet, such as email, texting, and IM and new media used through websites like YouTube and social networking sites like Facebook, Myspace, and Twitter, may explain the Millennials' reputation for being somewhat peer-oriented due to easier facilitation of communication through technology.
In his 2009 book, “Net Generation, Grown up Digital: How the Net Generation Is Changing Your World” author Don Tapscott provides eight norms that we can associate with these individuals.

1. *They want freedom in everything they do, from freedom of choice to freedom of expression...*
2. *They love to customize, personalize...*
3. *They are the new scrutinizers...*
4. *They look for corporate integrity and openness when deciding what to buy and where to work...*
5. *The “Net Gen” wants entertainment and play in their work, education, and social life...*
6. *They are the collaboration and relationship generation...*
7. *The “Net Gen” has a need for speed- and not just video games...*
8. *They are the innovators...*

These norms manifest themselves in many ways, from the desire to change jobs as they see fit to the freedom to consume media however they choose, regardless of content creator or consumption device. They also reflect on this generation’s expectations from education. For the Net Generation, “at their fingertips they have access to much of the world’s knowledge. Learning for them should take place where and when they want it. So attending a lecture at a specific time and place, given by a mediocre professor in a room where they are
passive recipients, seems oddly old-fashioned, if not completely inappropriate” (Tapscott, p 94). This generation is not afraid to question an instructor on the validity or source of information. In my own lecturing experience, I have had students raise a hand in the middle of lecture several times with comments that begin, “That was really interesting, but I Googled this topic just now and it says...” I personally find this to be a great moment to demonstrate the academic process, but students outside of the Net Generation rarely would attempt such a thing at the undergraduate level in a large lecture. Tapscott cites a similar situation where more quickly than the professor can find a particular statistic in his lecture notes, a sophomore student was able to provide the answer using his Blackberry cell phone.

Christy Price, EdD, a psychology professor at Dalton State College, conducted a qualitative analysis of narratives provided by more than a hundred Millennial learners (Bart) and then outlined the instructional implications of her findings with these Five R’s for engaging Millennial students:

1. Research-based methods: Research suggests Millennials prefer a variety of active learning methods. When they are not interested in something, their attention quickly shifts elsewhere. Interestingly, many of the components of their ideal learning environment – less lecture, use of multimedia, collaborating with peers – are some of the same techniques research has shown to be effective.

2. Relevance: Millennials have grown up being able to Google anything they want to know, therefore they do not typically value information for information’s sake. As a result, the professor’s role is shifting from disseminating information to helping students apply the
information. One of the greatest challenges for teachers is to connect course content to the current culture and make learning outcomes and activities relevant.

3. **Rationale:** Unlike Boomers who were raised in a more authoritarian manner in which they more readily accepted the chain of command, Millennials were raised in a non-authoritarian manner and are more likely to comply with course policies when teachers provide them with a rationale for specific policies and assignments.

4. **Relaxed:** Millennials prefer a less formal learning environment in which they can informally interact with the professor and one another. In interviews with students, the term “laid back” was used repeatedly.

5. **Rapport:** Millennials are extremely relational. They are more central to their parents’ lives than previous generations and are used to having the adults in their lives show great interest in them. They appreciate it when professors show that same interest, and they seem to be more willing to pursue learning outcomes when instructors connect with them on a personal level.

According to Price, “The idea here is student learning outcomes, and getting students to achieve learning outcomes is a persuasive endeavor...

Students are going to be more likely to work toward achieving their learning outcomes if they have a positive rapport with us... You don’t have to be their best friend. You just have to be perceived as being on their side.”

This all supports the notion that education styles and methods will need to evolve to support the education of this new breed of students. Many educational fields have acknowledged this, yet in many cases, design seems to still be
predominantly trying to educate the 1920s Bauhaus student, though this student now has a laptop computer and the Adobe Creative Suite.

**2.3: Making, Hacking, & The D.I.Y. Ethic**

The Do It Yourself, or more commonly D.I.Y. or DIY, Ethic refers to the idea of individuals completing tasks themselves, rather than relying on the traditional, mainstream avenues to provide solutions for them by the larger culture. Central to this ethic is the idea of empowering individuals and small communities to learn and acquire the skills to do whatever it is that they need to do themselves, rather than relying on experts or commercially available solutions.

Stemming out of the Punk subculture of the 1970s, upon experiencing the fact that the music and culture they wanted to make was not being supported by the established popular music industry, bands saw fit to record, distribute, and promote their music themselves. To do so, the bands needed to seek out and learn the needed skills themselves, and develop ways to record and promote themselves using tools and means available to them. This idea of using whatever happens to be available to the individual or community at the time, whether it be tools, information, or resources, to achieve the results they desire, has become central to the DIY Ethic. In this way, a strong correlation could be made to the philosophies of the Arts and Crafts movement of the 1900s, which sought to
reconnect people with hands-on activities and the aesthetics associated with them.

The Arts and Crafts movement was a direct response to the increased trends towards mechanization and mass-production resulting from the Industrial Revolution. For William Morris and other proponents of the Arts and Crafts movement, it was a call to retain the skills and aesthetics from the handmade artisan-created styles of the past. In much the same way, the DIY Ethic seeks to empower people to take a sense of agency in their daily lives by retaining a considered and hands-on approach to what they do, how they do it, and the things they use, consume, and create.

Those who subscribe to the DIY Ethic do so for a number of reasons which fall along a diverse spectrum. At one end, there are those who see the DIY Ethic as a political response which stands against the increasingly visible trends of mass-production, conspicuous consumerism, waste, and the industrial corporate philosophy of planned obsolescence. At the other end of the spectrum are people who are politically neutral on these issues, but see DIY as an extremely personal, if not spiritual, approach to living that allows them to feel connected to the things they do and the stuff they own. Obviously, many individuals find that they fall between these two extremes, and many others are participating in many of the activities claimed by supporters of the DIY Ethic without conscientiously being a part of the subculture.
The effects of the DIY Ethic can be seen in many ways today, from the recent surge in homeowner-led remodeling and the popularity of cable channels such as HGtv, TLC, DIYnetwork, and Discovery Home, to the rise in popular interest in various types of crafting hobbies and the rise of Maker and Hacker subcultures. Editor in Chief of “Craft Magazine” Carla Sinclair sums up the DIY community like this.

“This DIY renaissance embraces crafts while pushing them beyond traditional boundaries, either through technology, irony, irreverence, and creative recycling, or by using innovating materials and processes...the new craft movement encourages people to make things themselves rather than buy what thousands of others already own. It provides new venues for crafters to show and sell their wares, and it offers original, unusual, alternative, and better-made goods to consumers who choose not to fall in step with mainstream commerce." (Sinclair)

Along with the new crafting movement, another subculture has arisen that embraces the DIY Ethic; that of the Maker community. The Maker subculture tends towards a more technology-based and engineering-oriented set of interests. The members of this community can more often than not be found creating with skills from the disciplines of electronics, robotics, 3-D printing, and the use of CNC tools, as well as more traditional activities such as metalworking, woodworking, and traditional arts and crafts. Evidence of this subculture can be found in the rise of over 100 “hacker-spaces” in the US (Lahart). “Hacker-spaces”
are community shops where access to tools, resources, and information regarding the above mentioned skill-sets are open to either the public or members of the organization supporting the space.

Another manifestation of the DIY Ethic comes in the way of the Hacker community. A hacker can be defined as “a person who enjoys exploring the details of programmable systems and stretching their capabilities, as opposed to most users, who prefer to learn only the minimum necessary (Raymond).” It should be clarified first that this is different from the popular media usage of the term to refer to a malicious meddler who tries to discover sensitive information by way of various electronic means, who is technically called a “Cracker.” The Hacker community shares an interest in writing computer code that allows them to perform tasks more easily, efficiently, or previously unable to be performed as well as a belief in what is known within the community as the Hacker Ethic. For the scope of this writing, Hacker Ethic’s tenets can be summarized as a commitment to the ideas of sharing, openness, decentralization, free access to computers — and anything which might teach you something about the way the world works— and a commitment to world improvement and increasing quality of life generally (Levy). Many important technological and cultural ideas today have been products of the Hacker community. Most notably have been the Internet, the World Wide Web, the GNU Project, the Linux kernel, many of the common programming languages such as HTML and CSS, as well as many of the central ideas behind the Creative Commons movement for sensible copyright law.
Additionally, the notion of creating the workarounds needed to do things that an individual could not previously accomplish is a central idea to the larger DIY Ethic, leading to the use of the term “life-hacks” when this notion is applied outside of computer programming.

From this understanding of the subcultures of Making, Hacking, and the D.I.Y. Ethics based movements, it is clear to me that while digital tools are situated to provide interesting possibilities for the ways in which we might educate future designers, there is still a strong desire to maintain a relationship with the physicality and materiality aspects of this education. That is to say, I am not very interested in removing the physical aspects of design education to the online environment. I am not interested in what a design education would be in a completely online environment. I am interested in the ways that digital and web-based tools can accentuate and support new approaches to the existing ways we teach design, in the physical locations found at colleges and universities.

2.4: Tools & Tech of Web2.0

Tools and technologies are most certainly not the only area with potential for design education to adopt to facilitate a connection with the Generation-C, but they are a topic of great interest to this researcher and potentially a major focus of this thesis. Later in this writing, tools and technologies will be used as a filter to select relevant examples to be used for the discussion to come. With this identified, here seems to be a good place to establish some definitions
surrounding some of these tools and technologies to establish a common language for the forthcoming discussion.

**Web 2.0:** A loosely defined term for the second generation of the World Wide Web in which content is user-generated and dynamic, and software is offered that mimics desktop programs. Web 2.0 largely reflects a new way of viewing the internet as a medium in which interactive experience, as blogs, wikis, forums, etc, plays a more important role than simply accessing information. Web 2.0 applications generally go beyond displaying individual pages of static content and allow a community of users to interact with the site and each other by adding or updating the content. The term was coined by Darcy DiNucci in 1999, though she was discussing designing web sites for new hardware platforms (Howe).

**Blogs:** A blog is a website where entries or posts are listed in chronological order. Blogs commonly allow for readers to provide comments which are posted along with the original entry (IIG). Blog is a shortening of the term "weblog" and first appeared in English usage in 1998. Popular examples include Blogger (blogger.com/) and WordPress (wordpress.com/).

**Microblogging:** Microblogging is a form of blogging where users provide brief period updates (often on a frequent basis throughout the day) and publish them on microblogging platforms. The term came into predominance somewhere between 2006 and 2007 depending on the source referenced. You’ve probably heard of Twitter (twitter.com/), which is a Microblogging tool. Microbloggers can submit their updates through the web itself or through text messages, instant
message, or even email (IIG). Other popular examples include Tumblr (tumblr.com/) and Posterous (posterous.com).

**RSS:** RSS is a syndication format, first developed in 1999, that allows websites and blogs to distribute their updated, dynamic content as feeds to users. Instead of having to visit the website, users can sign up for the feed provided by the website or blog and using an RSS reader or aggregator, access the feed. Users can sign up for as many feeds from different websites as desired and then access and manage those feeds all at once using their RSS reader (IIG). Many e-mail clients and web browsers have RSS readers built into their feature set. Additionally, Google Reader (reader.google.com) is one of the most popular web-based clients. Also, all major operating systems have many stand alone RSS aggregator softwares developed for use.

**Photo Sharing:** The first photo sharing sites originated during the mid to late 1990s. Photo sharing tools allow users to upload and post their photographs online to share them with other users (IIG). Popular options include Flickr (flickr.com/), Shutterfly (shutterfly.com/), and Picasa (picasa.google.com/)

**Podcasts:** The term "podcasting" was first mentioned by Ben Hammersley in The Guardian newspaper in a February 2004 article about the new medium. A Podcast is a digital audio (now video, too) that is distributed by way of the Internet for playback on a user’s computer or portable media device – a mp3 player such as an iPod (IIG).
**Social News and Bookmarking:** Social bookmarking allows web users to save, organize and share their bookmarks of web pages on the Internet (versus their own computers). Social news sites allow users to submit web pages and articles and have other users vote on them with the number of votes determining which articles are presented on the social news site (IIG). Popular examples include Delicious (delicious.com/), Digg (digg.com/), StumbleUpon (stumbleupon.com/), and reddit (reddit.com/)

**Social Networking:** Social networking services are websites that allow online users to connect and share information with other online users (IIG). Popular examples include Facebook (facebook.com/), MySpace (myspace.com/), and Google+ (plus.google.com/)

**Video Sharing:** Video sharing allows users to upload and share videos. Other users can watch the videos, comment on them, share them with other users and even embed them on their own websites and blogs (IIG). Popular examples include YouTube (youtube.com/), Vimeo (vimeo.com/), Viddler (viddler.com/), and blip.tv (blip.tv/)

**Wikis:** A wiki is a collaborative website that allows users to contribute to and edit the content on the website. Wikifarms host multiple wikis and provide tools for users to create their own wikis (IIG). Popular examples include Wikipedia (wikipedia.org/), PBworks (pbworks.com/), Google Sites (sites.google.com), and TiddlyWiki (tiddlywiki.com/).
2.5: Conclusion

In the previous pages we have begun to establish several societal trends that are contributing to the subtle but important shifting of the ground upon which design education sits. Among these trends is the rise of the Millennial demographic of students who are now bringing to colleges and universities a new set of expectations and a high level of comfort with digital technologies. Additionally, the trends of making, hacking, the D.I.Y. Ethic, and a new crafting movement not only exhibit a complementary set of interests towards art and design, but also open possibilities for new approaches for engaging and connecting with students in the design classroom.

We have also established some common definitions and language to discuss more recent advancements in the digital and web-based technologies. This will be useful as we move forward to discuss the potential these tools may have in altering and transforming the ways in which we think about and educate students in the formal design classroom.

In the next chapter, we will begin to look more specifically at the context of design education.
Chapter 3: Framing Design Education

3.1: Chapter Overview

In the previous chapter, we began to understand some key points about the greater context affecting design educators today – from the changing demographics and psychographics of the students entering our classrooms to the issues of tools, technology, and subculture that are part of the myriad of potential constraints that we may attempt to work within as we prepare the designers of the future. That was the macro contextual view. Now, it seems beneficial to start to look into the micro context of design education.

I would like to provide a complete summary of the history of design education and the ways in which it sprung out of a combination of art education and a general education designed to prepare students for working in industrialized economies. I would like to be able to provide a complete understanding of the state of design education today, which is in a state of flux, alongside design in general, questioning its role as the global industrialized economy transitions largely from a goods and services economy to a services and information economy. I would like to be able to provide these because I have been unable to find them myself and I feel that they are important and would be a significant contribution to the discourse of design education. Unfortunately
though, I will not be able to provide these. These topics each would require a thesis onto themselves, and as such are simply beyond both my established scope and my stated interests.

In the pages ahead, what I will be able to provide is a brief summary into two micro-aspects of the larger design education context. To support what will come later in this thesis, I will present the following. First, I will establish an idea that I will refer to as the Promise of design education. Briefly, the Promise refers to the central "why" we do what we do to participate in a particular group, in this case the "group" is that of designers. Then, I will introduce a bit about the current discussion and critique surrounding the state of design education today and the questions surrounding the purpose of a formal design education.

3.2: The "Promise" of Design Education

Design students, mentored by design educators, hope to one day make their way in the world as members of a particular group of people. These people are called designers. Whenever we are dealing with a group of people of any sort, we have to understand how the group has come to exist. We have to ask "why" anyone joins, contributes to, or participates in the group. This can been seen to be true for all groups from The Boy Scouts of America and High School Marching Band to the Animal Liberation Front. The “why” in question might be a fundamentally shared belief; Citizenship, the love of music, or the rights of animals, respectively, in the previous examples. Sometimes it may be a shared
goal, such as the case of the followers of Martin Luther King, Jr. and Malcolm X during the late 1950s through the 1960s in the United States. While these two groups did not see eye-to-eye on the means to achieve their goal, they were unified by the shared goal of Civil Rights for African Americans. The purpose of this writing is not to talk about these particular groups, but they serve as good examples for illustrating the fact that a central “why” is one of the components necessary for unifying a group. This idea of a central “why” is what we might refer to as the Promise of the group.

The following question arises. What is the Promise of design education? This is a rightly complex question, and as we will see later in this chapter it is still very much up for debate. Perhaps it might be useful to start with a slightly different question first. In much of its history in formal education settings, art education shared many characteristics with what we often think of as design education today. Maybe there is a starting point for the discourse if we first ask what the Promise of art education might be?

When we look first to the nineteenth century Romantic Tradition of art education we find that it was not an uncommon philosophy that one of the roles of American society, and therefore education, was to foster the moral and cultural upward movement of the citizenry. It was typical among nineteenth century thought that there was a connection between morality and art (Stankiewicz, 1984). According to English Aesthetic Theorist John Ruskin, drawing was a method to learn to speak the language of art, but though artistic skill could be
cultivated, only those with inherent artistic abilities and high moral character could produce great works of art (Stankiewicz). Given that only people in this unique situation could produce art, it was Ruskin’s belief that everyone had the potential to respond to art, to read its messages, and he therefore devoted his efforts to art appreciation. From this perspective, art education provides the promise of a connection to something larger than the self, and with that the tools to communicate with this something larger.

Moving forward as art instruction began to become more formalized in schools, during the middle nineteenth century there existed two distinctly different types of art instruction: Common School Art and a style that was referred to in various derisive terms such as “fancy art” or “pretty pictures” (Efland). The distinction between the content contained in these two types of art instruction was firmly embedded in notions of gender roles at the time.

Common School Art was based on geometry and the needs and skills of industry, such as architectural and mechanical drafting. This more practical view of art was mostly taught to men, and to a large extent the more middle to lower class men. At this time, many prominent educators did not generally see the benefit of teaching art from a nonscientific basis and that it was art’s scientific basis that indeed made the field teachable (Efland, p. 134). Many educators felt that drawing from scientific observation allowed the student a sense of producing something new and that art was grounded in simple geometric conditions and
therefore a worthy accomplishment. In this way, we can see that the promise of art education could be considered to be that of providing drawing-based skills that allowed for communication and documentation of the world and for contribution to a shifting industrialized economy.

For Mary A. Dwight, though, a teacher at an unnamed private girls’ school and contributor to Barnard’s American Journal of Education, the visual arts were more than simple geometric constructions. She felt that they were also a source for understanding the great ideas of humanity and this understanding allowed for an acquisition of high culture, which allowed for social dominance and upward mobility (Efland, p. 135). It is this ideological perspective which allows us to see Dwight as a bridge from the Common School Art to the second type of art being taught during this period.

As stated above, the second type of art being taught at the time was often referred to by derisive terms such as “fancy art” or “pretty pictures.” As society saw an expansion of the middle class and increasing affluence and urbanization, subjects that would have been referred to as the “accomplishments” (elocution, music, and drawing, among others) became part of the upward mobility strategy of the new middle class. While many of these subjects had been previously taught in private finishing schools for women, this ideology gradually trickled down to the public schools as they were chosen as economical topics to be taught (Efland, p. 136). This became a gender-divided issue as women were seen both as the cultural monitors of the children they raised and as a tool for families to “marry
up” into more elite social circles. By the 1870s, the women’s role of teaching the children of the community in public schools had been firmly established, and with this it was seen as increasingly important to make sure that the young women who were preparing to teach were of high moral and cultural character (Efland, p. 139). This emphasis on high culture could also be seen as another potential Promise of art education at the time.

Moving forward to the formation of the Bauhaus in 1919 by Walter Gropius, this difference between an art education as one with emphasis on practical and industrial applications and one with emphasis on high culture continued, though both were now housed within the same school. Gropius proclaimed his goal as being "to create a new guild of craftsmen, without the class distinctions which raise an arrogant barrier between craftsman and artist" (Whitford). While much has been written about the importance of the Bauhaus to both art and design, it is not my intent to give a full summary of the Bauhaus. For my discussion in this document, it is important to note a few key assertions. One of the main objectives of the Bauhaus was to unify art, craft, and technology. The machine was considered a positive element, and therefore industrial and product design were important components. In the Bauhaus, we see one of the first formal declarations of design education stated as such, as opposed to being a form of art education. The school's philosophy stated that the artist should be trained to work with the industry. Therefore designers were needed and so was a new type of art education. It is also important to note that
the Bauhaus taught courses called Vorkurs ("initial" or "preliminary course");
this was equivalent to the modern day "Basic Design" courses that have become
the key foundational courses offered in architectural and design schools across
the globe. From this, we can begin to identify our first Promise of design
education. For Gropius at the Bauhaus, the promise of design education was to
create a class of people who could reunite art and craft to arrive at functional,
high-end products with artistic pretensions that were also consistent with mass
production.

For much of the previous century, this Promise of design education has
worked relatively well for the needs of the design profession. While there have
certainly been modifications and evolutions on this central Promise, largely today
one can look at design programs around the world and see this Promise still
evident in one way or another, though individual programs may place more or
less emphasis on a particular side of the functional mass-production versus
artistic pretension discussion.

This is changing.

3.3: The Changing Face of Design

It is a daunting task to conceive of writing a comprehensive but concise
summary of the ways in which the face of design is changing and the ways in
which this will change the Promise of design education. The change has been
happening not as a high profile movement, but more as a slow groundswell. Nonetheless, I can think of no better place to start than 1972.


“There are professions more harmful than industrial design, but only a few of them...only one profession is phonier. Advertising design, in persuading people to buy things they don’t need, with money they don’t have, in order to impress other who don’t care.”

With this, Papeneck’s book serves as one of the earliest critiques of the design discipline that begins the reframing of the design discipline. In *Design for the Real World*, Papeneck critiques Industrial Design specifically as “creating whole species of permanent garbage to clutter up the landscape, and by choosing materials and processes that pollute the air we breath, designers have become a dangerous breed” and brings to the forefront a discussion about the role of design in the greater context of culture. Papeneck was the modern father of responsible design, both for the planet and for human society. He believed designer’s skills were squandered devising gizmos and trinkets, when genuine work was required to make the world a better place. Papanek defined design as “the conscious effort to impose meaningful order” on the world. He wrote on what he believed was the deeper moral obligation of designers to create ecologically sound design, serve the poor, the disabled, the elderly and other minority segments of society.

Papanek suggested that every designer give one-tenth of their time to the under-served population that is struggling to meet their basic needs, asserting that "the only important thing about design is how it relates to people." Ultimately, *Design*
for the Real World has since been translated into 23 languages and set the stage for a reframing of design to include a larger ethical and ecological understanding of the contexts in which we practice design. Papeneck, in his writing of Design for the Real World, gives us a publication that we can point to as the birth of Social Design and Ecological Design.

Building upon Papeneck’s work (though disappointingly without acknowledging him), in 2002 a book titled Cradle to Cradle: Remaking the Way We Make Things by Michael Braungart and William McDonough was released. In this book, the authors present a manifesto detailing how to achieve their “Cradle to Cradle Design” model. It calls for a radical change in industry: a switch from a cradle-to-grave pattern to a cradle-to-cradle pattern. It suggests that the "reduce reuse recycle" methods perpetuate this cradle-to-grave strategy, and that more changes need to be made. The book discourages down-cycling, but rather encourages the manufacture of products with the goal of up-cycling in mind. This vision of up-cycling is based on a system of "lifecycle development" where after products have reached the end of their useful life, they become either "biological nutrients" or "technical nutrients." Biological nutrients are materials that can reenter the environment. Technical nutrients are materials that remain within closed-loop industrial cycles. In Cradle to Cradle, McDonough and Braungart further drive home the role that designers play in decisions that have an impact on the ecological health of our planet and call out designers to further incorporate
this role in their practice. In *Cradle to Cradle*, McDonough and Braungart evolve the field of Ecological Design to one of Sustainable Design.

Evolving the discussion of Social Design, in 2004 designer Bruce Mau was commissioned by the Vancouver Art Gallery to create an exhibit called *Massive Change* that looked at how design could be used as a methodology to address the problems inherent to our social, economic and political systems. *Massive Change* looked at the implementation of new ideas and technologies to address issues like environmental sustainability and poverty. The exhibit was also documented in a book by the same name, which Mau co-authored with Jennifer Leonard and the Institute without Boundaries. In both iterations, *Massive Change* posited the question that “Now that we can do anything, what will we do?” Going further, the question put forth that “whether we realize it or not, we live in a designed world. The question is: will this be a design for destruction or for a sustainable new world that we can safely hand down to our children and our children’s children?” Essentially, what *Massive Change* did was survey and curate hundreds of examples from practice where design was being used to affect positive change in the world.

In 2006, two years after Mau’s *Massive Change*, Cameron Sinclair and Kate Stohr, the founders of Architecture for Humanity, published a compendium on socially conscious design, titled *Design Like You Give A Damn: Architectural Responses to Humanitarian Crises*. In many ways, *Design Like You Give A Damn* was very similar to *Massive Change* in that it served as a reminder that
there could be more to architecture than museums and posh private homes. Like *Massive Change*, *Design Like You Give A Damn* featured 77 design-based solutions to real-life problems. Included were fiberglass domes for the homeless of Los Angeles, a schoolhouse in Burkina Faso with an arced steel roof that insulates the clay brick classrooms below, and a water pump in South Africa that is powered by children playing on a merry-go-round. Together, *Massive Change* and *Design Like You Give A Damn* suggested a paradigm-shift within the practice from thinking about the world of design to thinking about the design of the world; Social Design.

These moments, along with many others, give identity to a few of the major ways in which the face of design is changing. The practice of design is beginning to place more emphasis on various cultural contexts — motivated by issues ethically above the Bauhausian notions of functional, high-end products with artistic pretensions that are consistent with mass production — giving way to new design specializations. Specializations such as Social Design, Service Design, Sustainable Design, Interaction Design, Experience Design, and Design Thinking are emerging as disciplines within the practice of design that stand separate and conceivably above our traditional design practices of Industrial, Interior, or Visual Communication Design. With these new emerging design disciplines, new Promises regarding the potential of design will also soon need to be identified.
3.4: Critiquing Design Education

As the Promise of design evolves, it would seem evident that so too will the Promise of design education have to evolve. This raises the question, how will we identify the new Promise or Promises of design education? One way will be to try to identify the ways in which design practice is critiquing design education. After all, though the design discipline is evolving what is not changing is that the overarching goal of design education is to prepare students for becoming design practitioners.

In 2006, AIGA and Adobe teamed up to try to identify and define the skills and competencies that would define what they have coined “the designer of 2015.” Their mission was derived from the observation that design studios and the corporate organizations that often employ designers in various roles “have been looking for a new type of designer, one that has traditional skills and yet a much broader perspective on problem solving” (Visionary Design Council). Through interviews, focus groups, workshops, and surveys, they have attempted to understand the emerging roles of designers. The plan was to then enter into discussions with design educators and industry leaders to help prepare the designers of the future.

By 2008, the results of this investigation seem to have amounted to a few insightful future vision tools and then stalled as best as can be seen. The first of these tools is a list of 13 competencies that this future designer will need to possess. In the words of the team who worked on the research, “these
The competencies are listed below in order of their ranked importance in the online survey administered by AIGA:

1. Ability to create and develop visual response to communication problems, including understanding of hierarchy, typography, aesthetics, composition and construction of meaningful images

2. Ability to solve communication problems including identifying the problem, researching, analysis, solution generating, prototyping, user testing and outcome evaluation

3. Broad understanding of issues related to the cognitive, social, cultural, technological and economic contexts for design

4. Ability to respond to audience contexts recognizing physical, cognitive, cultural and social human factors that shape design decisions

5. Understanding of and ability to utilize tools and technology

6. Ability to be flexible, nimble and dynamic in practice

7. Management and communication skills necessary to function productively in large interdisciplinary teams and “flat” organizational structures

8. Understanding of how systems behave and aspects that contribute to sustainable products, strategies and practices

9. Ability to construct verbal arguments for solutions that address diverse users/audiences; lifespan issues; and business/organizational operations

10. Ability to work in a global environment with understanding of cultural preservation
11. Ability to collaborate productively in large interdisciplinary teams

12. Understanding of ethics in practice

13. Understanding of nested items including cause and effect; ability to develop project evaluation criteria that account for audience and context

This list certainly gives us some good targets as design educators. From here, the competencies were evaluated and another document was produced identifying six major trends for defining design’s future role in a much broader, strategic context than its roots. These trends were well received by the attendants of the 2008 AIGA Design Educators Conference, though the researchers point out that there was also “anxiety about whether designers are adequately prepared to take on the broader context of the roles these trends imply for them.” The identified trends were, in order of importance as identified by “designers”:

1. Wide and deep: meta-disciplinary study and practice
2. Expanded scope: scale and complexity of design problems
3. Targeted messages: a narrow definition of audiences
4. Break through: an attention economy
5. Sharing experiences: a co-creation model
6. Responsible outcomes: focusing on sustainability

It would seem appropriate that there may be some “anxiety about whether designers are adequately prepared to take on the broader context of the roles these trends imply for them.” These trends seem to exist at a much higher knowledge level than that for which we have previously been educating design
students. To deliver education that begins to prepare students for these emerging trends, we may have to find ways to pull from other educational disciplines that have more experience dealing in concepts with this kind of breadth. At liberal arts schools, some of this preparation might be achievable through more rigorous or specified general education curriculums. Others of these may require design educators to become increasingly familiar with teaching methods and content domains from other disciplines, most notably the social sciences and communications domains. Nonetheless, this work from Adobe and AIGA provides us with a bit of important insight into some of the constraints that will be influential to defining the future Promise of a design education in some way.

Moving forward to October of 2010, Andy Rutledge published an article on Design View entitled “The UX Design Education Scam.” This passionate and no-holds-barred post, noting that “the time for political correctness, courteous patience, and the benefit of doubt has passed,” presented the critique that “the vast majority of institutional UX design programs are nothing short of scams.”

“If you emerge from university today with a web design degree, chances are rather slim that you’re employable as a user experience (UX) or web designer. Maybe you learned a lot of stuff; it’s just probably the wrong stuff. Congratulations, you’ve been defrauded. Hope it didn’t cost you or your parents too much.”

In Rutledge’s view, academic institutions have proven that the majority of formal programs are incapable of keeping up even with even decade-to-decade industry evolution, much less the nearly month-to-month sorts of frantic changes
occurring in the information design professions. Rutledge asserts that the educational “system as it exists today cannot be fixed” and even when educators wish to change institutional programs to be more relevant to the current practice, “nothing changes” because “nothing can change in that environment. That’s how it’s set up to operate.” He also states though that is not just academia’s fault that design students are not getting the practice-applicable education they need to be employable. He states that the practitioners who hire design school graduates are also to blame for perpetuating the idea that a design school education is the path into the practice.

“Many in the design professions have become willing enablers of this broken system. Design professionals who are the product of academic education, even though they’ve acquired their UX skills outside of school, too often can’t see past their academic allegiances. These folks have long demonstrated a foolish faith in the capabilities of myopic institutions. Today, even faced with compelling facts to the contrary, these people still believe that academic institutions can change. As such, they are slaves to a lazy and foolish notion, and do harm to their profession and to the young people interested in pursuing it. Professional interest in academic degrees and hiring degree requirements sends an increasingly destructive message.”

He goes on to state that “today the appropriate path for UX design education goes around, not through, nearly all universities and colleges. These institutions should be ignored in favor of actually relevant UX design education options, which most often means self-directed study.” In a follow-up opinion article that Rutledge published in Applied Arts Magazine, “Education for
Dummies,” he addresses the very few academic programs that are, in his opinion, doing an adequate job of providing good UX design educations and some resources for students who wish to take a more self-directed route to their studies, either on their own or to augment their formal education.

What Rutledge provides in these two writings, for our purposes here, is an insight into one possible constraint that we will have to consider in reframing the future Promise of design education. Judging from the comment sections on these two articles, Rutledge is not alone in these opinions, and if formal design education institutions are to remain viable educational resources for the discipline and practice, the concerns expressed in these articles will need to be addressed. We will need to find ways to be increasingly relevant and nimble in both the content and methods embedded within our curriculums.

At nearly the same time as Rutledge’s critique, in November of 2010, Donald Norman published an article on the popular Industrial Design blog Core77.com entitled “Why Design Education Must Change.” This post sparked a flurry of activity both on Core77 and the greater design blogosphere. Norman pointed out, among other things, that “Design schools do not train students about [these] complex issues, about the interlocking complexities of human and social behavior, about the behavioral sciences, technology, and business” (Norman). He goes on to write about the need for designers, particularly those working in fields such as Interaction, Experience, and Service Design, to have much deeper understandings of human cognition and emotion, sensory and motor systems,
statistics and experimental design. Norman states that “classical industrial design is a form of applied art, requiring deep knowledge of forms and materials and skills in sketching, drawing, and rendering... The old skills of drawing and sketching, forming and molding must be supplemented and in many cases, replaced, by skills in programming, interaction, and human cognition.”

Reactions to Norman’s article ranged from borderline “flame wars”, accusing Norman of being out of touch with the academic constraints of curriculum, to fervent agreement. One reaction though, which was also published on Core77, stands out as a good representation of the middle view as far as reactions go. In September of 2011, nearly a year after Norman’s post, Andy Polaine published "Design Research and Education: A Failure of Imagination?" In this post, Polaine notes identifying with Norman’s statement of being "made to read a lot of crap" and goes on to state:

“Around ninety-percent of the design and design education research I read sends me to sleep. I am interested in design, education and research and the futures of all three, but why is the strike rate of interesting material so low? It leaves me rather depressed about a discipline that claims creativity to be among its key attributes. When it comes to engaging in public discourse, design research has suffered a failure of imagination.

I should clarify here that when I am talking about design research, I am talking of institutional, mainly academic research. I’m not talking about research that designers do in design practice. That this needs explaining is part of the problem.”

Polaine uses this writing to first make the case that design as a discipline could learn a few things from the educational movement towards STEM subjects
an acronym for science, technology, engineering and mathematics. He writes that STEM subjects are currently the “centerpiece of curriculum development and the associated funding.” He notes that “newspaper columns and sections are devoted to science. Entire television channels and expensive series... are directly aimed to inspire and ignite the imaginations of schoolchildren and adults alike.

Where are the equivalents for design?”

“Given that the world is not only filled with designed objects and media, but also suffering under the enormous weight and consumption of much of them, design clearly has a central role to play in society for good or ill. Where are the impassioned calls for the role of design and for teaching design in curricula debates in mainstream media? Where are the TV programs, magazines and books? I am not talking about superficial style magazines or the design periodicals that essentially print articles on the reverse pages of press releases. Where are the design equivalents of Scientific American or National Geographic? Why isn't design debated in government in the same way as STEM subjects?... This is a poor indictment of our abilities as designers. Design educators and researchers and, I think, designers in general, have failed to imagine and communicate an integrated vision of design's role and value in society comparable to that of science.

Design research and design education research should form the backbone of this message if we are to escape the popular public understanding that design equals style. The skills so central to design are also crucial skills for everyone. They should sit next to discussions on curriculum where STEM is balanced by, as John Maeda put it, IDEA—Intuition, Design, Emotion, Art.”

Polaine goes on to make incredibly poignant points regarding the ways in which science has successfully packaged research for mass understanding, the media’s role in this, and the precedent for designers to hide the process of design; “perpetuating the myth of design ability stemming from talent and inspiration”
rather than a process and set of skills that can be fostered and learned. He draws comparisons between the scientific process and the design process and the ways they are held up in their respective disciplines, ultimately landing on the idea that in science theory and practice are tightly intertwined and that in design “we should be teaching students that theory is practice and practice is theory and that the same goes for the design and research.” In this article, Polaine concludes with a commentary regarding the new emphasis on Service Design and Social Good. It is a read that is well worth the time for any design educator. He points to the increasing complexity that these fields are dealing within and echoes many of the same notions we saw with the Adobe/AIGA collaboration. He also points out what he considers to be one of the big factors holding design back from achieving the ability to tackle the big issues that today’s design students are exponentially expressing interest in addressing.

“Despite the rhetoric of interdisciplinarity, design researchers and educators have become discipline specific. Much like the towers of medieval San Gimignano, academic careers are built by adding layers to one's own discipline tower while attempting to demolish those of others. Trying to prove ourselves wrong may seem counter-intuitive to a field that is trying to gain credibility outside of its usual place in the food-chain, but it is also the mark of self-confidence.

If design, as a broad field, really does want to start doing some good in the world, it is essential that design develops a clearer voice in public discourse. We need to argue the case for design's importance throughout education as an integrated practice and be rigorous in understanding the context in which we operate. That means looking outward, not naval gazing. A glance through the abstracts of a great deal of research journals and conferences points to the latter. This is a terrible irony given the fact that many of us practice human-centered
design research that expressly aims to avoid the effects of designing from within ivory towers.”

With this response to Norman, Polaine helped to solidify the fact that, at the least, Norman had successfully brought to the forefront two important goals. First, he brought to light the need to have a discussion centered on the question “What is design school for?” As a result of Norman’s article, now there are many educators and practitioners thinking about and discussing what I have called the Promise of design education. This is good. It will be necessary, if we are going to provide future students with relevant, applicable educations, that we identify what exactly that will mean. Second, he and others started to put forth specifics about how he believes design schools are failing what could be argued as their primary target audience, design students. These “failings” should be launching points for future work for design education researchers.

At this point I certainly cannot identify what the Promise of design or design education in the future will be. I can identify though that the conversations that are beginning around the topic are a step in the right direction. Dialogue between practitioners, educators, and researchers will be important. As design continues to expand in its scope and context, it will be increasingly important for the discussion to continue, and that the discussion be one among practitioners, educators, and researchers collectively.

I speculate that as we move forward, we will not be able to identify a single Promise of design or design education. Though the practice of design is beginning to tackle larger and more complex issues, I do not see a near future where the
more traditional design as a service profession will not continue to be relevant to society as well. While some designers may be tackling issues such as world hunger or healthcare, there will still be others that will be needed to facilitate the economic functions that design has been doing for the last century. This does not necessarily mean that these designers will be doing things in the same ways they have in the past though. The constraints are still changing.

I think we will ultimately come to a point where we have multiple Promises at play. As educators, this will mean that we will have to learn to be more explicit and honest in identifying and communicating what Promises an education from our individual institutions will address. In this multiple Promises future, I speculate that multiple types of design education will be needed to address multiple design practice futures, in which case academic programs will need to be more explicit in communicating to students which Promises they intend to deliver on with a particular program of study. We are already seeing this play out at some design schools. We are starting to see some design schools that are structuring their undergraduate programs according to the traditional practice disciplines, offering for example Bachelor of Science degrees in Industrial Design or Visual Communication Design, and structuring their graduate programs to offer Master of Fine Arts degrees in Social Good or Sustainability. This scenario seems like it may be at least part of the path forward.
3.5: Conclusion

In this chapter, I have established the idea of the Promise of design and design education. The Promise refers to the central "why" we do what we do to participate in a particular group. In this case, the "group" is that of designers. Then, I introduced a bit about the current discussion and critique surrounding the state of design and design education today and the questions surrounding the Promise of a formal design education.

The next chapter will address several primary research activities which contributed to the direction and journey of this thesis. After that, I will begin to explained my proposed tools and framework for educators and design educators to use to help us further explore the Promise of design education and the ways we might explore to deliver on whatever Promise or Promises we identify in the future.
Chapter 4: Preliminary Investigations

4.1: Chapter Overview

We have now developed a working view of our primary end-users, the students of design coming into college as members of the Net Gen. We have also established a basic understanding of the current context of our environment as design educators. Now I would like to take a step back for just a bit and outline a few of the preliminary investigations that got me to where this thesis ultimately will end up.

I present this overview for a couple of reasons. Admittedly, the following investigations do not amount to a great deal of “hard facts or statistics.” Nor do they really answer many questions when compared to the number of questions they raise. What the following investigations do accomplish is the following. They lay on the table where some of this author’s personal assumptions, insights, and biases come from. They point to a few of the instances that have occurred in this author’s very short teaching career thus far that have served as both affirmations of the possibilities of Web 2.0 in the design classroom and guiding lights to follow that demonstrate why this line of inquiry is important to the future of design education.
In the following pages, an overview will be given of two “formal investigations” and two “informal interventions” that have influenced this thesis regarding the understanding the use of Web 2.0 in the design classroom. We will start with the informal interventions, written as personal anecdotes, both of which involve the introduction of primarily blogging and micro-blogging, by this researcher in an instructor role, to the classroom. Then we will look at the formal investigations done by this researcher in an attempt to understand more fully the interest in Web 2.0 within the larger design educator community.

4.2: Blogging in an Advanced Interior Design Studio Course

4.2.1: Context and Administration

During the Winter and Spring Quarters of 2010, I worked with the Instructor of Record as an informal Teaching Assistant for the Advanced Interior Design Studios II & III (OSU Design 661.08 & 662.08). This sequence of studio courses are where the Senior Level Interior Space Design (ISD) students conduct their final Thesis project required for successful completion of their undergraduate education. During this experience, I helped with many of the standard instructional requirements of facilitating the Senior ISD students’ preparation of their final thesis projects. This included Desk Critiques, Mentoring, Group Critiques, and many general discussions regarding the theory and methodology behind the work the students would be doing.
Along with these stated roles, I was given permission by the Instructor of Record to ask the students if they would be willing to, on a volunteer basis, blog as well. I introduced the idea of blogging to the students in one presentation, and assisted those who were interested in setting up a blog on the blogging platform of their choice. I explained to them that I have used blogs in several different ways in my own past course work and outlined use cases such as personal journaling, research collection, and group collaboration.

It was made clear that participation in the blogging component of the course was completely optional and voluntary. It was intended to expose the interested students to another tool that they may find helpful, and to give me personal insights into the usefulness of blogging to the student design process, beyond my own personal experiences.

4.2.2: Results

Eleven of the seventeen students enrolled in the course elected to voluntarily participate by setting up their own personal blogs and sharing the URLs with me so that I was able to follow along with their efforts. This fact alone suggests that there is student interest in using blogging technologies as a tool within their workflow. For the most part, the students used the blogs in much the same way that one could assume they would have used an analogue research notebook or binder. They posted links to helpful resources on the web, images that were inspiring their work, documentations of their thought processes as
mind-maps, outlines, and free-writing or journaling, and images of ideation sketches. Through conversation with the participating students, it seemed that the students were finding the blogs to be very helpful for them to keep track of their research and process. They stated that the blogs seemed particularly helpful given the fact that the majority of their research materials were available through digital web-based resources, as opposed to from analogue media such as books and magazines. They stated that by having a chronologically organized ubiquitous place to put the things they found, that they could also easily annotate with their thoughts relating to the things posted, it made them feel like they were more easily able to keep track of their process and thoughts.

Moving into Spring Quarter, as the “research phase” of their thesis projects started to wind down, I found that the blog usage declined significantly for many of the participants. Through conversation, the students stated that the blogs were very helpful when compiling their research, but the pace at which the later parts of their design process occurred just did not seem conducive to the continuation of their blogs. They felt little benefit to documenting their own work’s process and revisions since they were generally in the same room with their peers when working and could more easily just ask someone sitting near them for feedback, then move on. They stated that in the time it would have taken to export a rendering from their software, upload it to the blog, and get feedback from me (as the instructor participating in the blogs), they could just ask a peer and be several decisions further the next time they met with me face to face.
4.2.3: Insights

From the “instructor” perspective, I found that the blogs allowed for more efficient communication between me and the students between face to face meetings. When a student posted something on their blog, I was able to read the posts and take my own time to develop helpful responses or critiques, and track down resources that I felt they should look at more closely or to further their ideas. I would then be able to post these ideas as a comment on their individual post. This allowed me to craft my responses tactfully when needed, and be more efficient in pointing the student to things by providing direct links. This is in counterpoint to my usual approach without blogging that would go something like the following in a face to face situation.

“Yeah StudentX, this is an interesting inspiration photo. Have you seen this other project by this designer who’s name is escaping me at the moment, but I saw a post about a few months ago on randomdesignblog.com (not a real site) but has a very similar approach to what you are going for and you’ll just have to try to find it...? or if you email me to remind me, I’ll track down the link and send it to you.”

I also found that when I was able to use the student’s blog for these types of communications, our face to face meetings tended to result in more in-depth and insightful discussions. We were then able to have discussions about how the
source I suggested compared to their own discoveries and the students seemed more engaged with the exploration process.

This led me to the understanding that if the blogs were going to take advantage of the collaborative aspects of the studio environment, then the student’s peers would also have to be following each other’s blogs and some sort of expectation would have to be established that they participate with each other through the blogs as well. This was not an aspect that I had facilitated as I did not distribute the student’s blog URLs to the rest of the class. This aspect was something that I considered later in my own instruction of Design 200 a few quarters later, which will be covered later in this chapter, to very positive results.

Another important insight came out of this experience that I had not been aware of being an issue when considering Web 2.0 in educational spaces. During the first week of my involvement in this series of courses, the Instructor of Record expressed that (s)he was very hesitant to the idea of the students’ possible blogging, citing concerns about the Cloud Computing Policy (OSU OCIO) drafted by The Ohio State University Office of the CIO. This policy was at the time still in a draft version as use cases for cloud computing and Web 2.0 in the classroom are still very new. This was my first realization that universities were beginning to create policies like this. Due to the Cloud Computing Policy, this Instructor of Record was not comfortable participating in the blogging experience of the students in any way. While (s)he did allow me to talk to the students about it, in the clear role of a peer, (s)he also added an additional comment that “blogging is
not sanctioned or requested by [the instructor], and that [the instructor] would not participate in their blogs.” I take little issue with the instructor's stance in this situation, but much of my research leans toward one of the key aspects to successful implementation of new technologies in the classroom is that of instructor support and buy-in. This experience led me to the understanding that some portion of my final thesis would have to address the legal issues surrounding this topic, such as university cloud computing policies, if only to make sure that the reader is aware that they may want to look into this topic at their own institutions if my thesis leads them to consider implementing Web 2.0 technologies into their courses.

Generally, I found this informal exploration of blogging in the Advanced Interior Design Studios to be insightful and encouraging to my general hypothesis that at the least, blogging could be a beneficial addition to a studio-based course if implemented correctly and if carefully considered regarding the expectations of what part of the process the blogs were implemented within.

4.3: Blogging in an Introduction to Design Lecture Course

4.3.1: Context

During my time at The Ohio State University as a Graduate Student I have had a Graduate Teaching Appointment (GTA). For seven quarters I taught Design 200: An Introduction to Design. This course is a requirement for all students interested in either a Major or Minor in design and has a few broad goals. Among
these goals are ideas such as introducing the students to the broad history of design as a professional discipline, introducing the disciplines of design taught at OSU (Industrial, Interior Space, and Visual Communications), and exposing them to ideas that affect design beyond the disciplines such as Accessibility, Sustainability, and “Design for the other 90%.” Most importantly though, the course is designed to get the students to begin understanding design as a creative problem-solving (Design Thinking) activity and to get them excited about what they might do in the future with a Major or Minor in design from OSU.

Because Ohio State is a large university and Design 200 is required of many students and open to all students, the course is structured as a large lecture course. Enrollment generally ranged between 60-90 students per quarter. In my time teaching this course, one of the biggest challenges was how to really engage and connect with the students to get them to interact with each other, the course content, and with me as the instructor. During the Winter and Spring Quarters of 2011, I decided to try implementing blogs as a primary course component. This decision was made with two primary goals in mind: 1) To give the students a formal place to encourage reflection and writing relating to the content of the course. In my previous instruction, it became obvious to me that many of the students did not take the time needed to reflect and internalize lectures and readings. Additionally, quite frankly, most college students could use more practice writing in general. 2) Throughout the course I had the students work in groups on several assignments. While this had generally worked fairly well, there
was always a bit of lead-time necessary for getting the team members comfortable and trusting of one another. My hope was that the blogs could be used to help soften this time and get the group work up and running more quickly.

4.3.2: Administration

To introduce blogs into the course, I first used Google’s Blogger service to setup a course blog that would be used by me as the instructor to organize course content and communication. This was the primary channel for the course outside of the classroom. I used the blog to post lecture slides, assignment briefs, the syllabus and calendar, and general news or updates for the course. These blogs can be found at the following urls: http://Design200wi2011.blogspot.com/ and http://Design200sp2011.blogspot.com/ The only course related activity not handled by the blog was the distribution of grades, which was done through Carmen (OSU’s Course Management System). This was for student privacy and FERPA compliance.

Next, I asked the students to set up their own personal blogs for use in the course. They were free to use whatever blogging platform they preferred, though in class I gave them my personal reviews and recommendations of many of the available free options based on my own experiences blogging. After setting up their blogs, the students were required to use a form, embedded by way of Google.docs, that I made available on the course blog to “register” their blogs
with me. The form was a way for me as the instructor to get the urls of their blogs and be able to attach the blogs to an individual student. This was necessary because some of the students were understandably not comfortable using their real names online, but I would need to know their screen-names to be able to review and assess the blogs. Once I had a list of all the student blogs, I made this list available to the students as links in the sidebar of the course blog. To keep track of the student’s blog posts, I imported all of their RSS feeds into my RSS reader application (Google Reader). This allowed me to see every post the students made in one place.

Now that every student had a blog, I knew that I could not simply expect them to start writing or that if they did write on their own, that there would be any organization to the blogs naturally, so I implemented a few assignments specific to the blogs and added aspects to the previously established assignments that would help organize the students posts. Regarding assignments that were previously established in the course curriculum, I simply asked the students to post their assignments to their blogs rather than as physical or digital documents. To be sure that I knew that a particular post was for a specific assignment, I gave every assignment a “code” that was to be used in the blog post title. (Example: A01, A02, etc ... referring to Assignment 01, 02 respectively) I also asked the students to post three additional types of posts on a weekly basis: 1) Reading Reflections (code format - RR##). These posts were reflections on the assigned readings. 2) Course Reflections (code format - CR##). These posts were
reflections on anything we did in class; lectures, discussions, activities, films watched, etc ... 3) Journals (code format - J##). These posts alternated between two types of posts. On one week, I would assign a small design related activity, such as seeking out and photographing designed objects that appear to have an anthropometric face, that would have to be posted to their blogs. The following week, the students would be required to read a selected number of their peer's blogs and write reviews of the posts that would highlight things the student found interesting, such as differing opinions on readings or interesting solutions to assignments.

4.3.3: Results and Insights

From the student perspective, the blogs seemed to be very well received. Students commented to me that they enjoyed being able to submit their work through a digital means that was different from their other classes. They enjoyed being able to embed links, images, and YouTube videos into their documents when applicable in an easy way. Several of the students approached me, as the instructor, individually and asked if they could further take advantage of the web medium of the blogs to share additional content that was not part of the course but related. I agreed and many of them shared reviews of design articles that they were reading on their own. A couple of students began video-blogging (vlogging) their RR, CR, and Journal posts by turning on their webcams and speaking candidly about the readings, lectures, class activities, and peer blogs. They then
uploaded these to YouTube and embedded the videos on their blogs. As an instructor, these were the most fun to grade, and the students seemed to really enjoy letting their personality show through the content they were creating.

Judging from the comments that students submitted at the end of these experiences through the Student Evaluation of Instruction (SEI) form, overall the blogs were very well received. Here are a few selected comments from students enrolled in Design 200 during the two quarters when blogging was a component of the course.

“I feel that his way of teaching not only inspired us to think in new ways but was also very innovative with the design blogs that connected all of us classmates together.”

“The blog project he had us do in place of standard exams really helped my overall gain of knowledge in this course.”

“I liked that [we] used blogs weekly. It made me feel like my voice was heard.”

“The website he created for the course laid out each assignment with a calendar we could follow, making it incredibly easy to know what work was due on a certain day. And from the calendar we could see what exactly he expected of us from that certain assignment.”

“I also liked that all of our assignments were turned in electronically via a blog system. We didn’t have to waste any paper on a paragraph summarizing our books, and I could include pictures/video/etc really easily in my homework. I honestly wish all of my classes went to this blog format, it just makes things so much easier and more organized.”
From the instructor perspective, I found that the Course Blog that I maintained was a very helpful way to organize the course material. When I would publish a new post for a particular assignment, I could then link the Course Calendar to the assignment post so that navigation was more fluid for the students. Also, by using the same codes I gave the students as “tags” on my posts, it was very easy to quickly find all posts related to a single assignment, including the original post assigning the project and any additional posts that may have been used to clarify instructions, change deadlines, or provide additional resources.

The most challenging aspect to the blog implementation in this course was the aspect of grading the student posts. Before importing all the student blog feeds into my RSS reader, I had to navigate to each individual blog and scan for new posts. This was very time consuming. Once I implemented the use of an RSS reader though, all new posts were fed to me shortly after the students published them and I only saw new posts, so I did not have to question whether I had already seen a post. Grading was still very time consuming because of having about 60 students posting 3-4 posts per week (400-500 total posts per week to read), but once I had developed the habit of grading for about an hour a day it was a fairly similar time commitment as pre-blogging courses had been. It was also very comforting that I did not have to worry about all the factors of being in physical possession of the students’ work. If I found that I had extra time at home or the coffee shop or anywhere else with an internet connection, I could grade. I
did not have to worry about having left the student work at my office, or in a
different bag. I also did not have to worry about misplacing student work or
students’ not having items in on time. Every post gets a date and time stamp, so
there is little question about if the work was turned in on time.

An unforeseen result of the blogging experience has been that a few of the
students have continued to use their blogs. Initially, I had just not gotten around
to removing the student blogs from my RSS reader, which I use personally as
well. Then I started to notice a few of the students start posting work from
subsequent design courses and other interesting design related links to their
blogs. I made the decision that I would stay subscribed to the student blogs, and
this has allowed me to stay in contact with a few of my former students and see
how they have been progressing. This has been very enjoyable, as it allows me to
some extent see my work as a foundations instructor “pay off” as the students
start producing more refined design work. It has been very validating in the least.

4.4: Exploratory Survey

4.4.1: Context and Administration

Purpose

The purpose of this pilot study was to prepare and test a few ideas about
how to establish some baselines for understanding the current adoption and
usage of Blogging in Studio-Based Education. Insights from this survey were used
to inform the administration of the Design Educators Survey, a similar survey-based study that looks into many more aspects of Social Media technologies. This survey is later in this chapter.

With this in mind, the pilot study was also seeking to test the limits of the technology I intended to use to administer the survey as well as start to craft ways of understanding the resultant data.

**Creation and Administration of the Survey**

Using Google Forms, I created a six page survey. The questions contained in the survey were designed to address a broad overview of social media and ultimately help guide my research to focus on more narrow aspects of specific Social Media outlets. The complete survey can be found in Appendix B: Exploratory Survey.

The topics covered fell into the following categorical sections:

1. An Introduction to my research interests and a “Consent Question”
2. Some basic demographic questions relating to the respondent’s relationship to design education and basic computer usage
3. Questions relating to how the respondents interact with Blogs from a non-authorship perspective
4. Questions relating to how the respondents interact with Blogs from an authorship perspective
5. Questions relating to general usage of other non-blog Social Media outlets

6. A few open ended questions about Social Media generally, experiences with Social Media in the classroom, and a request for assistance in distributing the forthcoming survey to a larger audience.

Google Forms has built into its functionality a very basic level of conditional logic. Essentially, there is the ability to have a respondent be directed to a particular page of the survey depending on a given response to a multiple choice question. I used this function on the last question of Section 3 (see above). This question stated “Have you ever contributed primary content to a blog?” If the “No” option was selected, the participant skipped Section 4 (see above), but if they selected the “Yes” option, they continued to Section 4 about blog authorship. In the future version, I leveraged this function to allow me to address more topics, while allowing the participant to either skip large sections relating to topics they are unfamiliar with, or to ask questions relating to why they have not chosen to interact with a particular topic to this point.

To get the survey into the hands of potential respondents, I sent a link to the survey, accompanied by a short message explaining my research interests, to representatives of the Department of Design and the Knowlton School of Architecture (KSA) at The Ohio State University. I asked these representatives to forward this message to all students and faculty in their respective programs.
From this email, these potential participants could either click a link or “copy and paste” a url into their web browser and take the survey.

4.4.2: Results

36 people responded to this survey. While this survey was intentionally surface level, there were a few interesting data points that resulted from the responses. The first of these is what I see as validation for the general premise of my research. With 42% of my respondents indicating that they currently spend 40 or more hours per week on a computer, trying to understand the ways in which design education is happening in digital environments is potentially substantial. While I understand that social media is only one part of the digital environment that design students occupy, my literature research shows that it is any increasingly important component that deserves investigation.
The next interesting data point lies in the conclusion that while reading blogs has a relatively strong foothold, commenting on blogs is all but nonexistent. Blogging seems to be seen more as a consumable media rather than a medium to be contributed to. From this information, I am still interested in blogging as a potential documentation tool for design students, but my hope for it to be a valuable feedback medium within the design education space still needed further investigation. It is my observation that design students already have a fairly established feedback infrastructure built within their educational space and that the blog medium is seen as a cumbersome avenue for this in comparison. My survey results seem to support this idea to an extent.
Additionally, I have derived from the survey data an understanding of some of the other social media venues that are of interest to design education. While it may seem obvious, the survey results support the notion that photo and video sharing applications are of interest to the individuals in the design education space. Referencing Fig.X above, a majority of the respondents are already participating in these activities, so learning more about why, how and to what ends will be an important part of the next, larger survey. Also from this area, the majority of responses indicated little to no interest in “micro-blogging” as a medium. This helps me focus my pursuits a bit by eliminating this medium from my pool of options for further investigation. Finally on the topic of other social media environments, with 19% of the responses indicating that the participants have “contributed to a Wiki” I find this to be a topic worth investigating more. While I have been unable to find any concrete data on general Wiki adoption, knowing that Wiki technology is just starting to break into the mainstream as a platform other than Wikipedia.com specifically, 19% seems to me to be a promising level of adoption.

4.4.3: Insights

The primary insight to come out of this survey is revolved around the idea of what I would call “Planning for Inaction.” While the survey had 36 participants, by looking at the demographic portion of the survey, it is obvious
that there were no responses from the KSA participant pool. It became apparent that at least one of the two following conditions occurred.

1. No one from the KSA forwarded my e-mail with survey link;
2. EVERYONE in KSA was “too busy” to spare 10 minutes to take my survey.

While I am sure there may be very logical reasons that this occurred, and that most likely no one was acting with malicious intent, the fact is that in both of these situations, someone did not do something. This led to a survey that, while helpful to clarifying the direction this thesis would take, had a response rate that was significantly less than hoped for.

4.5: Design Educators Survey

4.5.1: Context and Administration

Preparation

A pilot study was conducted in preparation for this study. The pilot survey was distributed to my teaching peers in the OSU Department of Design. The purpose of the pilot study was to test how long the survey would take to complete and make sure that software being used would work as expected. Additionally, this pilot study was used to gather feedback to refine the specific wording of the questions and identify potentially confusing questions for clarification before the survey was distributed nationally.
Procedures

I identified design educators at colleges and universities across the United States. A particular focus was placed on educators who teach at what their respective curriculums would consider to be “foundations-level” design courses. The original intention was that through a two-phase investigative process, I would seek insights into and case-studies of the application of Web 2.0 and Social Media technologies within design classrooms.

Phase 1:

I surveyed design educators by way of an online survey that had been designed to provide data regarding the ways that various communication channels, including Web 2.0 and Social Media technologies, are being used currently in the classrooms of the participants. These participants were solicited through email. In most cases, I contacted them directly, though an invitation to participate email. A less personal version of the invitation to participate email was also distributed to three list-servs that target design educators affiliated with AIGA (the prominent professional organization for designers), Design Ph.D.s, and Design Researchers respectively.

This survey took less than 45 minutes for the participants to complete. The entirety of the survey is included in Appendix C: Design Educators Survey.

The final questions on this survey solicited a potential participant pool for participation in Phase 2 of this study.
Phase 2:

The intention was to interview design educators who suggested during participation in Phase 1 that they have either successfully or unsuccessfully attempted to implement the use of Web 2.0 and/or Social Media technologies within their classrooms. Given the potential of these participants to be geographically dispersed across the US, these interviews would predominantly be conducted through digital communication channels such as email, instant messaging, or video conferencing technologies. If preferred by the participants, telephone or face-to-face interviews would also be an option for interview, depending on schedules and location of participants.

It was expected that these interviews would take less than 60 minutes for the participants to complete.

As will be discussed later in more detail, Phase 2 of this investigation was not completed due to low response rates on Phase 1.

Research Design

As a qualitative research study, I was looking for a diverse range of design educators from various age ranges, design disciplines, and experience levels to fully understand both the overall condition of design education and the wants and desires for how these technologies might be integrated into design curriculum.
Sample Size

The sample population varied between Phase 1 and Phase 2.

*Phase 1:* I sent the invitation to participate email to 75-100 design educators along with the three list-servs mentioned above to create a sampling population that comes as close as possible to an accurate representation of the design education field as possible. Of what can be assumed to be a couple hundred possible respondents, a total of five respondents completed the survey.

*Phase 2:* I planned to interview 20-30 design educators from a variety of the subsections of design education. The intent was to cover as large of a cross-section of various experience levels, both from the perspective of teaching at the university level and that of implementation of Web 2.0 and Social Media technologies as possible.

4.5.2: Results and Insights

By analyzing the opinions and experiences of current design educators, I would have been looking for patterns that lead to successful implementation, insights into strengths and weaknesses of particular technologies, and concrete links between various technologies and educational outcomes for use in the educational environments commonly found in design classrooms. Comparing and contrasting a variety of methods and experiences, I intended to look for results which could provide concrete benchmarks and/or goals for others to replicate.
That was the intention. The fact is that out of the 55 participants who were personally invited and the countless other potential participants accessed by way of the list-servs, only five responses to the survey were completed.

No significant data and very few insights resulted from the actual responses to Phase 1 of this investigation due to the low number of respondents. With only five participants, there was no way to draw conclusions that could be considered to be larger than a single experience or opinion.

The one insight that has come out of this experience is the validation of my thought that design educators are not accustomed to the idea of documenting and sharing their insights and experiences relating to their role as educators. This serves to strengthen my own view that a case needs to be made for design education as a parallel discipline to design.

4.6: Conclusion

These experiences, along with my secondary research and individual conversations with my thesis committee members, have led me to a point where some important decisions would need to be made concerning the direction this thesis would take.

The first of these decisions revolved around the idea that in order for a case to be made for the use of Web 2.0 technologies within design education, an exploration and assessment would need to be done regarding the state of design education currently. This assessment would need to explore and understand the
challenges being faced by design education, and the discussion framing these challenges, to present specific ways in which Web 2.0 technologies could be used to address these challenges. While a researcher could certainly devote an entire thesis to understanding and documenting the state of design education currently, and possibly someone should, it is not my intention to do that. This would be simply both beyond my intended scope and outside of my stated interest. Nonetheless, I still felt that an effort should be made to at least establish some sort of precedent for an idea of a design education discipline that exists parallel to that of design. This became the previous chapter.

At the conclusion of these research investigations, I had been thinking and researching Web 2.0 technology for over a year and a half. Since my previous attempts to find some way to filter the potential use case scenarios for Web 2.0 within design education down to a reasonable level did not have the intended outcomes, some sort of framework would have to be developed to assist with this. As stated within the discussion of my previous two surveys, my original hope was that the surveys would have ultimately led me to either a key set of technologies that other design educators were interested in, or a key set of issues within design education that I could explore using various technologies. Without this scenario having played itself out in the intended manner, it became evident that I would have to develop another method for creating this filter that is based on a framework of some sort.
As I began the process of developing this framework, it quickly became apparent that a simple framework for organizing technologies according to learning needs was of very limited effectiveness. As I searched for ways to understand learning generally, it became apparent that education and learning has, like design, become very segmented and that finding resources in this space was very complicated as well. There existed no easily understood way to seek tools, methods, techniques, or educational experiences in a broad way. In developing a framework, I wanted to be sure that the framework would be one that would simultaneously allow for my investigations into Web 2.0 technologies, yet be broad enough that others after me might apply the framework to explorations into other potential tools, methodologies, and techniques that could facilitate learning within a design education. As I was trying to develop a framework to understand how Web 2.0 technologies may apply to education, another framework began to emerge. This new framework was about trying to understand learning. This new framework was not only much bigger than Web 2.0, but also felt to me to be more important than exploring Web 2.0 in design education as I had originally set out to do. This new framework is the primary direction that I chose to explore in this thesis, and is introduced in the next chapter.

But what to do with everything that I had learned thus far about Web 2.0 in educational environments? A decision was made that my explorations and research into Web 2.0 would take a backseat to the new framework. I would use
examples of Web 2.0 or new media to help explain the framework being
developed. Where appropriate, I would introduce ideas of how these technologies
might benefit design education specifically. Not wanting the resources to go to
complete waste, Appendix A: Resources for New Media Technology in Education
and Society, has been added to this thesis. This appendix consists of a
chronological compilation of articles that I found interesting and relevant to the
use of Web 2.0 in education or society in general. Along with this, I wanted to
place here a couple of issues that I discovered. These are presented purely in the
effort to place them into the thoughts of anyone who might read about any of the
examples used within this thesis, or the ones provided in the appendix, and
desire to give them a run in their own classrooms. So, here they are, with little
explanation other than they could be important.

Do not forget about the technologies already in place at your university for
use in your courses. Often these are course management systems like those
developed by Blackboard, Moodle, or Desire 2 Learn. They all have many of the
same inherent qualities that many Web 2.0 and social media technologies do, but
also have added security conditions that help mitigate concerns surrounding
student safety and privacy. Sometimes, the desired results can be achieved using
these established systems, though they may not be as intuitively designed and
user-friendly as the public technologies that have become successful in the open
market of the web.
If you chose to use technologies that are “out in the wild” of the web, check to see if your university has an established cloud computing policy in place. These are policies at your university that govern how web technologies may be used for educational purposes. Most often they are discoverable through your university’s Office of the CIO. They are usually well intentioned, but can sometimes cause problems for educators who are thinking about student learning rather than legal issues. These policies have been drafted by the lawyers. Be aware of them when making choices to use various web technologies in your classrooms.

With that, the next chapter will introduce the framework for learning that has become the primary contribution in this thesis.
Chapter 5: Mapping the Learning Map Framework

5.1: Chapter Overview

Thus far a case has been made for the need to create a defined discipline of design education that runs parallel and complimentary to the needs of design. As academics, we have been rewarded by being secretive with our ideas; to work in our silos and share after we have staked our due claim. Publish or perish. As designers though, we know how to share fairly well. We are accustomed to sharing our expertise and experiences liberally with our students and clients, and we have high expectations of those whose expertise lies outside of our own to share that with us when needed. It seems that learning to share as academics should be easy given our ability to do so as designers, yet something is obviously missing. We are not sharing as academics. We are not seeking the experts in educating. This might suggest that something is wrong with the tools. The predominant tools we use as educators and academics for sharing our experiences as such, are journals and conferences. These tend to be highly segmented, siloed spaces, dedicated to very targeted and specific audiences. It is challenging for an Industrial Design educator to keep up with what is going on with Interior Space Design as a topic, not to mention either of these being able to keep up with the larger world of education outside of the design disciplines.
What is needed, it seems, is a better tool; a framework for sharing. To paraphrase IDEO's David Kelley in the 1999 ABC Nightline episode "Deep Dive," the designer's advantage is in the understanding that they are experts in nothing but a process. We need a framework that allows us a way to find the experts, in learning and teaching, from as diverse a set of academic and teaching settings as possible. We need a set of common denominators that can be used to compare the experiences, techniques, successes and failures that result from trying out methods, tools, and techniques as educators. We need a framework that fosters a way to understand extremely diverse artifacts of teaching based on their commonalities. While it should be a designed framework, it should not be a "design" framework. It should be a learning framework.

The following is a proposal for this framework. This proposed framework attempts to organize artifacts of teaching, the tools, methods, techniques, and tricks that support our classroom activities, into categories based on the type of learning types they support: Learning to Know, Learning to Do, Learning to Be, and Learning to Work Together. In this chapter, we will outline the roots of this model, define these categories, and then use small case studies to further our understanding of the framework. The potential pool of cases that could be held up for study is quite expansive and deep, so the implementation of Web 2.0 and successful engagement of “Net Gen” students was used as a filter for the selection of examples.
5.2: UNESCO Four Pillars of Learning

The launching point for the framework I will propose in this chapter is based on an understanding of the types of lifelong learning suggested in *Learning: the Treasure Within*, a report to UNESCO of the International Commission on Education for the Twenty-first Century. In this document, the Commission felt that education throughout life is based upon four pillars: learning to know, learning to do, learning to live together and learning to be (Delores, 1998). According to the International Commission on Education for the Twenty-first Century, it has become increasingly important to think about education in an all-encompassing way. To this end, the Commission points out that “education takes place throughout life in many forms, none of which ought to be exclusive” and that though they have identified four separate pillars of education, these pillars cannot stand alone and that they are all of equal importance. While I will modify a few specifics surrounding the understanding of these four pillars for the purposes of my framework proposal shortly, it would be prudent to take a little closer look at how the International Commission on Education for the Twenty-first Century defined them first, presented in the order determined by the Commission’s report to UNESCO.

5.2.1: Learning to Know

For the International Commission on Education for the Twenty-first Century, the Learning to Know pillar is concerned less with the acquisition of
structured knowledge than with the mastery of learning tools. In this case, it is about a form of learning to learn and is seen as both a means – people have to learn to understand the world around them – and an end – it is underpinned by the pleasure that can be derived from understanding, knowledge and discovery.

The Commission comments that though “study for its own sake is a dying pursuit with so much emphasis now being put on the acquisition of marketable skills,” a truly educated person will need both a broad general education and the opportunity to build a more in-depth knowledge within a smaller, more specialized number of disciplines. In addition, they will need to be equipped with the tools to know how to learn new information due to the multifarious and virtually infinite nature of knowledge that leads any attempt to know everything to be increasingly futile.

5.2.2: Learning to Do

For the International Commission on Education for the Twenty-first Century, the Learning to Do pillar is closely associated with the issue of occupational training. That stated, the idea of what constitutes “occupational training” can vary greatly, depending largely on the dominant economic condition of where the learner lives. Identifying the fact that world economies range on a spectrum from developing industrial, to established industrial, to service-based, to knowledge-based economies, these conditions will have an impact on what might be considered occupational training. No matter what the
economic situation, the Learning to Do pillar is focused on the acquisition of various skills the learner will need to be a successful, contributing member of their respective economy.

5.2.3: Learning to Live Together

For the International Commission on Education for the Twenty-first Century, the Learning to Live Together pillar is largely related to notions of conflict-resolution, tolerance, cultural diversity and peace studies on a global stage. The commission specifically proposes “that education should adopt two complementary approaches. From early childhood, it should focus on the discovery of other people in the first stage of education. In the second stage of education and in lifelong education, it should encourage involvement in common projects.” By the Commission’s own account, the idea of teaching nonviolence is certainly praiseworthy, though inadequate given the scale and complexity of the multitude of issues that contribute to the range of human conflict. This portion of the International Commission on Education for the Twenty-first Century’s report to UNESCO spends many words on asking questions revolving around the idea of “how can we do better?” Ultimately, the Commission suggests that to address the Learning to Live Together pillar, “formal education should... set aside sufficient time and opportunity in its curricula to introduce young people to collaborative projects from an early age as part of their sports or cultural activities. This approach should also get them involved in social activities: the renovation of
slum areas, help for disadvantaged people, humanitarian action, senior citizen help schemes and so on.”

5.2.4: Learning to Be

For the International Commission on Education for the Twenty-first Century, the Learning to Be pillar is defined as being concerned primarily with contribution “to every person's complete development — mind and body, intelligence, sensitivity, aesthetic appreciation and spirituality.” The Commission goes on to state that the aim of development within the Learning to Be pillar is “the complete fulfillment of man, in all the richness of his personality, the complexity of his forms of expression and his various commitments — as individual, member of a family and of a community, citizen and producer, inventor of techniques and creative dreamer.” This section of the International Commission on Education for the Twenty-first Century’s report is both easily the most ambitious goal and the least prescriptive towards how educators might foster this learning type. The Commission offers the following as the closest to a recommendation.

“The twenty-first century will need a varied range of talents and personalities even more than exceptionally gifted individuals, who are equally essential in any society. Both children and young persons should be offered every opportunity for aesthetic, artistic, scientific, cultural and social discovery and experimentation, which will complete the attractive presentation of the achievements of previous generations or their contemporaries in these fields. At school, art and poetry should take a much more important place than they are given in many countries by an education that has become more utilitarian than cultural. Concern with
developing the imagination and creativity should also restore the value of oral culture and knowledge drawn from children's or adults' experiences.”

From these definitions, it is apparent that the International Commission on Education for the Twenty-first Century is certainly coming at the notion of thinking about education in an all-encompassing manner, though these definitions come with a few underlying biases, which is to be expected given the UNESCO audience they were developed for. Most notably are the emphasizes on a world perspective and a very idealistic and optimistic view of the potential of the human condition. I personally take no issue with these conditions, and look forward to living in the world that the Commission is trying to build in this report. That stated, to achieve my goal of providing a framework for sharing, these definitions are far too broad and “fuzzy” for our use directly. The four pillars proposed by the International Commission on Education for the Twenty-first Century do provide a fairly reasonable way to categorize an incredibly broad view of learning goals though and I believe they can serve as a very effective launching point. In the remainder of this chapter, I will rename, reframe, redefine and clarify these pillars into something more akin to a framework and tool for the organization and sharing of artefacts of teaching, the tools, methods, techniques, and tricks that support our classroom activities, into categories based on the types of learning that they support.
5.3: Four Pillars and a Framework

The pillars of education proposed by the International Commission on Education for the Twenty-first Century seem to be a very useful set of categories to use as a jumping off point for developing a framework to explore artifacts of teaching. They do a good job of defining fairly clean lines between various types of learning which need to be identified and supported by educators within the complete spectrum of lifelong learning. These pillars also help bring some clarity to what I have set out to achieve, the creation of a tool that can help educators share the artifacts and experiences that result from their work in the classroom.

In developing this framework, the thing that I wanted to be careful of was to be sure that the framework developed would be one that will simultaneously allow for my personal interests in investigating Web 2.0 technologies, yet be broad enough that others after me may apply the framework to explorations into other potential tools, methods, and techniques that could facilitate learning within a design education, or even better, any educational setting.

The goal is to create a framework that allows us a way to find the experts, in learning and teaching, from as diverse a set of academic and teaching settings as possible. The framework should support a way to ask about teaching, and find others’ answers where the learning goals are similar though the content to be learned may vary greatly. The pillars proposed by the International Commission on Education for the Twenty-first Century have this flexibility.

So what do we DO with these pillars?
It is my proposal that these four learning pillars (with some slight modifications that I will address in the next section) can be adopted as a set of parameters that educators can use to identify, classify, and search instructional research that has been documented. If the educators who publish about the artifacts, experiences, and experiments that come out of their classrooms and professions adopt these pillars as a way of thinking about their work, the pillars can begin to act as a form of meta-data, a way to classify information on a broader level. In the web world, we might call this form of usage as meta-tags or just tags. Perhaps a slight aside is needed to clarify how meta-tags work.

Let’s create a simple example, using the popular photo-sharing website Flickr.com to illustrate the power of meta-tagging. Perhaps I just returned from a visit to New York City and I am now uploading to Flickr the photographs that I took during my visit. I have a picture of the Statue of Liberty that I would like to share with others. The primary information, or data, that would be associated with my image would generally be the image itself, the filename, the title that I give to the image, and maybe the date on which I uploaded the image to my Flickr account. In this case, I have called my image “Statue of Liberty.” Now, anyone who searches Flickr for “Statue of Liberty” may find my image among the many others of this subject. But Flickr also allows me to tag the image with any number of additional keywords. If I chose, I could also tag the image with the following tags, separated by commas: New York City, NYC, Liberty, USA, Copper, France, Gift, Freedom, Opportunity, Statue, Birds, Sunrise, Boats, etc... The list could go
on depending on what I associate with the image. Now, if someone searches Flickr for any number of these keywords, my image has the possibility of appearing in the search results. Tagging exponentially increases the likelihood of my image being seen and shared, because someone who had no idea that they would enjoy my photo may see it as they are looking for images that represent “Freedom” or “Sunrise”, never having considered searching for “Statue of Liberty.” These meta-tags allow for a certain level of serendipitous discovery, depending on how broad the meta-tags assigned to the artifact are.

I propose that educators could begin to use these four meta-tags or meta-keywords, the pillars proposed by the International Commission on Education for the Twenty-first Century, alongside our other keywords in our various publishing venues. The addition of these meta-keywords would provide the opportunity to open our publications up to a broader level of serendipitous discovery, that may transcend discipline or specifics of content, while still being helpful and descriptive.

How would this be helpful? Well, let us set up another example, this time with many hypothetical conditions. Assume that a chemist at Saint Petersburg State University named Dr. Dmitri I. Mendeleev is going to publish a paper titled “Teaching the Periodic Table of Elements via Twitter” in the Journal of Chemistry Education. In this paper, he outlines how he implemented in his classroom a way to use the popular micro-blogging platform, Twitter.com, to assist his students in memorizing the Periodic Table of Elements. Each day, about an hour before class,
he would update his Twitter status (He would tweet) with less than 140 characters about a different chemical element. If his twitter ID were @DrDIM, it might look like this:

“@DrDIM: Silver (Ag) No.47, StdAtmcWgt=107.8682, Group 11, Period 5, Block d #TransitionMetal”

By-the-way, Dr. Mendeleev is using another example of meta-data in his tweet. The use of the hashtag “#TransitionMetal” allows his students to search for other tweets regarding other chemicals that share this characteristic. He would then quiz the students in class. Obviously, the paper would also outline many of the other specifics regarding how he encouraged the students to follow his twitter, how he administered the quizzes, and his insights into the relative success of this method. We could assume that this paper and its abstract might normally be accompanied by keywords such as: Periodic Table, Twitter, Chemistry, etc... Naturally, this paper would be received with much interest to the community of chemistry educators, and because Dr. Mendeleev included “Twitter” as one of his keywords, other educators who are interested in using Twitter in the classroom may stumble upon the paper if the database they are searching happens to also catalog the Journal of Chemistry Education. If Dr. Mendeleev has also read the thesis in your hand and has adopted the proposed meta-keywords within, he may have also included the keyword phrase “Learning
to Know” because he sees that his use of Twitter helped his students with this type of learning.

Now let us assume that there is a design educator who is struggling with developing a way to help her students learn simple definitions of words that we commonly use in design that may have other ways they are used in other disciplines. This educator, lets call her Professor Jones, does not have any particular methods or tools in mind for solving her classroom dilemma. Also, because she is a design educator, she would have no particular reason to be keeping up with publications in the Journal of Chemistry Education. Now Professor Jones has also read the thesis in your hand and has adopted the proposed meta-keywords within, so she knows that the issue she is dealing with is a “Learning to Know” type problem. By searching the meta-keyword phrase “Learning to Know,” the chances of her finding Dr. Mendeleev’s paper has now exponentially risen. Upon discovering and skimming over his paper, she now has an idea of a method she might try in her classroom. While Professor Jones may not be that interested in the Periodic Table of Elements, she sees in this paper an approach that could be used for any type of information that can be easily parsed to fit within the 140 character limit imposed by Twitter. Without the broad, meta-keyword phrase of “Learning to Know,” the chances of Professor Jones’ stumbling upon this particular idea were very low, but now she has a possible method to attempt.
It is to be hoped that it is now clear the possible affect a broad adoption of the meta-keyword phrases proposed by the International Commission on Education for the Twenty-first Century could have. As tempting as it is to say that my work here is done and draw up a few closing statements, alas there are still a few more things that need to be addressed. I would not be adding much to the discourse if I just put forth a book report on Learning: the Treasure Within, the report to UNESCO of the International Commission on Education for the Twenty-first Century and sent you on your way. In order for these meta-keyword phrases to be useful, we will need to tighten up and clarify what each mean when being used in this way.

5.3.1: Redefining Meta-Keyword Phrases

In order for these meta-keyword phrases to be useful to us in a broad way, across multiple disciplines, some clarification and modification to the pillars proposed by the International Commission on Education for the Twenty-first Century will be needed. An attempt has been made to remove a bit of the possibly too idealistic and optimistic view of the Commission’s definitions. While I firmly believe in an idealistic and optimistic approach to most activities, this condition of the Commission’s definitions leads them towards a hazy view that is difficult to provide a sense of consensus around.

The following definitions have been developed through a series of impromptu discussions and exploratory activities with current and future
educators and students from several academic backgrounds surrounding the ways in which they understand each of these phrases and the sorts of knowledge and learning they might encompass. Later in this chapter, several more specific examples will be provided to further clarify each of the following meta-keyword phrase definitions.

5.3.1.1: Redefinition of Learning to Know

Under the International Commission on Education for the Twenty-first Century’s model, Learning to Know was primarily concerned the mastery of learning tools – with learning to learn. For the purposes proposed here, we will continue to include this type of learning, because it cannot be denied that students do in fact need to be taught methods and techniques for learning in general. We will add to the Learning to Know meta-keyword phrase the acquisition of structured, specific knowledge that is associated with an academic discipline. This refers to the facts, ideas, and precedents within a discipline that need to be understood to function well within a particular field of study. The above mentioned hypothetical example of Dr. Mendeleev’s approach to teaching the Periodic Table of Elements to Chemistry students would fit nicely into the Learning to Know meta-keyword phrase. A knowledge of the Periodic Table is essential to understanding Chemistry and is foundational to the discipline. In design, we might put activities that foster understanding of the color wheel or the differences between Serif, Sans-Serif, and Display Typefaces under the Learning to Know meta-keyword phrase.
5.3.1.2: Redefinition of Learning to Do

The Learning to Do meta-keyword phrase needs the least redefinition from the International Commission on Education for the Twenty-first Century’s definition. Learning to Do is closely associated with the issue of occupational training and the specific skills, both physical and mental, that need to be acquired for the proficient functioning within a discipline of study or work. For the Chemist, this might include how to properly and safely use a Bunsen burner. For a designer, this might include how to set type, draw a floorplan, create digital and/or physical 3D models or apply an End-user Persona within the design process.

5.3.1.3: Redefinition of Learning to Live Together

For the International Commission on Education for the Twenty-first Century, the Learning to Live Together pillar is largely related to notions of conflict-resolution, tolerance, cultural diversity and peace studies on a global stage. This is where we will need to reframe this meta-keyword phrase to take the fuzzy idealism down a step. For our purposes, we will use this category to deal with aspects of learning that deal with the multifaceted issues surrounding interpersonal communication and collaboration. To further reinforce this point, the activities that led to these definitions exposed the need to rename this meta-keyword phrase to Learning to Work Together. It was found that this significantly
reduced confusion surrounding how this phrase might relate to learning generally. Activities that relate to Learning to Work Together would include any activities that foster the understanding of how to effectively work with others. This may include aspects of collaborative team working, communication with clients, end users, or audiences within and/or outside of the learner’s primary discipline, or any other similar conditions.

5.3.1.4: Redefinition of Learning to Be

For the International Commission on Education for the Twenty-first Century, the Learning to Be pillar is defined as being concerned primarily with contribution “to every person’s complete development — mind and body, intelligence, sensitivity, aesthetic appreciation and spirituality.” Again, for our purposes here we will step this down just a bit. The Learning to Be meta-keyword phrase will be used to address aspects of learning that deal with the idea of moving from knowing the facts and skills associated with a discipline to being fully embedded within a discipline. This particular meta-keyword phrase is certainly the least addressed aspect of learning in most academic settings. It would seem at this point that the Learning to Be category of learning is most often left to the learner to be discovered upon years of activity on the job or deeply embedded within a discipline’s culture. Learning to Be deals with the high-level ethics and views held by a discipline. For a design educator, this meta-keyword phrase would be used for activities that foster an understanding of what
it means to “be a Designer” as opposed to “knowing Design” or “knowing how to design.” How do we as educators help our students see the world through the eyes of a Designer? How do we instill the ethics of the profession in them?

5.3.2: Reframing the Pillar Model

Up to this point, these four meta-keyword phrases or pillars have been presented as seemingly separate categories. This was how they were presented by the International Commission on Education for the Twenty-first Century and it has served well to continue this for the sake of clarity. The Commission, with its choice to term these as “pillars of lifelong learning,” has set up a particular mental model for thinking about these categories. I believe that even though I began writing about these meta-keyword phrases several pages before this point, the picture that has been forming in your mind’s eye is probably very similar to Figure 2 below.
The useful thing about this model is that it is simple to understand while also giving the appropriate notion that each of the pillars are of equal importance. Remove any one pillar and the platform of Education & Learning becomes unstable and is at risk of toppling. The problem with this particular mental model is twofold. First, it reinforces a notion of education that runs counter to what I am trying to fix with this framework. It is not beneficial to the idea of sharing across disciplines to continue thinking of aspects of learning to be this segmented,
existing in particular silos if you will. Second, it does not support the reality of educational activities. Very rarely will a classroom activity or educational method fit perfectly into any one pillar. More often than not, these activities and methods will exist below the Education & Learning platform, somewhere in between these columns. Perhaps different activities may exist closer to a particular pillar than another, but the space defined by the pillars actually represents a continuum of some sort. So, this mental model needs to be changed. The model needs to be modified to allow for an understanding of the space under the platform of Education & Learning, between the columns. To begin to understand the space defined by the pillars, perhaps a map would be more useful.

To begin to define a new map for exploring Education and Learning according to our meta-keyword phrases, a central question must first be answered. What is the relationship between our four meta-keyword phrases? Are some of the meta-keyword phrases more related to each other than others of the meta-keyword phrases? Do any of the meta-keyword phrases exhibit conditions of polarity or complimentarity? Without answering these questions, we stand the possibility of simply creating a graphical representation of the space defined by our meta-keyword phrases that may be interesting conceptually, but just as issue ridden as the the International Commission on Education for the Twenty-first Century's Pillar Model.

Through a series of informal conversations with many other educators, as well as a few exploration activities with students, a central theme began to arise
regarding the relationships between the meta-keyword phrases. The phrases "Learning to Know," "Learning to Do," and "Learning to Work Together" seem to all contribute to the idea of "Learning to Be." My conversations with educators commonly revolved around the notion that "Learning to Know," "Learning to Do," and "Learning to Work Together" were all conditions that educators could to some extent plan for and facilitate through the design of learning activities. They could, often with great ease, think of ways in which any number of the activities they currently facilitated in their classrooms could be modified to enhance aspects of these three meta-keyword phrases. Conversely, "Learning to Be" seemed to be an aspect that educators identified as not really being within their control. While they could use learning activities to push students to greater levels in the other three meta-keyword phrase domains, "Learning to Be" was something that had to happen somewhere within the student. In this way, "Learning to Be" seems to be an idea closely related to the individual student's internalization and engagement within the other three domains. Likewise, in exploratory activities where Dr. Sanders and I asked students to use the meta-keyword phrases to create maps of their education at various stages of formal education (preschool, grade school, differing collegiate programs/major, etc...), the students commonly created closer relationships between "Learning to Know," "Learning to Do," and "Learning to Work Together," while identifying "Learning to Be" as a condition that the other three meta-keyword phrases contributed towards.
If we start to try to graphically represent or diagram this notion, we might start to get something like Figure 3 below.

![Figure 3: Beginning Ideation of Meta-Keyword Phrase Relationships](image)

In this model, we have a sort of core made up of our three meta-keyword phrases, "Learning to Know (L2K)," "Learning to Do (L2D)," and "Learning to Work Together (L2W)," surrounded by a larger space that represents "Learning to Be." In this model of thinking, a particular learning experience can exist within any of our three core meta-keyword phrase domains and be either more or less close to the outer space of "Learning to Be." Lower level activities will exist closer
to the center of the diagram, while higher level activities will exist closer to the outer edges of the diagram.

This model works very nicely for our purposes of representing the continuum of the Learning and Education space. One can easily imagine the core "filling" with various learning activities and experiences which, when added together, begin to fill the core space. This filling of the core represents the learner "learning to be" in some sense. Theoretically, when space runs out in the core, the learner has learned to be something. But what have they learned to be?

This question leads us to an important realization. In the International Commission on Education for the Twenty-first Century’s Pillar Model, Learning to Be was thought of as its own separate pillar, or container to be filled with "being," independent of knowing, doing, and living together. In this new model, "Learning to Be" is an expanding variable that must be defined to some extent depending on what the learner is learning to become. As the core fills, the outer "Learning to Be" ring has the potential to expand and change or be redefined as learning continues. Figure 4 below shows this notion, framed generically. In any particular knowledge domain, there exist various levels of knowledge acquisition which lead to various levels of expertise.
To exemplify the expanding nature of "Learning to Be" further, let’s use a baseball metaphor for a moment. Perhaps learning the game of Tee Ball would equate to Learning to Be a Beginner. Here a young athlete will Learn to Know some of the most important rules of Baseball, like that you run to First Base after you hit the ball, but other rules are not upheld yet, like Striking Out or nine inning games. A Tee Ball player will Learn to Do things like throw and catch the ball. They can learn these skills to a level that makes them successful Tee Ball player, but not well enough to play in the Major League. They will also Learn to
Work Together by taking turns in the different field positions or at bat, but they will still have half the team chasing every ground ball. As the TeeBall player learns more in the core meta-keyword phrase domains, he will move up in "Learning to Be" levels. Learning to Be a Novice Baseball player might equate to playing High School ball, and the Expert level might be Collegiate Ball, or playing in the Minor or Major Leagues. Exactly what level of play constitutes being an expert is questionable at best and reiterates the need to define the goals involved in moving from one level to another in the Learning to Be domain. Though most players who play for a Major League franchise might be experts compared to the average person, they are not all equal in expertise to Babe Ruth. Additionally it can be assumed that to get to the level of playing the first game of Tee Ball, a plethora of Learning to Do and Learning to Know had to be done to get to that point. The player had to first learn to walk, run, speak, control the motion of their arms, and develop some amount of hand-eye coordination, among many other things to even begin their first Tee Ball experience. As they Learned to Know and Learned to Do these things, they broke through many of the outer rings of the map by Learning to Be walkers, talkers, runners, and the multitude of other things that got them to this point. This means that any visualization we might create, represents a specific slice of time, with a significant past and future that will not be represented in the current map.

If we think back to Figure 4 and our Tee Ball example, all of Learning to Be a Tee Ball player falls within the Learning to Be a Beginner Baseball Player. Even
within the game of Tee Ball itself, there are differing levels of expertise. Right now, if one tells my son, who is playing his first season of Tee Ball now, that there is a runner on first base, then asks him where the play is, he will correctly tell you that the play is at second base. His level of Learning to Know Tee Ball is very good compared to his peers. He might be approaching an expert level in the Learning to Know domain of Learning to Be a Tee Ball player, but is not an expert Tee Ball player. He will miss ground balls hit right to him, chase the ball down, and throw it over the Second Baseman’s head. He still has a lot of Learning to Do to acquire. My son is still Learning to Be a Beginner regarding the Learning to Do domain. Sometimes, instead of throwing the ball to a teammate, he will try to run the ball from deep in center field to the play at Home Plate, he also has a lot of Learning to Work Together to acquire before he is even a proficient Tee Ball player. No visualization of Learning to Be a Professional Baseball player can accurately represent the player’s Tee Ball experiences 15-20 years before their rookie MLB season. This will be true for any learning experience.

This suggests one final visual refinement to our map. To represent the near infinite expansion and contraction of the "Learning to Be" space on the map, as well as to simplify the core meta-keyword phrase domain spaces, I propose the map represented in Figure 5 below, which I will refer to from here forward as the "Learning Map Framework."
In this representation, the Learning Map Framework, the core is represented as solid because it is theoretically densely "filled" with all the learning that has occurred before the condition be mapped at the moment. Similarly, the outer Learning to Be ring is represented with a thickness that represents the plethora of states of being yet to be learned that lay beyond the currently defined goals of Learning to Be that is being mapped in any one map. It should also be noted that in this final representation of the Learning Map Framework, the overlapping areas within the core meta-keyword phrase domains
have been replaced by simple dashed lines that subtly differentiate the spaces
defined by each of the meta-keyword phrases. Besides simplifying the visual
experience of the Learning Map Framework, this has been done to allow for more
variance in the amount of space that an activity being mapped may occupy when
it exhibits characteristics of more than a singular one of the core meta-keyword
phrases.

At this point, we have now redefined the four pillars of learning suggested
by the International Commission on Education for the Twenty-first Century into
our meta-keyword phrases and have transformed the pillar mental model into the
Learning Map Framework. As much as I would like at this point to encourage the
design educator community to take this Learning Map Framework forward and
prosper, I have a sense that this can’t be done just yet. I have not yet explained
what to do with the Learning Map Framework. To quote one of my
undergraduate instructors, the possible applications of the Learning Map
Framework is probably about as “clear as mud” at this point.

5.4: Exploring the Map

Possibly the most effective way to start understanding further how the
Learning Map Framework may be applied will be through a series of case study
type examples. The following examples have been selected using two primary
criteria. First, I tried to select examples that were skewed fairly clearly towards
predominately one border on the Learning Map Framework. This was done to
help facilitate the understanding and definition of the borders. Second, based on my own personal interest in exploring the possibilities of using Web 2.0 and Social Media Technologies within the design education setting, all the following examples deal with novel, if not interesting, uses of these technologies in an educational setting, though not always a design education context.

In the following sections, I will demonstrate the first and simplest way to use the Learning Map Framework. In these examples, the map functions very similarly to a standard polar graph, allowing the user to suggest the relative influence of the meta-keyword phrases in relation to each other within a particular experience. The maps presented will be useful for understanding an experience in a vacuum, if you will. They will not be as effective for comparing the experiences to each other, apart from comparisons of general orientation to the maps borders.

5.4.1: Exploring Learning to Know and Learning to Do

Learning to Know is primarily concerned two conditions of learning – the mastery of learning tools or methods that facilitate “learning to learn” and the acquisition of structured, specific knowledge that is associated with an academic discipline.

Learning to Do is associated with the learning of specific physical and/or mental skills that need to be acquired for the proficient functioning within a discipline of study or profession.
Recently, Stanford University’s Open Learning initiative has received much attention (DeSantis Jan 2012)(DeSantis Feb 2012)(Boyd Myers)(Parry)(Staton). This initiative invites the public to participate in a series of free online computer-science classes. To be able to offer these course online, an amazing amount of resources have been developed by Stanford faculty, including online tutorials, live captured lectures, and computer graded assignments. While the Open Learning initiative is very interesting alone, there has also been a change in the classrooms of the computer-science students who actually attend Stanford as a result of all the newly developed digital learning resources created for this initiative. Many of the courses that have been developed for the online environment are starting to "flip" the in-classroom sections of these same courses, to take further advantage of the digital resources that have been created. "Flipping the classroom" is the notion that with the use of digital media, much of the course content that had previously been covered in the lecture hall or laboratory can now be covered when the students are not in the physical space. This opens the face to face time that students have with instructors to be used to cover material that is not as easily covered online.

In the case of the computer-science courses at Stanford, the flipped sections of the courses moved from twice a week lectures to once a week face to face classes that focused more on problem solving and required the students to view the lecture videos during their own time. At Stanford, they found that the students who participated in the flipped sections of the courses not only...
performed better on the exams, but also entered their following courses with a higher level of concept understanding than their peers who were enrolled in the non-flipped sections. It is presumed that this is due to a number of factors, including that the students who viewed the online lectures were able to do so when they were most attentive, rather than during the scheduled course time and were able to go back and listen to parts of lectures multiple times if they needed to. Also, the students in the flipped sections were able to ask better questions and seek more help in problem solving issues during their once per week classes since they had more time between listening to and processing the information in the lectures and when they saw the professor face to face.

For these lecture based courses, the Learning to Know type content is strong, and by flipping the delivery method of the lectures from the standard lecture course to online videos, student learning was not only increased, but instructor time was made more efficient by allowing the face to face time to be reduced, but spent dealing with higher level content.

The courses that were flipped at Stanford were not only lecture-based courses. They also flipped some laboratory-based courses. Before flipping the courses, these labs were largely spent showing students on-screen tutorials of how to perform specific things. They were largely step-by-step walk throughs that the students were expected to mimic on their own computers and the instructor performed the necessary actions on a computer projected onto a publicly viewable screen. When these courses were flipped, the tutorials were screen
captured and made available online. The students were expected to view the tutorials on their own time and come to lab with the exercises completed. In this way, the face-to-face lab time with the instructor could now be used to answer more specific questions, help students figure out where they may have erred when they did, and to discuss larger issues such as when and why a student might want to use a particular method or tool.

These lab-based courses saw similar improvements in student learning as did the lecture-based ones. Here, Learning to Do content was high and more face-to-face time could be dedicated to increased levels of Learning to Know that were not a part of the curriculum previously.

Figure 6: "Learning to Know" and "Learning to Do" in Stanford’s Flipped Classrooms
As represented in Figure 6 above, in both the lecture and laboratory based courses, taking advantage of various digital medias allowed both predominantly "Learning to Know" and "Learning to Do" type course work to not only be internalized by the learner more efficiently, but also allowed for more content to be introduced into the courses from a broader set of learning domains. The lecture based courses were able to cover the needed "Learning to Know" content while allowing for more "Learning to Do" content, such as higher level problem solving. The laboratory based courses were able to cover the needed "Learning to Do" content, screen based tutorials, while allowing for more "Learning to Know" content, such as applicable theory for when the learned techniques might be useful.

While there are probably many ways in which the idea of flipping a classroom might be beneficial to design education, one of the first that comes to mind is how we generally approach the teaching of specific digital applications, such as Adobe Creative Suite or 3D modeling tools such as AutoCAD, Rhino, or SolidWorks. Most design programs that I have investigated either do not teach applications, or if they do, do so in laboratory settings composed mostly of instructor led tutorials. These types of tutorials are very simple to produce for online distribution as narrated and captioned screen casts. Many great tutorials already exist on the web for these types of applications as well. In my own undergraduate experience, the Adobe Creative Suite of applications was not directly taught in a course setting, but the expectation to learn these programs
was present. When I had trouble figuring out how to do something I needed for a project, one of my first stops was, and still is, YouTube.com. A simple search for "photoshop tutorial" on YouTube currently returns with over 1,480,000 results. A search for "photoshop tutorial CS6" returns 10,400 results, and as of this writing CS6 has only been available for about a month and a half. YouTube.com is not at all the only resource being used by students this way already. I know that many of undergraduate peers from Industrial Design regularly visited Core77.com to view tutorials for drawing techniques, or to simply see examples of drawing styles that they could try to emulate to progress their abilities in this area.

Whether a design program would create proprietary tutorials or compile curated lists of preexisting ones is a question for the program’s University Office of the Chief Information Officer as there may be concerns about copyright that factor into the decision. If a program choose to curate preexisting tutorials, a very interesting new web-tool was recently released by TED (ted.com) called TED-Ed (ed.ted.com). This tool, as described on its site, "allows users to take any useful educational video, not just TED's, and easily create a customized lesson around the video. Users can distribute the lessons, publicly or privately, and track their impact on the world, a class, or an individual student." The user can embed a video, add quick quizzes, pose questions for deeper thought, and lists of resources for digging deeper into the subject. It is really a quite interesting tool.

In either situation though, flipping application specific courses has the potential to allow for the addition of course content beyond the technical aspects.
In this scenario, no longer would an instructor sit at a projected computer screen stating "Create a new document in Photoshop (Ctrl + N) with a width of 800px and a height of 400px, and a resolution of 300 pixels/inch. Using the gradient tool, fill the background with white..." Rather, the discussions that the instructor can have with the class can move beyond the digital tools to address higher level ideas such as layout, composition, form, balance, motivation, or meaningful image creation.

5.4.2: Exploring Learning to Work Together

Learning to Work Together deals with aspects of learning associated with the multifaceted issues surrounding interpersonal communication and collaboration.

When thinking about the intersection of "Learning to Work Together" and digital media, Wiki and other collaborative editing software like Google Docs have become the big players. The Faculty Survey of Student Engagement (FSSE), which surveyed approximately 4,600 faculty members at 50 U.S. colleges and universities in the spring of 2009, found that 16% of the faculty surveyed were using some form of collaborative editing software in their course work. In his article "Wikis in the Classroom: Three Ways to Increase Student Collaboration," John Orlando, PhD. outlines ways in which he uses wikis with his students at Norwich University. Orlando describes wikis as "simply web pages that can be edited by their users. Instead of only carrying content from the
administrator, they harness the power of crowd-sourcing to create a powerful communal resource." Two of the ways he addresses in this article fall into the "Learning to Work Together" domain nicely.

One of the ways Orlando uses a wiki with his students is as a Resource Repository. He saves current articles that relate to course content as he finds them, collecting links and summaries organized by topic in one central and publicly accessible place, and he encourages his students to do the same. This allows the students to "feel a part of a knowledge community that is exploring the topics together." In this way, he and his students build an educational resource together. Because the students are contributing to the resource, they not only have reason to frequently check out the resources being posted, but they also are more engaged and feel a sense of ownership with the content. This contributes to the students' Learning to Know and pushes them closer to the next ring of Learning to Be as well.

Another way Orlando uses wikis is for Student Projects. Orlando see a disconnect between the expectations for making research public. He states that "while professors are supposed to make public their research to advance understanding in their field, student work is only seen by the instructor and the student." To address this, he puts his students into small groups and assign each the project of developing a learning module on a topic covered in class. The students have to produce learning content, such as a voice-over PowerPoint, as well as an assessment module, like an online quiz, and recommended resources.
The team members work together to create the content, and then it is posted on the course wiki. Orlando points out that "not only does this encourage students to do better work, but also makes that work a resource for future students. Other students can benefit from the work, and it can serve as a model of what the instructor wants from students." Along with being a strong example of Learning to Work Together, this application also pushes the students closer to Learning to Be in the Learning to Know domain, as they must dig into the course content to really understand it before they can develop good learning and assessment modules.

When we map these two experiences on the Learning Map Framework, we get Figure 7 below.

Figure 7: Using Wikis for “Learning to Work Together” as described by J. Orlando
In the Learning Map Framework for these activities, we can see that both of the wiki applications Orlando uses with his students have strong Learning to Work Together components. The use as a Resource Repository covers more of the Learning to Know area than the Student Project usage because the students are being exposed to resources that span all the course topics, whereas in the Student Project they are focused on a higher understanding of a smaller subset of the course content. The Student Project use case also pushes closer to Learning to Be in the Learning to Work Together domain than the Resource Repository use case because in the Student Projects, the students must work together to produce content. In contrast, the Resource Repository is more just a sharing case. Learning to share is certainly a component of Learning to Work Together, but not as intense as collaboration on content creation.

It is not hard to posit ways in which similar usage of wikis or other collaborative editing software could be used in the design education space. The creation of a resource repository could be applicable to nearly any course. Imagine an Adobe Photoshop course where the students create wiki pages full of online tutorials, open source image libraries, and/or free brushes, icon sets, and layout templates. For some time now, I have been thinking about a project for my Introduction to Design students that might use a wiki to build a database of the appearance of iconic design artifacts in popular culture. The project would be sort of a design scavenger hunt, where we could document how pervasive to popular culture some designed objects have become. Have you ever noticed that Dr.
House has a reupholstered Eames Lounge Chair in his office or see the Le Corbusier Cube Chair in the early 1990s Jello Pudding commercial with Bill Cosby? These would be the type things that would get documented on the wiki.

During my undergraduate degree in one of my first interior space design studios, my professor handed out a list of questions that he referred to as his "Design Bootcamp" assignment. It contained questions like "Who were the New York Five?" and "What might we be referring to in a design context if we talk about Memphis Style?" This type of assignment could become a wonderful resource if it were to be moved to a wiki platform and new questions asked every year. We could build a design specific wikipedia quite quickly this way.

5.4.3: Exploring Learning to Be

Learning to Be addresses aspects of learning that deal with the idea of moving from knowing the facts and skills associated with a discipline to being fully embedded within a discipline’s culture and ethics.

Learning to Be is easily both the least addressed of the meta-keyword phrases in the standard educational setting and possibly the hardest to show discrete examples of for the purpose of explanation. Largely, this is because Learning to Be is not a type of learning that can be easily planned to achieve or is easily measurable. Learning to Be is largely related to ideas of a sort of Maslovian Self-actualization, though specifically within the academic discipline or professional space. One of the best writings I have found on the subject of
Learning to Be has come from John Seely Brown in his paper *New Learning Environments for the 21st Century*. In this paper, Brown astutely points out that “each community of practice is itself embedded in a broader epistemic frame, which suggests what problems are considered interesting problems, what constitutes an elegant solution, what warrants are acceptable in an argument, and so on. There are never explicit rules or predicates that define an epistemic frame, but being in a community of practice allows students to start to intuit and embody them. (Brown, p. 7)” It is in this same paper that we are able to find one of the clearest examples of Learning to Be happening within a traditional classroom experience. Brown offers the following anecdote to illustrate a specific experience from his own education where he became aware of the difference between learning about a subject and learning to be a member of that subject’s larger community. He writes:

“There is a crucial difference between learning-to-be and learning-about. For me, it wasn’t until my second year in graduate school in mathematics at the University of Michigan, taking a course from Professor Paul Halmos, that I got a glimpse of what it meant to be a mathematician. Someone in our class asked him a question that he couldn’t immediately answer. What followed was amazing. All of us in the classroom had the chance to watch him struggling with the question for over half an hour. Halmos was doing mathematical research; he was exhibiting the practices of being a mathematician. I had spent six years studying theoretical mathematics and had never had the slightest glimpse of what it might mean to be a practicing research mathematician. That one moment in time gave me an insight into the practice of being a research mathematician. I was spellbound. (Brown, p. 5-6)”
To visualize this particular experience on the Learning Map Framework we will have to make a few assumptions regarding where the experience may appear with relation to the core meta-keyword phrase domains, but we know from Brown’s account, based on his amazement over watching his professor struggle with the question at hand, that the experience emanated from the outer Learning to Be ring. The Learning Map Framework in this situation may look something like Figure 8 below.

![Figure 8: J.S. Brown's “Learning to Be” Moment](image)

*Figure 8: J.S. Brown’s “Learning to Be” Moment*
For this Learning Map Framework, I have assumed that Professor Halmos probably used a few mathematical concepts that his students might not have been aware of previously, and had to therefore take a small aside to introduce these briefly for the students to follow along, pushing the demonstration towards the Learning to Know region. I also have assumed that Professor Halmos may have also came to moments in the solution where he would have needed to simply “crank through” a concept that had previously been covered in class. For this part, the he may have said something like, “Now we will need to solve for $\Delta$. We can use the method we discussed in Chapter 3 to do this. Who can work that out for us? Thank you, bonus points for Ms. Smith in the third row!” This pushes the experience towards the Learning to Do region as well.

In many disciplines, experiences such as the above are rare and by no means a structured part of the planned curriculum. That stated, these opportunities are presenting themselves in the classroom with increasing frequency, largely due to the increasing presence of internet enabled devices in classrooms and the access to information that comes with these technologies. Brown offers an example, which I have personally seen happen from both the student and instructor role, where a student raises their hand and says some variant of the following statement. “But professor, I just found this world famous scholar who contradicts what you just said.” What the instructor does next has the potential to be the difference between an uncomfortable, confrontational moment or a Learning to Be experience like above. Brown writes that at this
moment, the instructor “could stare the student down, (s/he) could ignore him, or (s/he) could turn this moment into a critical, Socratic learning event (Brown, p.8)” – a Learning to Be moment. Brown suggests that “By seizing the moment, abandoning your prepared lecture and asking the student, or better yet, asking the entire class, ’Why would you believe that – just because you found it on the net? I certainly hope not. Let’s all search the web right now and see how many counter examples can be found for each position.’ Usually the class will go off and find a host of contradictory facts, opinions or arguments. So now the question becomes, how do you decide what to believe? What are the warrants for each belief? Are the warrants (or sources) really independent or do they just look independent? How rigorously can the warrants be defended? Soon the class is engaged in deliberate inquiry, critical thinking, and argumentation. Your job becomes that of a stimulator, moderator, guide and mentor – all on the fly. And students now see you demonstrating your practice, and thus they experience a small fragment of an epistemic culture (Brown, p.8).” This approach could possibly lead to a small glimpse into the nature of “being” in the discipline, of course this also assumes that the instructor has previously reached an appropriate level of ”Learning to Be" in their own previous experiences.

Surely though, there must be other ways to address the Learning to Be needs of students than simply hoping for unplanned opportunities like the one above to spontaneously arise. In fact there are, though it seems that the best examples I could find do not generally happen within the confines of what we
would normally think of as the traditional, curricular course work. They happen in only a few specific fields of study. Much of the Learning to Be that occurs in a university setting, does so in fields that have a longer history of Master-Apprentice relationships to learning. In medicine, after the student completes much of their required Learning to Know and Learning to Do work (anatomy, physiology, biochemistry, pharmacology, pathology, clinicals, etc...), they are then required to spend between three and seven years completing their “Residency,” a period of supervised practice within their specialization. This happens in a hospital, working with patients. This is the time when the students go from knowing medicine to being physicians.

Most other disciplines rely heavily on the professional world to cover the Learning to Be needs of the student through internships, shadowing opportunities, and entry-level positions. Students who participate in an internship position or a shadowing opportunity during their studies get opportunities to begin their Learning to Be educations, or at least see what being looks like in their field. Entry-level positions in most employment settings tend towards Learning to Be experiences as well. They are often structured with more frequent performance reviews and some flexibility built into the position to take into account the fact that the recent graduate will need more time to learn to be in their chosen career.

While we in design education have in place the internship model as well, we also have something else working in our favor regarding the terrain of
Learning to Be; the studio-based learning environment. Very little of architecture, art, or design education takes place in the lecture halls or labs that are so common to many other disciplines. Brown points this fact out in his paper and suggests that this environment is an aspect that many other disciplines should be investigating more. Brown summarizes the studio-based learning environment quite well, stating the following about an architecture studio.

“Note that in studio-based learning environments all work-in-progress is always made public. As a result, every student can see what every other student is doing. Moreover, every student witnesses the thinking processes that other students are using to develop their designs. And then there is the public “crit.” What typically happens is that the master and several outside practitioners come in and critique each of the student’s projects. The other students not only get to hear each other’s critiques, but because they were in some sense peripheral participants in the evolution of each other’s work, they understanding the thinking behind it. They have a moderately nuanced understanding of the design choices, the constraints, the unintended consequences of choices made early on, and the compromises that may underlay the final product. As a result, the brief crit holds substantial significance and presents learning opportunities for all the students – not just the one whose project is being critiqued. ...Consider how students in studios start to pick up skills from each other, i.e., how they witness the wide variety of ways to approach a design problem in the first place and how they start to appreciate and learn from the struggles, the missteps, and the successes of their peers, as well as how they start to learn the social and intellectual practices that enable them as an ensemble to become a reflective practicum. Indeed, they are starting to be enculturated (sic) into the practice of being an architect. (Brown, p. 3-4).”
To take this back to the Learning Map Framework, the average studio course in the design disciplines appears to be a fairly ideal balance between the meta-keyword phrase borders. It might look something like Figure 9 below.

Figure 9: "Learning to Be" in an Ideal Studio Based Learning Environment

Much has been written recently on the advantages that can be gained within studio-based learning environments and many education researchers are looking to the design disciplines to guide the way in this type of learning. The studio may be a great environment for facilitating a balanced approach for
learning, as we in art and design may be the resident experts in studio-based learning, but it is not a silver bullet. The above map certainly suggests this, but we have to be careful. While our learning environment has the potential for a balanced approach, we cannot become complacent. The other disciplines are looking to us for help with the Learning to Be, but we should be looking to them for help with the Learning to Know and Learning to Do methods while trying to retain the advantages of the studio.

5.5: Conclusion

At this point, a framework, the Learning Map Framework, has been proposed. This proposed framework attempts to organize artifacts of teaching, the tools, methods, techniques, and tricks that support our classroom activities, into categories based on the type of learning types they support: Learning to Know, Learning to Do, and Learning to Work Together relative to a desired level of Learning to Be. In this chapter, we outlined the roots of this model, defined these categories, and then used small case studies to further our understanding of the framework. The potential pool of cases that could have been held up for study was filtered to select examples involving the implementation of Web 2.0 and successful engagement of “Net Gen” students.

In the next chapter, we will look at a few more ways in which the Learning Map Framework can be implemented within design education as we redefine the scope of the Learning to Be ring on the map.
Chapter 6: Discussion

6.1: Chapter Overview

In the previous chapter, I began to touch on the idea of building the four pillars of lifelong learning proposed by the International Commission on Education for the Twenty-first Century into a notion that I have referred to as meta-keyword phrases. I then transformed the mental model of the four pillars into one of a landscape, visualized as the Learning Map Framework. Through a predominantly case-based exploration of the landscape of the Learning Map Framework, you saw the first, most basic application of the Learning Map Framework tool as a way to attempt to identify a place for a singular experience to exist within the landscape in relation to our meta-keyword phrases. I feel that while that was important, it was just the beginning of what is possible with these ideas.

In this chapter, I want to further the discussion surrounding these two ideas, the meta-keyword phrases and the Learning Map Framework. I posit that the combination of thinking about learning experiences according to the meta-keyword phrases and the Learning Map Framework has the potential to have significant implications in two predominant ways: 1) the ways in which we share
and discover the research artifacts of learning, and 2) the ways we may understand the systems with which we support learning.

In the next pages, I will first reiterate the power of the meta-keyword phrases and a few ways in which we can harness this power. I will then expand on the Learning Map Framework by showing a few more applications, different from what we saw in the previous chapter, for the map that will demonstrate the larger potential of these notions.

6.2: Implementing Meta-Keyword Phrases

As I alluded to in Chapter 5, section 3, the notion of meta-data and meta-tags can be very powerful and interesting by how it fosters sharing and discovery of tangentially related content in a variety of ways. In my example of tagging an image of the Statue of Liberty on Flickr with a diverse set of related “keywords,” it is these related tags that allow others to find that particular image without being aware that it was the image they may have been looking for. Flickr’s implementation of meta-data into its interface is key to its success. What this implementation does is allow for the creation of space that has been designed for serendipitous discovery. Much of what really makes this successful is related to the fact that there is little standardization regarding what can be used as a tag on an image uploaded to Flickr, yet the culture of Flickr supports the notion of tagging with incredibly broad terms. An end-user can log onto Flickr knowing
very little about the specifics of what they are looking for, and still come away having found something useful to him or her.

This is very different from the way we use our predominant form of metadata, keywords, in academic writing and publishing. As academics, we strive to attach to our published content as specific and concise of a set of keywords as possible. This, along with our abstracts, helps others decide quickly if the item we have published will be useful to the specific topic the reader is looking for. This methodology is useful in databases that catalog our work for finding very specific items. In the situation where a researcher is looking for work on a specific topic, specific keywords are helpful. This approach is not as effective when we are not quite sure what we are looking for, which is more often the case when we are seeking solutions to problems.

In this thesis, I am proposing that as we publish items related to education and learning topics, that we begin to attach a set of significantly broader keywords to our published artifacts. These meta-keyword phrases seek to increase the opportunity for serendipitous discovery of useful information. They seek to flip the orientation of searching, from a perspective of finding extremely directly related content to one of finding tangentially related content. In this way the proposed meta-keyword phrases, “Learning to Know,” “Learning to Do,” “Learning to Be,” and “Learning to Work Together” become a set of searchable phrases, just like our other keywords. The addition of these phases though will allow a user to search based on the particular aspect of learning that the searcher
is interested in implementing in their classroom. Additionally, these meta-keyword phrases transcend disciplines. For example, the article I referenced from John Seely Brown that talked about Learning to Be was originally published in Change Magazine, a magazine of higher learning, and one I was not previously aware of. I had no moment of previous experience to have given me cause to know of this resource, let alone be a reader of it. Had it not been for the actual inclusion of the specific phrase “Learning to Be,” which I knew I was seeking examples of for this work, I would have most likely never stumbled on Brown’s article. It is in this way that the proposed meta-keyword phrases have the potential to cross disciplinary boundaries while remaining consistent to the larger topic of education and learning related content.

This idea of a codified set of meta-keyword phrases for educational research purposes is something that I have been referring to as the “low hanging fruit” of my thesis as I have discussed it with various peers and colleagues. This is because I see the notion of these proposed meta-keyword phrases as the simplest idea to implement that stands a chance of having the broadest affect. For the meta-keyword phrases to become useful, all we have to do is start using them. Start including them alongside our other keywords when we publish, and the various search systems built into the web and the database systems that catalog journals and media will find them. If the meta-keyword phrases are in the systems, then when we search the systems we will find the sources, which we can parse further based on other criteria that we may be interested in as searchers.
With this one, low-investment addition to our current practices of research and publishing, we gain a way to seek information on learning that transcends disciplines and is only limited by the sources cataloged by the search system being used at the moment. It is that “simple.” In the next chapter I will touch on my reasoning for putting the word “simple” within quotation marks, but for now I will leave this as it is. If we simply start publishing education and learning related experiences with thoughts of including at least one of the proposed meta-keyword phrases along side our other keywords, the general field of education gains a new resource for sharing and discovery.

6.3: Scaling the Map

In the previous chapter we saw how the Learning Map Framework can be used to understand an individual learning experience. I have found that this implementation of the Learning Map Framework has the potential for allowing an instructor to gain valuable insights into the activities that may occur in the classroom. That stated, individual learning experiences do not happen in a vacuum. They most often occur within the overall experience of an entire course, which in turn is experienced within an overall curriculum. This brings to our attention the question of how to begin to account for understanding learning environments beyond the singular learning event.

To account for this idea, the Learning Map Framework has been designed to be fractal, or without scale. It has the potential to be used more broadly than as
a way to classify singular learning events as shown in the previous chapter. Because "Learning to Be" is an expanding variable on the Learning Map Framework, the user can redefine the outer ring of the map representing "Learning to Be." The map user can begin to define what it might mean for a student to have learned to "be" a successful student within an individual course, a smaller series of courses (such as a Foundations Sequence or a Minor Program), or throughout the series of courses that comprise the completion of a particular Major.

In the figure below, we can see an example of how the fractal nature of the Learning Map Framework might work. In this example we see that a collegiate design program seeks to build upon a foundation of learning experiences that the student participated in during their high school education. From this point, the design program may have a series of courses and experiences that they consider to be foundational to all design disciplines. Often times, these course are what a program might call their "foundations courses" or they may be part of the Minor program offered to non-design majors at the university. Built upon these foundational learning experiences are the next level course work that will contribute to the students' notion of "being" a particular type of design major, in this case an Interior Space Design major. The various skills and knowledge acquired by a student at this level may be enough to allow the student to be hired by a firm upon graduation, but they may not be enough for the student to feel as though they learned to "Be" an entry-level designer. After some time in their
entry-level position, the student will become an entry-level designer, knowing and doing everything that is expected of this position. At this point, we could imagine the final Learning to Be ring in the figure receding into a map representing the next level in the designer's career, perhaps as a Project Leader.

![Diagram of the Learning Map Framework]

**Figure 10: The Fractal Nature of the Learning Map Framework**

It is the understanding and application of fractal nature of the Learning Map Framework where this idea begins to demonstrate its strongest potential as a tool for understanding and affecting the ways in which we as educators might provide students with opportunities for balanced and fulfilling educational opportunities. Additionally, this fractal framework can be used by educators and
administrators to build language and structure that can seek to organize and connect classroom activities, courses, and curriculums along common goals and needs.

In the remainder of this chapter, I will show through examples more specifically how the fractal nature of the Learning Map Framework can prove to be both useful and insightful. First we will look at using the Learning Map Framework as a tool for course design. We will then use the Learning Map Framework as a tool for curriculum design, and finally we will see it in use as a tool for opportunity discovery.

6.3.1: A Tool for Course Design

In this section we will look at using the Learning Map Framework as a tool for course design. To achieve this objective, I will use two course which I taught at OSU while in my role as a Graduate Teaching Associate. The courses we will look at are OSU Design 201: Descriptive and Analytic Drawing for Designers and OSU Design 200: An Introduction to Design. Both of these courses are ones that are required of all students at OSU who are seeking to pursue either a Design Major or Minor. Through these courses, I will show how the map can be used to understand, analyze, and refine the contents of a course (Assignments, Lecture Topics, Etc...). By mapping these course components, insights can be gained into the nature of the learning journey the students are to take during the academic term.
First we will look at OSU Design 201: Descriptive and Analytic Drawing for Designers (Design 201). Design 201 is the first in a series of three drawing courses required within the OSU Design curriculum. This course is intended to begin the student's development of drawing skills to explore, observe, understand, record, analyze and communicate visual information. Generally, Design 201 is structured as what most would be familiar with as a traditional drawing studio course. Fifteen to twenty students are taken through a series of assignments intended to introduce the student to various types, techniques, and styles of drawing, largely using physical observation as the subject of the drawings. Through instructor and peer-led critique, issues of technique, composition, form, and meaning-making are discussed and developed. If the course were to be reduced to a singular learning goal, it could be stated as that of learning to be a descriptive and analytic drawer.
The above Learning Map Framework shows the series of learning activities and touch-points that occur within Design 201. The course uses a textbook, *Design Drawing* by F.D.K. Ching, for the majority of the Learning to Know that occurs within the course. Additionally, the students are guided through a series of drawing assignments. Assignments A1–A5 on the map are individual assignments which build upon each other. Theses assignments are largely Learning to Do type activities, but they do have slight aspects of Learning to Know brought into the mix, through the assignment critique process and the fact that as the students complete the individual assignments, they must figure out the specifics of how and why the current assignment may differ from the
preceding assignments. As one analyzes the Learning Map Framework for Design 201, it should be apparent that assignment A6 is somehow different from assignments A1–A5. Assignment A6 asks the students to work on a team with one other student to create a visual narrative that effectively demonstrates all the techniques learned in the previous assignments. With assignment A6, not only are the students asked to build upon and refine the Learning to Do aspects of the course, but the Learning to Work Together component is added to the mix. The students must learn to work with their partners, to compromise, to share workloads, to plan their time effectively, and communicate both their individual creative visions with each other and their narrative to the viewer.

From the Learning Map Framework for Design 201, we can see that an effort has been made by the course designer to involve all of our learning types, though the course is certainly swayed heavily towards the Learning to Do aspect. This identification can begin to offer additional questions for consideration in the development of the course in the future. Is it a problem that the course is weighted heavily towards the Learning to Do components? Perhaps not, depending on where the course fits in the larger curriculum. If we wish to improve the course, where might the simplest or quickest changes be implemented? Again, this might depend on where Design 201 fits in the larger curriculum, but it would not be unreasonable to also assume that improvements could be made in either the Learning to Know or Learning to Work Together aspects. For example, the majority of the Learning to Know occurring currently in
the course comes from the inclusion of the textbook and required readings from it. Perhaps the addition of a small lecture component or the inclusion of focused technique demonstrations by the instructor could be developed to facilitate the Learning to Know aspects of the course. Perhaps a series of tutorial videos on YouTube.com or example images that include the techniques implemented well on Flickr.com could be curated and presented to the students as an additional Learning to Know resource. These types of questions and solution possibilities begin to touch on the ways that the Learning Map Framework can also act as a tool for opportunity discovery at the course design level.

OSU Design 201 is a fairly straightforward, formulaic course designed to be taught by many instructors simultaneously while maintaining consistency across the various sections. The instructors in charge of Design 201 often change quarterly and this presents the constraint that the design of the course and its content must be easy to grasp quickly for whichever instructors pick up its teaching responsibilities for a single academic term. For those who are familiar with drawing courses at the collegiate level, it most likely presented few surprises, but my hope is that seeing it represented on the Learning Map Framework has provided a few insights into the application of the map for course design purposes. Now let us look at a more complex course and how the Learning Map Framework might look.

Unlike OSU Design 201, OSU Design 200: An Introduction to Design (Design 200) is most often only taught by one instructor for several academic
terms. This allows the course design to be more complex, given that the instructor has more time to become comfortable with the content. For example, I was in charge of the instruction of Design 200 for seven consecutive quarters, and during this time I was able to build and modify the course extensively. Design 200 also fulfills a different role within the curriculum, which will become more apparent in the next section.

When I took over Design 200, it was primarily a lecture-based course. Below you can see an overview of what the course looked like Autumn 2009, the first quarter that I taught the course. Then, Design 200 consisted of ten lectures, a series of quizzes and exams, and a few assignments with little interaction between the students.

---

**Figure 12: OSU Design 200 – Autumn 2009**

*Legend*

- **Lectures** = L1 – L10
- **Assignments** = A1 – A4
- **Quizzes & Exams** = Q&E
- **Reading**
  - T1: Design: A Short Introduction, Heskett
  - T2: Cradle to Cradle, McDonough
It was apparent both from this structure and the fact that 80 students were assigned to a single section, that this course had been designed with a strong emphasis on the Learning to Know aspects of learning. This format had worked for instructors in the past and it was a relatively solid course generally, but something did not quite feel right to me as the current instructor.

After teaching the course once structured in this way, a few things started to become apparent to me. Looking at the student comments about the course on our department's Student Evaluation of Instruction form, there were many comments that ran similar to the idea that "the class was good, but the lectures could get kind of boring, but I guess that is just the way large lecture classes are." This aligned well with my own observations that the students seemed bored and unengaged with the material, no matter how much I tried to involve them through questions and discussion.

In trying to figure out what to do about this, I spoke with our Foundations Coordinator. I asked him what the primary goals were with the course, what is this course's role in the curriculum. His response was that we obviously wanted to introduce some key information about what design is, why it is important, a beginning understanding of the design process, and an introduction to some of the larger issues in design such as sustainability, accessibility, and problem seeking and solving. Beyond that, I was told that the primary goals was to get the students "excited" about design and wanting to be design majors or minors.
Armed with this, I began redesigning assignments to cover more information and seeing what topics could be addressed more actively and removed from the lecture format. I reflected on my own undergraduate experience as identified that I always learned more through the application of information in my studio courses than listening to information in lectures. I wanted to see how close I could get to running an 80 student studio course. If getting students "excited" about design would be one of my primary goals, then I wanted them to get out of the classroom and discover how much design affected their lives currently. I wanted them to see the world around them through the lens of design.

By the third quarter of teaching Design 200, Spring 2010, I had developed a number of activities, large and small, that seemed to be achieving these goals. The students were having fun, learning about design, and killing me with grading. Some weeks I was grading 160-240 individual mini-design projects. It was about this time when I first ran across the report from the International Commission on Education for the Twenty-first Century, which I wrote about in Chapter 5. The idea that students need to Learn to Work Together seemed like the perfect excuse to reduce my grading load. I began tweaking assignments to be larger in context and content, but to be worked on in teams of various sizes. The students responded well to these changes and I was happy with both the reduced grading load and the more insightful results of the assignments.
The final piece of the puzzle that needed to be solved revolved around the aspect of quizzes and exams. I felt that they did not really do an adequate job of evaluating learning beyond rote memorization topics, and the Student Evaluations of Instruction seemed to suggest that the students agreed. I had recently read a series of articles on the topic of design students needing to have higher levels of writing and reflection skills. Beginning during Winter 2011 quarter, I developed a series of journal and reflection type prompts based on course material and the required readings, threw out the quizzes and exams, and asked the students to start blogging as a component of the course. More can be read about this experience in Chapter 4, but overall I found it to be very successful.

By the final quarter of my instruction of Design 200, Autumn 2011, the course had been vastly improved regarding the mission of getting students "excited" about design, and they were still learning everything that they needed to know to "be" pre-design students. The Learning Map Framework for Design 200 at this point looked like the figure below.
From this Learning Map Framework, we can see that while the course is still very focussed on the Learning to Know domain, the activities are more spread across all the meta-keyword phrases and the addition of the writing activities have allowed the students to get much closer to the outer Learning to Be ring based on the need to internalize and reflect on the course material.

As we can see now, the Learning Map Framework is a useful tool for understanding the experiences within a particular course. With the Learning Map Framework, we can easily identify the predominate learning types occurring with the course and can begin to identify opportunities for growing and evolving.
courses. Next, we will expand the Learning to Be ring to the next logical viewing level, curriculum design.

**6.3.2: A Tool for Curriculum Design**

To use the Learning Map Framework for Curriculum Design, two things need to happen first. First and most obviously at this point, we need to reframe the "Learning to Be" scale. Where when we produced the Learning Map Framework for OSU Design 201 by framing "Learning to Be" as learning to be a descriptive and analytic drawer, we might now frame it as learning to be a particular type of design school graduate. For our purposes here, I will reframe "Learning to Be" as learning to be an Interior Space Design Major. This has been done for the sole reason that out of the three design majors offered by The Ohio State University, Visual Communication Design (VC), Industrial Design (ID), and Interior Space Design (ISD), Interior Space Design is the program I am most familiar with; having gone through this program for my undergraduate degree.

The second thing that we would need to do would be to create Learning Map Frameworks for all the courses included within the curriculum being analyzed. This must be done to allow us to determine where to place each individual course on the Learning Map Framework for the curriculum. With nearly 30 individual courses required for the ISD major from the Department of Design alone, this is certainly a daunting endeavor. This does not included the courses that are required from outside the department as General Education
Credits; courses like Biology 101, English 110, or Art 300. To save space, I will not show all the Learning Map Frameworks produced for the individual courses. Rather, I will use the two I have shown previously to give a sense of how this process works.

If we look at the Learning Map Framework produced earlier in this chapter for OSU Design 201 (Figure 11), we can see that the bulk of the experiences in Design 201 fall into the "Learning to Do" domain. Looking at the Learning Map Framework produced for OSU Design 200 (Figure 13), we see that this course is weighted heavily towards the "Learning to Know" space with a secondary emphasis on "Learning to Work Together." This tells us where these two courses will fall in our ISD Curriculum Learning Map Framework, as seen below in Figure 14.

*Figure 14: Placing Courses into a Curriculum Learning Map Framework*
As can be seen in Figure 14 above, OSU Design 201 has been placed in the "Learning to Do" domain, but a little closer to the "Learning to Know" space than not. Likewise, OSU Design 200 has been placed mostly in the "Learning to Know" domain, but also a bit into the "Learning to Work Together" space to reflect the secondary emphasis in that aspect. This methodology can be applied to all the courses within the ISD curriculum. Table 1 below shows all the courses in the OSU ISD Curriculum housed within the Department of Design. The table is organized according to the recommended sequence in which an incoming student should complete the required courses. It should be noted that the following course list comes from the curriculum as it existed within a quarter based academic calendar at OSU. As of Summer 2012, The Ohio State University transitioned to a semester based academic calendar, but at the time of writing this document not enough information was available to analyze the new semester based curriculum.
<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Name</th>
<th>Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>An Introduction to Design</td>
<td>Autumn</td>
</tr>
<tr>
<td>201</td>
<td>Descriptive and Analytic Drawing for Designers</td>
<td>Autumn</td>
</tr>
<tr>
<td>310</td>
<td>Color and Communication</td>
<td>Winter</td>
</tr>
<tr>
<td>203</td>
<td>Drawing Systems for Designers</td>
<td>Winter</td>
</tr>
<tr>
<td>320</td>
<td>Electronic Media for Designers</td>
<td>Spring</td>
</tr>
<tr>
<td>205</td>
<td>Graphic Thinking for Designers</td>
<td>Spring</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>251</td>
<td>Basic Design Studio I</td>
<td>Autumn</td>
</tr>
<tr>
<td>253</td>
<td>Design History</td>
<td>Autumn</td>
</tr>
<tr>
<td>252</td>
<td>Basic Design Studio II</td>
<td>Winter</td>
</tr>
<tr>
<td>254</td>
<td>Introduction to Materials and Processes</td>
<td>Winter</td>
</tr>
<tr>
<td>262</td>
<td>Basic Design Studio III</td>
<td>Spring</td>
</tr>
<tr>
<td>521</td>
<td>Interior Drawing</td>
<td>Spring</td>
</tr>
</tbody>
</table>

Table 1: OSU Interior Space Design Quarter Based Curriculum
Table 1 Continued

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Name</th>
<th>Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>460</td>
<td>Intermediate Design Studio I</td>
<td>Autumn</td>
</tr>
<tr>
<td>523</td>
<td>Interior Modeling</td>
<td>Autumn</td>
</tr>
<tr>
<td>555</td>
<td>Design Research Methodology</td>
<td>Autumn</td>
</tr>
<tr>
<td>461</td>
<td>Intermediate Design Studio II</td>
<td>Winter</td>
</tr>
<tr>
<td>524</td>
<td>Interior Specifications</td>
<td>Winter</td>
</tr>
<tr>
<td>552</td>
<td>Design Communication Practices</td>
<td>Winter</td>
</tr>
<tr>
<td>462</td>
<td>Intermediate Design Studio III</td>
<td>Spring</td>
</tr>
<tr>
<td>603</td>
<td>3D Computer-Aided Design Visualization</td>
<td>Spring</td>
</tr>
<tr>
<td>522</td>
<td>Interior Graphics</td>
<td>Spring</td>
</tr>
<tr>
<td>Fourth Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>660</td>
<td>Advanced Design Studio I</td>
<td>Autumn</td>
</tr>
<tr>
<td>554</td>
<td>Human and Environmental Systems Design</td>
<td>Autumn</td>
</tr>
<tr>
<td>Intern</td>
<td>Internship or Study Abroad</td>
<td>Autumn</td>
</tr>
<tr>
<td>661</td>
<td>Advanced Design Studio II</td>
<td>Winter</td>
</tr>
<tr>
<td>525</td>
<td>Interior Detailing</td>
<td>Winter</td>
</tr>
<tr>
<td>656</td>
<td>Design Professional Practices</td>
<td>Winter</td>
</tr>
<tr>
<td>662</td>
<td>Advanced Design Studio III</td>
<td>Spring</td>
</tr>
</tbody>
</table>

Upon creating Learning Map Frameworks for all the courses contained within the ISD Curriculum, the individual courses can then be plotted onto our
Learning Map Framework for the ISD Curriculum. Figure 15 below shows the results of this effort.

What insights into the ISD curriculum do we gain from this Learning Map Framework? First, we are able to see that the "Learning to Know" and "Learning to Do" domains seem to be getting a fair amount of attention. This is not particularly a surprise since educational institutions seem to have a good hold on methods for fostering "Learning to Know" and design is a discipline that is rooted in craft and service skills, so requires a great deal of "Learning to Do." We also see that there seems to be room to explore more ways of bringing "Learning to Work Together" into the curriculum as this space is comparatively underpopulated.
Arguments could be made that the "Learning to Work Together" space might be a ripe area for Professional Organization Student Chapters (AIGA, IIDA, ASID, etc...) to become more active. If we were to include the activities of these student chapters, many would probably fall in the "Learning to Work Together" domain. This relative void in the “Learning to Work Together” domain could also be of interest as we beginning to discuss how design educations might need to change to deal with the changing role of the designer covered in Chapter 3. As we start to think more about educating for Social Design or aspects of design “with people” rather than “for people,” this portion of the learning space may need to be looked at closer regarding our curriculums. We also see that while many courses seem to have logical connections to each other based on the fact that their areas touch or overlap, but some seem to stand alone in the space. Perhaps these are courses that might need to be looked at closer for opportunities to be revamped and create stronger connections to the rest of the curriculum.

These are just a few of the most obvious insights that could be gained about the design of the ISD curriculum. More work needs to be done concerning the value of the Learning Map Framework to analyze curriculums. In the future, it would be interesting to produce the same maps for the other two OSU design majors, or for other ISD programs at other schools. It may provided insights into the differences between the approaches used within design education. I believe that the Learning Map Framework has the potential to be a useful new tool for course and curriculum design.
6.4: Conclusion

In this chapter, a case has been made for the potential impact that could be felt in the design education space, and more generally the education space as a whole, if we were to be able to implement a large scale use of the meta-keyword phrases of Learning to Know, Learning to Do, Learning to Work Together, and Learning to Be as a component of our normal academic publishing activities. Also, examples have been shown regarding ways to potentially use the Learning Map Framework beyond categorizing the individual learning activity as a tool for course and curriculum design.

I believe that these insights may be just the tip of the proverbial iceberg. Certainly, with more time and work, the use of the Learning Map Framework, and the associated meta-keyword phrases, as a methodological approach, thinking framework, and visualization tool has the potential for other insights that could not only be influential to assignment, course, and curriculum design, but also help create learning experiences that are lasting and holistic regarding fostering student learning. In the next chapter, I will touch a bit more on the work that still needs to be done to start to achieve these goals.
Chapter 7: Conclusions, Future Work & Provocations

7.1: Chapter Overview

This thesis set out to, and has now achieved, a few key contributions to the discourse surrounding learning and more specifically learning within the design discipline. In Chapter 2, I established that somewhere in the overlap between the tools and technologies of Web 2.0, the recent surge of interest in Maker, Hacker, and D.I.Y. Communities, and the rise of the Millennial Generation exists an opportunity to reevaluate the ways in which we approach design education. In Chapter 3, I established the need to more closely define the "promise" of a formal design education, whatever that promise is currently and what it may become in the future. In Chapter 4, I outlined four of the primary experiences that led me to establishing the need for developing a set of tools to facilitate learning and sharing. In Chapter 5, I proposed a set of meta-keyword phrases that will assist in the sharing and categorizing various learning experiences. I also proposed a Learning Map Framework for visualizing the relationships between the meta-keyword phrases. In Chapter 6, I expanded on the potential implications of the meta-keyword phrases and possible additional applications for the Learning Map Framework.
In this, the final chapter, the goals are simple. I wish to wrap this thesis up in understated but elegant craft paper, and tie up the loose ends with twine in shoelace type bows. While this is the visual metaphor I want to achieve, I will have to be a bit more specific in my approach.

In this chapter, I will reiterate the key conclusions I have come to regarding the meta-keyword phrases and the Learning Map Framework. I will also address conclusions that surround the importance of fostering a holistic approach to education and the need for building tools that support this approach. I will address a couple of justifications for why I believe the topics contained here are both timely and why they should start in design education, though they are applicable to education and learning in any discipline. Finally, I will highlight a few of the more prominent areas that have been identified in the topics presented thus far in which future work still needs to be done. I will then conclude this thesis with a few provocations that are meant to be a “call-to-action” for other educators to continue the discussion surrounding the future of the ideas presented in this thesis and the future of design education more generally.

7.2: Conclusions

7.2.1: The Meta-Keyword Phrases and the Learning Map Framework

In this thesis, I am proposing that as we publish items related to education and learning topics, that we begin to attach a set of significantly broader
keywords to our published artifacts. These meta-keyword phrases seek to increase the opportunity for serendipitous discovery of useful information. They seek to flip the orientation of searching, from a perspective of finding extremely directly related content to one of finding tangentially related content. In this way the proposed meta-keyword phrases, “Learning to Know,” “Learning to Do,” “Learning to Work Together,” and “Learning to Be” become a set of searchable phrases, just like in our traditional use of keywords. The addition of these phrases though will allow a user to search based on the particular aspect of learning that the searcher is interested in implementing in their classroom. Additionally, these meta-keyword phrases transcend disciplines.

This idea of a codified set of meta-keyword phrases for educational research purposes is something that I see as relatively simple to implement and stands a chance of having a broad effect on teaching and learning, both within and outside of design education specifically. For the meta-keyword phrases to become useful, all we have to do is start using them. By including them alongside our other keywords when we publish, the various search systems built into the web and the database systems that catalog journals and media will find them. If the meta-keyword phrases are in the systems, then when we search the systems we will find the sources, which we can parse further based on other criteria or constraints as needed. A case has been made for the potential impact that could be felt in the design education space, and more generally the education space as a whole, if we are able to implement a large scale usage of the meta-keyword
phrases of Learning to Know, Learning to Do, Learning to Work Together, and
Learning to Be as a component of our normal academic publishing activities.

Additionally, a framework which I am calling the Learning Map
Framework, has been proposed. This proposed framework attempts to organize
artifacts of teaching, the tools, methods, techniques, and tricks that support our
classroom activities, into categories based on the type of learning types they
support: Learning to Know, Learning to Do, and Learning to Work Together
relative to a desired level of Learning to Be. In previous chapters, I defined these
categories, and then used small case studies to further the understanding of the
framework. The potential pool of cases that could have been held up for study
were filtered to select examples involving the implementation of Web 2.0 and
successful engagement of “Net Gen” students. Also, examples have been shown
regarding ways to potentially use the Learning Map Framework beyond
categorizing the individual learning activity as a tool for course and curriculum
design.

I believe that the insights thus far demonstrated with the Learning Map
Framework, and the associated meta-keyword phrases, as a methodological
approach, thinking framework, and visualization tool have the potential for
additional important insights if given more attention in the future. The additional
insights that could be gained with future work could not only be influential to
assignment, course, and curriculum design, but also help create learning
experiences that are lasting and holistic with regard to fostering student learning.
7.2.2: Building Tools to Foster Holistic Learning

In Chapter 3, it was addressed that in 2006 AIGA and Adobe teamed up to identify and define the skills and competencies that would define what they have coined “the designer of 2015.” Among these competencies were two that seem of particular importance to this discussion now, if we take at face value that to educate "the designer of 2015," we have to become the educators of 2015 as well. Competencies such as number three – a broad understanding of issues related to the cognitive, social, cultural, technological and economic contexts for design, and number four – an ability to respond to audience contexts recognizing physical, cognitive, cultural and social human factors that shape design decisions, start to hint at what it might take to educate for these conditions. If we seek to help students learn to apply a “broad understanding of issues related to the cognitive, social, cultural, technological and economic contexts for design,” then it would seem appropriate that we will need to demonstrate a broad understanding of issues related to these same contexts for education. Likewise, if we seek to help students learn to “respond to audience contexts recognizing physical, cognitive, cultural and social human factors that shape design decisions,” then we will need to demonstrate a similar response to audience contexts recognizing these same human factors that shape educational and curricular opportunities and/or decisions. To do this, it seems to me that we will need to find ways in which to focus and frame these contexts and decisions in
more cohesive and systemic ways. One possible way to begin this framing is to try to understand as much as possible about the complex systems involved in these contexts. We have to find ways to understand the whole as a sum of its parts, so that when the parts are reframed or modified, they are done so with a positive effect on the whole.

It is this trying to understand the whole as a sum of its parts that I am referring to as a holistic approach to learning and education. The pillars proposed by the International Commission on Education for the Twenty-first Century, which was written about in the early parts of Chapter 5 and which my proposed meta-keyword phrases are based upon, were a step in this direction. The Commission set forth to encourage educators to begin thinking about learning holistically, across all ages and learning environments. They wrote that “these four pillars of knowledge cannot be anchored solely in one phase in a person’s life or in a single place. There is a need to rethink when in people’s lives education should be provided, and the fields that such education should cover. The periods and fields should complement each other and be interrelated in such a way that all people can get the most out of their own specific educational environment all through their lives.” This is a lofty goal, without a doubt. The rethinking and restructuring of education and learning that will be needed to create the interrelated experiences proposed by the International Commission on Education for the Twenty-first Century, and embedded within the “Designer of 2015” competencies will not be the work of any one person or even any one discipline.
The constraints and complexity that surround education and learning add up one “wicked problem” that will take the work of many individuals to tackle.

Being from a design background, the development of tools seemed like a good place for me to try to contribute to this end goal. I feel that the tools I have described and built in this thesis, the idea of meta-keyword phrases and the Learning Map Framework are steps in the right direction. I have to state that I “feel” this because I cannot yet prove this. I will touch on this more in the next section on future work to be done, but the ideas contained within this document and these proposed tools are still in their infancy. When more time and effort can be devoted to exploring, researching, reiterating, and refining the idea of meta-keyword phrases and the Learning Map Framework, I believe that they could have a great impact on the ways we may approach education in the future.

When I first came to the realization that at the conclusion of this stage of my academic work, I would be writing about “could be” and “may be” and “has the potential to be” statements, I felt that I was failing with regard to my goals in this project. It was not until somewhere during the writing of Chapter 6 that I started to see the bigger picture about what I have accomplished here. Much earlier in this process, I had in my head that the work I was doing for my Master’s Thesis was somehow going to revolutionize the ways in which we think about education and learning. I had hoped that the tools I would develop would someday be referred to by educators linked to my name somehow, the way social scientists refer to Maslow’s Hierarchy. The Learning Map Framework may
someday get there, who knows, but I now realize that this is not the important part. The complexity involved in this endeavor will require the work of many, united by goals and tools, and I now feel accomplished having begun the process of contributing at least one of many possible tools as a step towards preparing education and learning for the complex future that it faces. As I stated above though, more work still needs to be done. While I am getting close to completing this thesis and this stage in my academic career, the work is really just beginning.

7.3: Future Work

7.3.1: Sharing, Spreading, and Building the Body of Work

As I alluded to in the previous section, there is still much to be done to begin the process of validating the potential of the proposed meta-keyword phrases and the Learning Map Framework. In my own future professional academic career, I intend to keep exploring this framework and applying it to what I will do as an educator.

The first of the ways that I will be exploring in the future regarding the meta-keyword phrases deals with what I stated in the previous chapter as the “simple” implementation. As I am in the position professionally to do so, I will simply start publishing education and learning related experiences with thoughts of including at least one of the proposed meta-keyword phrases along side my other keywords. In this way, the general field of education gains a new resource for sharing and discovery. To call this “simple” though is an understatement of
potentially epic proportions. Acting alone, the meta-keyword phrases will be of little use. The meta-keyword phrases were conceived to facilitate sharing and they gain strength in numbers. Others who are writing and publishing in the various education and learning spaces need to be adopting these meta-keyword phrases for them to have any efficacy at all. They will have to be adopted by conferences and journals that work in the space of education. They need to be adopted by websites and databases that organize the artifacts of others publishing about education and learning. Papers, articles, and manifestos need to be written that refine, reiterate, challenge, expand upon and promote both the notion of meta-keyword phrases generally and the ones proposed here specifically. We do not yet know if “Learning to Know,” “Learning to Do,” “Learning to Work Together,” and “Learning to Be” are the most useful meta-keyword phrases to be used. Are they sufficient? Do we need additional phrases? Do they need to be further redefined to be more useful? These are all questions that are ripe for further investigation. As I and hopefully others investigate these questions further, much will need to be written, distributed, and promoted to continue the cycle. Only then will we begin to be able to see if the proposed meta-keyword phrases, or some other variation or remix of the idea behind them will be of much use to the future of education and learning.

At this point, I believe that the Learning Map Framework has the potential to expand in its application in several ways. Can the Learning Map Framework be used as an evaluative tool within departments? For example, if an instructor of a
course uses the Learning Map Framework to facilitate the design of a particular series of assignments that together form a course, what do we learn if we ask the students who participate in the course to place the assignments on the map when they have finished the term? Will this give the instructor insights into how successful the assignments were? Would this provide any additional data for evolving the course further?

In another potential application of the Learning Map Framework, can it be used to compare similar courses from differing design programs at different institutions? What insights might be gained through using the Learning Map Framework to visualize the assignments in “Foundational Drawing” courses from each of the top ranked design programs in the nation? What if we did the same for the entire curriculums from the top ranking and lowest ranking design programs within a particular design discipline? It is possible that we might see connections between the top or bottom ranking programs and the emphasis they place on each of the meta-keyword phrase domains on the Learning Map Framework.

Another set of questions that could be explored exists within the relationship between curriculum design and program accreditation. It is possible that the set of constraints and expectations that accreditation bodies place on a design programs could be mapped onto the space within the Learning Map Framework and used as data points for mapping a curriculum? For example, one of the competencies required for National Association of Schools of Art and
Design (NASAD) accreditation of a General Design Program is the demonstration of the students having “learn(ed) to analyze works of art/design perceptively and to evaluate them critically.” Can this competency be used as measurement vertex of some sort in the Learning Map Framework that we could then use to more accurately place learning experiences on the map? If so, how does this change the insights that can be gained when using the Learning Map Framework in the ways postulated in the previous paragraph? To investigate this idea, the researcher might have to first evaluate the competencies that are a part of the accreditation guidelines for how they relate to Learning to Know, Do, and Work Together as they contribute to Learning to Be within the Accreditation Body’s vision. This in itself might be a rewarding exploration for the insights it could reveal.

All of these questions begin to suggest the potential of the Learning Map Framework. Again, these ideas will need to be investigated, written about, published, critiqued, and further explored, but nevertheless, these questions are ripe for further exploration and future work.
7.4: Provocations

7.4.1: Why Right Now is the Time to Take Action

The rapid changes happening to the students, disciplines, and economy suggest the need for education reform. Now, more than ever before, design education needs to be asking big questions about the role of the designer. As the profession is shifting, so too must the education. The questions that still need answers are not easy questions, but with the rise of the web, we now have available more information and more opportunity for communication between more communities than ever before. The rapid advances in technology as both tools and communication streams suggest that we may now have the ability to pursue and manage large-scale systems thinking. We are now able to ask hard questions and get diverse responses from all ends of the planet faster than ever before. We should be able to ask questions of the experts who lay outside our usual circles, such as education scholars and researchers. They will have the insights that we do not and we will need these experts to be successful in the reinvention of education. As designers, we have been identified as the experts in the design process, a process for problem seeking and solving in an ever expanding range of disciplines. As design educators, it would seem logical that we should start applying that design process to the education and learning part of our job titles.
7.4.2: Why to Start in Design Education

First, as alluded to above, as designers we are trained to think in creative and systematic ways in order to develop solutions. We are the creators of culture and we are the ones who are the main proponents of the idea that design can be applied far beyond the making of objects and spaces. Perhaps it is time for us to put the proverbial money where are our mouths are, and begin to look at our own education spaces and methods. If we can do this, we can begin to change the cultures and methods in our classrooms to be as effective as possible to whatever our goals might be.

Second, design education can be seen as a microcosm of the larger education space. We have within our borders a broad range of disciplines, practices, and methods. We are in need of a way to share across this spectrum more than most other academic fields. We are also a young discipline filled with thinkers who are used to a culture of change. We are attempting to educate students to be the harbingers of change. That stated, we are also unified by this idea of design, so it would seem that we should be able to spread this idea through our design network with relative ease. Once it spreads through design educators, because we have an established practice of collaborating outside the boundaries of design, the idea has the potential to then “go viral” as we continue this practice. If we are able to learn to develop tools, techniques, and methods that address education across the diversity of design, and then learn to share
them, there is a high likelihood that what we learn in this process can scale beyond design quickly as we collaborate outside of design.

7.5: Chapter Conclusion

The tools proposed in this thesis, the meta-keyword phrases and the Learning Map Framework, are just that – proposals. They are not presented here as definitive solutions, but I do feel that they are steps in the right direction. They have potential, but much more work needs to be done to evolve these ideas beyond mere proposals. The meta-keyword phrases propose a system for thinking about learning, a way to attempt to unify that which is written about learning at a level above that of academic disciplines. The Learning Map Framework proposes a way to visualize relationships between the meta-keyword phrases when taking a snapshot at any given point along a lifelong learning journey. It is a proposal for a way to think about at what stage in a learner’s journey any one particular educational experience might be occurring. Together, the meta-keyword phrases and the Learning Map Framework are proposed tools that will have to be used, reviewed and refined. They are also more than tools though.

The meta-keyword phrases and the Learning Map Framework are provocation pieces. They are this one author’s ideas about how we might begin to take on the issues faced in design education. These pieces are presented to spark discussion around the issues of how and why we teach design. With these
proposals, I wish to encourage design educators to think deeply about our roles as educators. I want design educators to apply their design expertise, their systems-thinking skills, their insights into user experience, and their empathy for end-users (students in this case) to the problems and futures of design education specifically. I want design educators to point out flaws in these proposed tools. Critique them in the ways you would student work in your studio courses. Engage in discussions about the issues that lay under these proposed tools. Propose other tools and approaches. Make these discussions, critiques, and proposals as public as you know how. When you do this, do not bury them in design discipline specific academic journals. If possible, put them in the space of education and learning, not design. As the discipline of design changes, reflect on the effect this must have on our education spaces and approaches.

What do you think the Promise of design is now? What should the Promise of design be? What is currently the role of the designer and should this change? If so, how? Is that different from the Promise embedded within an undergraduate degree in Visual Communication, Industrial, or Interior Space Design?

What Promises does my program offer to design students and how do we best deliver on these promises? Can we build at our university a curriculum of general education courses, or other courses within our department, that would allow our students to walk away with a B.S. in Design with a Specialization in Social Good, Service Design, or Sustainability? If we offer a minor in design to
those outside of the department, what do we really want those students to get out of that view of design?

Ask huge, wicked questions and share relentlessly!
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Appendix A: Resources for New Media Technology in Education and Society

This appendix consists of a chronological compilation of articles that I found interesting and relevant to the use of, or cultural effect of, Web 2.0 and new media. Articles Titles, Authors, and the last known working URL have been provided to assist with finding these again if interested.

Many of these articles deal with the larger context of Web 2.0 and new media in the general culture or within education. A few deal specifically in the context of Art and/or Design.

Those that deal specifically in the context of Art and/or Design have been set in italics and prepended with the “†” (dagger) symbol.

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Appendix B: Exploratory Survey

Invitation to Participate Email Script

Hello Colleagues,

I am an MFA student in the Department of Design at OSU. I have compiled a short survey that I am hoping you would be willing to take about 10 minutes to complete. The topic is about Blogging in Studio-Based Education and is part of a pilot study I am doing in relation to my MFA Thesis.

To access the survey, please navigate your preferred browser to the following link:

[TAKE THE SURVEY]

If the link does not work for some reason, copy and paste the following into the URL field of your browser:

http://sites.google.com/site/gabetippery mfa/research/blogpilot

Thank you in advance for taking the time to help me out with this survey.

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Gabe Tippery
MFA Candidate - Design Development
The Ohio State University
Hello,

My name is Gabe Tippery and I am a MFA Candidate in the Department of Design at the Ohio State University. For my Master's Thesis, I am researching the use of Social Media Technologies within Studio-Based Learning Environments. This survey is seeking to establish a benchmark for the current usage and adoption of some of these technologies.

The survey that you are participating in at this time is a pilot survey for a larger survey that I will be developing soon. I am using this to try to access a surface level understanding of both what is occurring out there in the academic space as well as to test the software capabilities used to administer this survey (thanks Google).

It should be noted that throughout this survey, the terms "design" and "design education" will be used. For the purposes here, these terms refer to any discipline that intends problem solving through creative means and traditionally taught within a studio-based environment. This includes disciplines such as Architecture, Graphic Design, Visual Communications, Industrial or Product Design, Interior Space or Architecture Design, Furniture Design, Transportation Design, and Fashion Design, among many others.

Thank you for volunteering your time to complete this survey. Your help will be of great value to my research and hopefully one day to the field of design education.

Thank you,
Gabe Tippery
MFA Candidate
The Department of Design
The Ohio State University

Disclaimer: * Required

All questions (with the exception of this one) on this survey are optional to fill out. No information gained from this activity will be published or presented in anyway attached to any personally identifiable information that you may be asked.

[ ] I understand and agree to the above statement of privacy.
Demographics - Page 02

Lets get the easy stuff out of the way to warm up.

Which of the following options best describes your current relationship to design education?

☐ Undergraduate Student
☐ Graduate Student
☐ Design Educator
☐ Design Professional

Which of the following best describes your current design discipline?

☐ Graphic or Visual Communication Design
☐ Architecture
☐ Product or Industrial Design; including Furniture, Transportation, etc...
☐ Interior Space Design or Interior Architecture
☐ Fashion Design
☐ Other: _______

In which of the following ranges were you born?

☐ 1900-1924
☐ 1925-1942
☐ 1943-1960
☐ 1961-1980
☐ 1981-2000
☐ 2000-Present (WOW! Congrats on being in design at 10 or younger!)

Do you own a personal computer?

☐ Yes
☐ No
How many hours per week would you say you spend on a computer?

☐ 40+
☐ 30 - 40
☐ 20 - 30
☐ 10 - 20
☐ 1 - 10
☐ I use a computer less than weekly.

What percent of the time you spend on a computer would you say is spent "online"?

☐ Less than 20%
☐ 20% - 40%
☐ 40% - 60%
☐ 60% - 80%
☐ Greater than 80%
A blog (a contraction of the term "web log") is a type of website, usually maintained by an individual with regular entries of commentary, descriptions of events, or other material such as graphics or video. Entries are commonly displayed in reverse-chronological order. "Blog" can also be used as a verb, meaning to maintain or add content to a blog.

Many blogs provide commentary or news on a particular subject; others function as more personal online diaries. A typical blog combines text, images, and links to other blogs, Web pages, and other media related to its topic. The ability of readers to leave comments in an interactive format is an important part of many blogs.

How often would you say that you READ blogs on average, in general?

☐ never
☐ Monthly or less
☐ Weekly
☐ Daily
☐ Multiple times per day

How often would you say that you READ DESIGN blogs on average?

☐ never
☐ Monthly or less
☐ Weekly
☐ Daily
☐ Multiple times per day

How often would you say that you COMMENT on blogs on average, in general?

☐ never
☐ Monthly or less
☐ Weekly
☐ Daily
☐ Multiple times per day
How often would you say that you COMMENT on DESIGN blogs on average?

☐ never
☐ Monthly or less
☐ Weekly
☐ Daily
☐ Multiple times per day

How do you most commonly keep up with blog content?

Definition: RSS (most commonly expanded as Really Simple Syndication) is a family of web feed formats used to publish frequently updated works in a standardized format. RSS Feeds are translated by a RSS Feed Reader.

☐ Periodically navigate to the blog site.
☐ RSS Subscription

Have you at any point been a contributor of primary blog content?

☐ No
☐ Yes
Blogging - Page 04

Please think of the ways that you may have contributed primary content to a blog.

What types of blogs have you contributed to?

Choose all that apply.

☐ Non-Design Related Blog (personal or other interest)
☐ Design Related Blog

If you answered "Design Related Blog" in the previous question, what of the following blog "types" have you contributed to?

☐ Personal Design Related Blog
☐ Suggested Design Blog relating to course work
☐ Mandatory Design Blog relating to course work
☐ Other: ______

Please describe your experiences blogging.

Please use this space to reflect on your design related blogging experiences. What have you done? How did you feel about it? Was there interesting or disappointing outcomes from your blogging? Was it related to a particular course and how did that work out for you and your course?
Other Social Media Technologies - Page 05

This section is to understand the other social media technologies that I should be investigating in the future survey.

What of the following services do you use to Microblog?

Microblogging is a form of blogging where users provide brief period updates (often on a frequent basis throughout the day) and publish them on microblogging platforms. You’ve probably heard of Twitter, which is a Microblogging tool. Microbloggers can submit their updates via the web itself or via text messages, instant message, or even email.

☐ Twitter
☐ Tumblr
☐ Jaiku
☐ Yammer
☐ I do not Microblog
☐ Other: ______

What of the following services do you use to Photo Share?

Photo sharing tools allow users to upload and post their photographs online to share them with other users.

☐ Flickr
☐ Shutterfly
☐ Picasa
☐ I do not share photos on the web
☐ Other: ______
What of the following services do you use to Video Share?

Video sharing allows users to upload and share videos to video sharing website such as Youtube. Other users can watch the videos, comment on them, share them with other users and even embed them on their own websites and blogs.

☐ YouTube
☐ Vimeo
☐ Viddler
☐ blip.tv
☐ I do not share videos on the web
☐ Other: ________

What of the following services do you use for Social News and Bookmarking?

Social bookmarking allows web users to save, organize and share their bookmarks of web pages on the Internet (vs. their own computers). Social news sites allow users to submit web pages and articles and have other users vote on them with the # of votes determining which articles are presented on the social news site.

☐ Delicious
☐ Digg
☐ StumbleUpon
☐ reddit
☐ I do not participate in Social News and Bookmarking
☐ Other: ________

Have you ever contributed to a wiki?

A wiki is a collaborative website that allows users to contribute to and edit the content on the website. Wikipedia is a well-known wiki. Wikifarms host multiple wikis and provide tools for users to create their own wikis.

☐ No
☐ Yes
Thank you for your time and participation.

This concludes the formal part of the survey. The following questions provide some space to give any additional feedback or insight you may have.

Feedback on the survey?

Did you notice a typo? Have a suggestion for a specific question that should be asked?

When the post-pilot survey goes out, it is my intention to try to get the survey to as many design students and educators as possible.

Are you able to help with this in any way? Distribute a link on your blog? Have access to a mailing list? Any other ideas for distribution? Feel free to drop links, list-serv addresses, twitter-lists, etc... here.

Social Media in Studio-Based Learning

Do you know about any interesting applications of these technologies in the design classroom? Have a horror story? A great success? I would love to hear your stories.
Appendix C: Design Educators Survey

Phase 1 / Survey Recruitment – Email Script

Dear [Insert Name],

I am a graduate student in the Department of Design at The Ohio State University conducting research under the supervision of Professor Paul Nini to understand how Web 2.0 and Social Media technologies might play a role in Foundations-level Design Education at the University level. You have been brought to my attention as a design-related educator who may teach course work that fits this criteria. As a future design educator myself, I am very interested to know your opinions and insights regarding the potential of these technologies in design education.

Would you be willing to participate? The research information is being gathered through an online survey, which you may answer at anytime convenient for you. Your involvement in this survey is entirely voluntary and there are no known or anticipated risks. All information you provide will be considered confidential and will be grouped with responses from other participants. Further, you will not be identified by name in any thesis, report or publication resulting from this study.

If you agree to participate, this survey should not take more than 60 minutes. The questions are quite general about your ideas and how you may or may not currently use Web 2.0 and/or Social Media technologies in your classroom.

If you would like to participate, the link below will take you to the online consent form, then to the survey.

[Insert Survey Link Information]

If you have any questions about this study, or would like additional information to assist you in reaching a decision about participation, please feel free to contact me at: tippery.2@osu.edu or 614-806-7703.

Thank you in advance for your interest in this project and please feel free to forward this email to any of your colleagues that your feel may be interested in participation.
Phase 1 / Online Statement of Consent

This is a statement of consent for research participation.

It contains important information about this study and what to expect if you decide to participate.

**Study Title:** Web 2.0 and Social Media in Foundations-Level Design Classrooms

**Purpose of the study:**
The purpose of this study is to seek insights into the state of the use of Web 2.0 and Social Media communication channels in Foundations-Level Design Classrooms. You have been tapped as a potential study participant because you were identified either by the researcher or one of your colleagues as an Instructor in a design related discipline, with a focus having been placed on those teaching at a "foundations level" within the curriculum.

**Subject rights:**
Participation in this study is 100% voluntary, and you may withdraw at any time without penalty. This study has been designed to avoid any risk beyond the normal scope of online activities or everyday life. An Institutional Review Board responsible for human subjects research at The Ohio State University reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

**Study tasks or procedures:**
This study consists of a survey of less than 50 questions seeking qualitative, open-ended responses from the participant. There are no questions in the survey that have been identified as "required" and therefore the survey software will allow you to skip any questions you choose to. Additionally, this survey will give the participant the opportunity for the submission of potential cases of both the success and failures of attempts to use these technologies in support of educational objectives.

**Duration of participation:**
The survey should take no more than 60 minutes of your time depending on the depth of your responses.
Confidentiality:
Efforts will be made to keep your study-related information confidential. Data will only be view by the researcher. All data being collected will be retained on the personal laptop of the researcher and protected using 256-bit AES encryption. Additionally, data will also be retained for the duration of the study on a number of geographically distributed data centers administered by Google. Google’s computing clusters are designed with resiliency and redundancy in mind, eliminating single points of failure and minimizing the impact of common equipment failures and environmental risks and these systems have been optimized for security and performance. Data transfers between these locations and the researcher’s laptop are completed using SSL and HTTPS security protocols. Both Google and the researcher on this study take your privacy very seriously.

Contacts and Questions:
If you have any questions about this study, or would like additional information to assist you in reaching a decision about participation, please feel free to contact me at: tippery.2@osu.edu or 614-806-7703.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

Affirmation of Implied Consent:
I have read (or someone has read to me) the above information and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by clicking the following link. I understand that clicking on the link below implies my informed consent to participate.
Online Survey

1.0 Teaching Demographics

1.1 Please indicate the number of years you have been teaching at the University level within a design-related discipline:

1.2 At what level are the majority of students in your class(es). Mark any and all that may apply:

☐ Freshmen
☐ Sophomores
☐ Juniors
☐ Seniors
☐ Graduate students

1.3 Please list the course(s) you have taught in the most recent 3 year time period along with a brief statement about the topics or primary goals of these courses:
2.0 Student / Instructor Communication & Feedback Methods

2.1 Please list the most common ways that you solicit feedback from, responses to, or insights into your students' learning process. Examples might be student tasks such as: Notated Sketches, Written Response Papers, Journaling, Exams, or Instructor-led Critiques; just to name a few.

2.2 What, if any, response to the above student activities do you offer your students as the instructor? If possible, please provide "links" between your responses and the associated student activity if applicable. Examples might be instructor responses such as: Standard letter grading (A, B, C, D, E), Alterations, extensions or redirections an assignment based upon student reflections, or written personal responses; just to name a few. An example "link" may be a statement such as: "I give standard letter grades for quizzes" or similar.

2.3 Thinking about your above responses about communication and feedback methods, please describe any benefits the student activities may have offered you as an instructor:

2.4 Please describe any benefits that your responses may have offered your students:

2.5 Please describe any shortcomings or disadvantages the student responses may have caused for you as an instructor:

2.6 Please describe any shortcomings or disadvantages that your responses may have caused for your students:
3.0 Instructor Technographics

3.1 Please indicate the communication channels you interact with on a regular basis in your personal or professional (non-teaching) life.

For the purposes of this survey, please consider the term “regular basis” to mean a frequency of several times per quarter/semester or more frequent.

Mark any and all that may apply:

☐ Face-to-Face
☐ Telephone
☐ Email
☐ SMS or MMS Messaging (Cellular based “texting”)
☐ Instant Messaging (AOL IM, Google Chat, Yahoo Messenger, or Similar)
☐ Online "Chat-Rooms"
☐ Video Conferencing Softwares (Skype, Google Chat, iChat, or Similar)
☐ Course Management Software - CMS (Desire2Learn, Blackboard, or Similar)
☐ Calendaring softwares (Outlook, iCal, Google Calendar, or Similar)
☐ Reading Blogs (weblogs)
☐ Contributing primary content to Blogs
☐ Social Networking (Facebook, MySpace, LinkedIn, or Similar)
☐ Micro-Blogging (Twitter, Yammer, or Similar)
☐ Photo or Video sharing (Flickr, YouTube, Vimeo, or Similar)
☐ Geo-Location (FourSquare, Gowalla, or Similar)
☐ Wiki Pages/Sites
☐ Any others that come to mind?________
3.2 Please indicate the communication channels you have used or currently use to interact with your students in a social or informal non-teaching manner.

Mark any and all that may apply:

☐ Face-to-Face
☐ Telephone
☐ Email
☐ SMS or MMS Messaging (Cellular based “texting”)
☐ Instant Messaging (AOL IM, Google Chat, Yahoo Messenger, or Similar)
☐ Online "Chat-Rooms"
☐ Video Conferencing Softwares (Skype, Google Chat, iChat, or Similar)
☐ Course Management Software - CMS (Desire2Learn, Blackboard, or Similar)
☐ Calendaring softwares (Outlook, iCal, Google Calendar, or Similar)
☐ Reading Blogs (weblogs)
☐ Contributing primary content to Blogs
☐ Social Networking (Facebook, MySpace, LinkedIn, or Similar) Micro-Blogging (Twitter, Yammer, or Similar)
☐ Photo or Video sharing (Flickr, YouTube, Vimeo, or Similar)
☐ Geo-Location (FourSquare, Gowalla, or Similar)
☐ Wiki Pages/Sites
☐ Any others that come to mind?________
4.0 Synchronous Voice-based Communication Channels

4.1 Please indicate the communication channels you have currently use to interact with your students as part of a formal teaching activity.

Mark any and all that may apply:

☐ Face-to-Face
☐ Telephone
☐ Video Conferencing Softwares (Skype, Google Chat, iChat, or Similar)

4.2 Please describe any benefits the above selected communication channels may have offered you as an instructor:

4.3 Please describe any benefits you feel the above selected communication channels may have offered your students:

4.4 Please describe any shortcomings the above selected communication channels may have caused for you as an instructor:

4.5 Please describe any shortcomings you feel the above selected communication channels may have caused for your students:

4.6 Please indicate the communication channels you have do not use to interact with your students as part of a formal teaching activity, but have considered possibly exploring in the future.

Mark any and all that may apply:

☐ Face-to-Face
☐ Telephone
☐ Video Conferencing Softwares (Skype, Google Chat, iChat, or Similar)

4.7 What concerns have thus far prevented or slowed your explorations into the above selected communication channels?

4.8 What sort of information do you feel would aid in your explorations into the above selected communication channels?
4.9 Which, if any, of the above listed communication channels have you decided at this point are not useful or beneficial to your interactions with students in your role as an instructor with regard to supporting formal teaching activities? Why?

5.0 Primarily Asynchronous Text-based Communication Channels

5.1 Please indicate the communication channels you have currently use to interact with your students as part of a formal teaching activity.

Mark any and all that may apply:

☐ Email
☐ Micro-Blogging (Twitter, Yammer, or Similar)
☐ Blogging
☐ Wiki Pages/Sites
☐ Course Management Software - CMS (Desire2Learn, Blackboard, or Similar)

5.2 Please describe any benefits the above selected communication channels may have offered you as an instructor:

5.3 Please describe any benefits you feel the above selected communication channels may have offered your students:

5.4 Please describe any shortcomings the above selected communication channels may have caused for you as an instructor:

5.5 Please describe any shortcomings you feel the above selected communication channels may have caused for your students:
5.6 Please indicate the communication channels you have do not use to interact with your students as part of a formal teaching activity, but have considered possibly exploring in the future.

Mark any and all that may apply:

☐ Email
☐ Micro-Blogging (Twitter, Yammer, or Similar)
☐ Blogging
☐ Wiki Pages/Sites
☐ Course Management Software - CMS (Desire2Learn, Blackboard, or Similar)

5.7 What concerns have thus far prevented or slowed your explorations into the above selected communication channels?

5.8 What sort of information do you feel would aid in your explorations into the above selected communication channels?

5.9 Which, if any, of the above selected communication channels have you decided at this point are not useful or beneficial to your interactions with students in your role as an instructor with regard to supporting formal teaching activities? Why?

6.0 Primarily Synchronous Text-based Communication Channels

6.1 Please indicate the communication channels you have currently use to interact with your students as part of a formal teaching activity.

Mark any and all that may apply:

☐ SMS or MMS Messaging (Cellular based “texting”)
☐ Instant Messaging (AOL IM, Google Chat, Yahoo Messenger, or Similar)
☐ Online "Chat-Rooms"

6.2 Please describe any benefits the above selected communication channels may have offered you as an instructor:
6.3 Please describe any benefits you feel the above selected communication channels may have offered your students:

6.4 Please describe any shortcomings the above selected communication channels may have caused for you as an instructor:

6.5 Please describe any shortcomings you feel the above selected communication channels may have caused for your students:

6.6 Please indicate the communication channels you have do not use to interact with your students as part of a formal teaching activity, but have considered possibly exploring in the future.

Mark any and all that may apply:

☐ SMS or MMS Messaging (Cellular based “texting”)
☐ Instant Messaging (AOL IM, Google Chat, Yahoo Messenger, or Similar)
☐ Online "Chat-Rooms"

6.7 What concerns have thus far prevented or slowed your explorations into the above selected communication channels?

6.8 What sort of information do you feel would aid in your explorations into the above selected communication channels?

6.9 Which, if any, of the above selected communication channels have you decided at this point are not useful or beneficial to your interactions with students in your role as an instructor with regard to supporting formal teaching activities? Why?
7.0 Miscellaneous Other Communication Channels

7.1 Please indicate the communication channels you have currently use to interact with your students as part of a formal teaching activity.

Mark any and all that may apply:

☐ Calendaring softwares (Outlook, iCal, Google Calendar, or Similar)
☐ Social Networking (Facebook, MySpace, LinkedIn, or Similar)
☐ Photo or Video sharing (Flickr, YouTube, Vimeo, or Similar)
☐ Geo-Location (FourSquare, Gowalla, or Similar)

7.2 Please describe any benefits the above selected communication channels may have offered you as an instructor:

7.3 Please describe any benefits you feel the above selected communication channels may have offered your students:

7.4 Please describe any shortcomings the above selected communication channels may have caused for you as an instructor:

7.5 Please describe any shortcomings you feel the above selected communication channels may have caused for your students:

7.6 Please indicate the communication channels you have do not use to interact with your students as part of a formal teaching activity, but have considered possibly exploring in the future.

Mark any and all that may apply:

☐ Calendaring softwares (Outlook, iCal, Google Calendar, or Similar)
☐ Social Networking (Facebook, MySpace, LinkedIn, or Similar)
☐ Photo or Video sharing (Flickr, YouTube, Vimeo, or Similar)
☐ Geo-Location (FourSquare, Gowalla, or Similar)

7.7 What concerns have thus far prevented or slowed your explorations into the above selected communication channels?

7.8 What sort of information do you feel would aid in your explorations into the above selected communication channels?
7.9 Which, if any, of the above selected communication channels have you decided at this point are not useful or beneficial to your interactions with students in your role as an instructor with regard to supporting formal teaching activities? Why?

8.0 Research Summary and Call for Case Study Opportunities

8.1 May I contact you to follow up on any portion of this survey?

☐ Yes
☐ No

8.1.1 If YES, Please complete the following:

Preferred Title or Prefix:

☐ Dr.
☐ Professor
☐ Mr.
☐ Ms.
☐ Other

Name ________

College or University ________

Email Address ________

This concludes the formal part of this survey.

8.1.2 Call for examples, cases and/or participation in the Phase 2 of this study

As you have probably guessed by now, I am interested in the use of various Web 2.0 and Social Media technologies in design education. Building upon the understanding that design educators are now experiencing a new type of student without existing precedent (the “Net Gen”), I am exploring ways in which social media technologies can be used in the foundations-level
design classroom. I am exploring ways that these technologies can be used to increase interaction, engagement, and productivity between students and educators. Through a process of reflection and analysis of the goals of design education past and present, methods and applications of social media technologies are being explored and held up for scrutiny as to their relative success or potential impact on the ways we may educate the designers of tomorrow.

8.2 With this in mind, are you willing to share any other insights, stories, or examples from your experiences teaching that may relate to this topic in anyway? I am looking for examples of both successes and relative failures of using Web 2.0 or Social Media technologies in design classrooms.

8.3 May I contact you to follow up on your response above?

☐ Yes
☐ No

8.3.1 If YES, Please complete the following:

Preferred Title or Prefix:

☐ Dr.
☐ Professor
☐ Mr.
☐ Ms.
☐ Other

Name 

College or University 

Email Address 

Please feel free to forward the original email you received about this study to any of your colleagues teaching foundations-level courses in a design related discipline you feel would be interested in participating or have helpful insights.

Thank you for your participation in this study.
Dear [Insert Name],

Let me start by expressing my sincerest gratitude for allowing me the opportunity to follow up with you regarding your recent participation in my online survey. Your willingness to share your experiences on the subject of Web 2.0 and Social Media in design-related curriculum is truly inspirational for my own development, both as a researcher and future design educator. Thank you.

Just to refresh your memory since it has been a few weeks since you participated in my online survey, I am a graduate student in the Department of Design at The Ohio State University conducting research under the supervision of Professor Paul Nini to understand how Web 2.0 and Social Media technologies might play a role in Foundations-level Design Education at the University level.

I would really appreciate the opportunity to talk with you further about this topic. Would you be willing to participate? I would like to conduct a one-on-one interview and would be glad to arrange a time that best fits in your schedule – this may be [a face-to-face meeting / via phone / an online IM session / a Skype session / via email / etc... – this list will be based on their geographic location and the technologies they list as used in Question 3.1 of the previously completed survey], whatever works best for you.

As always, your involvement in this interview is entirely voluntary and there are no known or anticipated risks. At the beginning of the interview session, I will first ask your permission to document the session for my own reference. Then we can briefly discuss how you would prefer that I discuss and write about our conversation in the future. I am willing to make our conversation as confidential or as identifiable as you are comfortable with in any thesis, report or publication resulting from this study.

If you agree to participate, this survey should not take more than 60 minutes. The questions will center around your ideas on how you may or may not currently use Web 2.0 and/or Social Media technologies in your classroom.

Please indicate in your response if: you would like to participate, and if you would prefer [a face-to-face meeting / a phone conversation / an online IM session / a Skype session / an email interview / etc... – this list will be based on their geographic location and the technologies they list as used in Question 3.1 of the previously completed survey]. I will then contact you to schedule an appointment.
If you have any questions about this study, or would like additional information to assist you in reaching a decision about participation, please feel free to contact me at: tippery.2@osu.edu or 614-806-7703.

Thank you in advance for your interest in this project. I look forward to the opportunity to follow up more with you soon.
Phase 2 / Interview Script

The following questions are general guidelines for discussion during the interview, regardless of the communication channel used. The interviews will be intentionally as informal as possible after the initial questions needs for ensuring participant rights.

Participant rights opening

Hi _______!

Thank you very much for agreeing to talk with me about your experiences with Web 2.0 and/or Social Media in design-related education. It is very helpful to me, as this study is for a graduate design thesis regarding design education and the state of these technologies our curriculum today. I will be asking you about your opinions and experiences throughout this interview and please know you may opt to not answer any questions you do not wish to answer. You may also stop participating at any time just by letting me know. We previously scheduled [XX] minutes for this interview, but have no other obligations for the next [time frame]. We can chat for as little or as much of this time as you like.

Before we begin, I will be recording this session for my reference only – is that okay with you?

Also, do you have any preferences around how I may discuss and write about our conversation in the future regarding your identity? I am willing to make our conversation as confidential or as identifiable as you are comfortable with in any thesis, report or publication resulting from this study. I will ask you this again before we wrap up, just in case you change your mind.

Great! Lets get started then.
Informal interview portion

The questions in this section will be based on the participant’s response to questions in sections 4-8 of the previously completed survey. The questions will all be similar to the following examples:

In your online survey responses, you indicated that you currently use to [insert a communication technology] to interact with your students as part of a formal teaching activity. Can you tell me more about this?

How did you come to this possible use of [insert a communication technology] in your teaching?

What sort of activities do you use [insert a communication technology] to facilitate or complete with your students?

What do you feel have been the biggest successes that have come out of your use of [insert a communication technology] in your teaching?

What have been the biggest hurdles that have had to overcome or what struggles have you had surrounding of your use of [insert a communication technology] in your teaching?

This type of discussion-facilitating line of questioning will be repeated for several of communication technologies that the participant had indicated on their previously completed online survey. What technologies I ask about specifically will be based on the participants responses and how possibly interesting, influential, and/or insightful their experiences seem to me. I am looking for a range of successful or less-successful experiences as well as particularly insightful or innovative uses of these technologies in the design-related classroom.
Closing Statements

Well, it seems that we are about out of time. Again, thank you very much for agreeing to talk with me about your experiences with Web 2.0 and/or Social Media in design-related education. Before we go, I want to ask again: Do you have any preferences around how I may discuss and write about our conversation in the future regarding your identity? Do you feel that this conversation went in any direction that makes you want to change your opinion from what you stated at the beginning of this interview?

Do you have any closing questions for me at this time?

Great! Thank you once more and I hope the rest of your day is positively wonderful.