INCORPORATING INTERACTIVE DESIGN THREADS INTO FOUR-YEAR UNIVERSITY UNDERGRADUATE VISUAL COMMUNICATION DESIGN CURRICULA

A Thesis
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ABSTRACT

Visual communication design is an evolving field. New technology brings new forms of communication as well as new design processes. In recent times, the Internet has emerged as one prevalent form of communication and design medium. The designer's role as visual problem-solver has broadened to include this electronic screen-based communication. Yet, with an added number of technical facets to understand for the new field of study, many print-based designers and design educators have not embraced these new challenges. Therefore, a "gap" has been formed in the design community, separating interactive designers and traditional designers. Even though there is a need for specialists in certain fields of design, it is important for designers to be aware of the entire visual communication spectrum. Undergraduate design education can play a pivotal role in preparing design generalists. The process of changing curriculum is typically slow and often difficult at four-year universities. Thus, many departments struggle to expose students to traditional and interactive facets. This widens the gap in the design community between design practice and design education. It also does not prepare budding visual communicators to be as versatile as the industry expects them to be.

To help establish the problem, a series of surveys were conducted. Current and newly graduated visual communication students were sampled to gather their perspective on current design undergraduate education. The findings show that design students are aware of the interactive void in design education. New graduates ranked how well their respective programs covered various facets of design. Interactive concepts consistently scored low. Web professionals were surveyed to construct an industry perspective. Generally, the industry expects new graduates to be proficient in skills other than concept design, such as knowledge of Web authoring tools and HTML coding. The samples reinforced the value of a theory-based education, as well as validated the pivotal role design education has in addressing the problem.
This thesis proposes a solution that is aimed at typical BFA visual communication programs. Such programs normally have a fine arts core, and lack personnel and resources to establish an interactive track for students. The solution introduces the idea of incorporating an interactive curriculum thread into the design program. This thread is flexible enough to discretely expose students to granular interactive design concepts. Faculty can include the thread into their classes, without having to be interactive design experts. Upon graduating, student will have acquired enough awareness of interactive design to ease their transition from school to practice. Ultimately, interactive design will remain under the umbrella of visual communication design, thus closing the "gap" in the design community.

ADVISING COMMITTEE

R. Brian Stone
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Susan Metros
This body of work is dedicated to my son.

He motivated me to continue writing through many late evenings, and he wasn't even born yet.
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CHAPTER 1

INTRODUCTION

The purpose of this thesis is to explore how recent changes in the range of applications, problems and challenges of the visual communicator has created a chaos in the design community and how four-year undergraduate design education can help close the gap by "threading" newer design concepts into existing curriculum. It has been concluded in previous group discussions by the American Institute of Graphic Arts (AIGA) and interactive design professionals, that design is becoming "less about creating objects and more about creating experiences" (Davis, 165). More and more design graduates are expected to perform tasks of an interactive nature in the design community. Unfortunately, many designers graduate with a thinking that they are either traditional or interactive designers. Their four-year university education has provided them with solid design theory fundamentals, but often lacks concepts and vocabulary of the interactive design culture.

Changing curriculum is a slow process, and one that is as unique as the faculty and philosophy of a particular design department. This study is not intended to provide a formula that will work in all situations, or all design departments. It is also not intended to repeat the work done by the National Association of Arts and Design (NASAD). NASAD is a council made up of design professionals and educators that converge to outline design standards and recommendations for design education programs. NASAD publications are used as a starting point to explore options to help a budding designer become better prepared to talk about visual communication from all levels and to take interactive designing roles.

To help support the hypothesis, recent graduates, students in an interactive design course, and Web professionals were surveyed. Qualitative and quantitative information provided a snapshot of the current opinions of all three participant groups. The recent graduates provided their opinions of their
preparedness to tackle interactive design type tasks. Current students provide information which support
the need of threading basic design tools into a curriculum. Web professionals illustrate the current climate
of the design market, including their expectations from new hires and from four-year design education
programs.

This investigation evolved over time. Originally it focused on how to use software training in a
design curriculum to help prepare students for the transition from school to work. Survey questions were
constructed with strong intentions of capturing this. Tools and software, however, are no longer the primary
cast members of this study. Though they can help paint an interesting picture of the interface design
landscape, tools do not endure, and risk the longevity and value of this thesis.

Thesis Semantics

The term designer is used abundantly in this thesis. There are several different types of designers,
such as product designers, informational architects, interior designers, landscape designers, and automobile
designers (just to name a few). For the purpose of this paper, designer refers to a visual communication
designer. This term has a perception of being a bit broader than a more commonly used (and still
applicable) title, graphic designer. And even though this is just one genre of designer, a visual
communicator wears many hats. “Books and magazines coexist with CD-ROMs and Web sites, exhibits
with virtual reality, flat paper with computer and TV screens. If our work as designers is to have any
relevance now and in the future, it will be because we know and understand something about all these
things” (Fried and Scott 173). This paper’s intent is to discuss ways to keep interactive designer under the
visual communication design umbrella.

Interactive designer, Web designer, experience designer and interactive visual communicator are
four titles that all refer to a designer using the Internet and other responsive systems as a visual
communication vehicle. They are used interchangeably in our culture as well as in this study.
Unfortunately, they all carry with them different meanings. To some, an experience designer is closer to the
practice of environmental design than Web design. Interactive design pulls in other electronic design
possibilities, such as game design and kiosk development. Analogous to a square that is a rectangle but not.
necessarily vice-versa, some say a Web designer is an interactive designer, but an interactive designer is not necessarily a Web designer. These different interpretations help illustrate the divide in the design community. For the purpose of this study, all four terms will assume the same meaning.
CHAPTER 2

THE GAP WITHIN THE DESIGN COMMUNITY

"We must realign our whole way of thinking if we are to achieve unity between our creative idea and its realization under the changed circumstances." This remark was stated by Armin Hoffman, a world renowned Swiss graphic designer and teacher, in his book Graphic Design Manual, Principles and Practice in 1965 (12). He was referring to new technologies in design reproduction. However, the circumstances have changed again and the design community is still seeking to achieve unity.

Visual Communication Design Education Background

The history of visual communication education is relatively short. June 23, 1888, Charles R. Ashbee founded the Guild of Handicraft. This school "unified the teaching of design and theory with workshop experience" (Meggs 171). This pedagogical combination of semantics and pragmatics, started in the Arts and Crafts movement in industrial London, was the seedlings of design education programs. Built on the same practical foundations, The Bauhaus introduced design as a holistic discipline, applying design theory to many different skilled disciplines. However, with the added hindsight of the Industrial Revolution, it further embraced technology, appreciating and applying the roll it has in design and design education. Designers were trained visual communicators, product designers, architects, photographers, artists, painters, and sculptures. Walter Gropius, the founder of the Bauhaus in 1919, placed an elevated value to the unity of art and technology (Meggs 279).
The Bauhaus redefined design curriculum, and visualized it in fresh ways. The first-year foundation course was established by Joannes Itten. His goals were to unleash creative abilities, focus on the physical nature of materials, and to teach the fundamentals of visual theory (Meggs 271). Even though Itten’s ideals were ultimately inconsistent with Gropius’ vision of an objective design language, his design education foundational approach is a model we see today.

Also infused by the strict geometry and philosophy of the de Stijl movement (from the Netherlands), the Bauhaus redefined typography, a major communication vehicle for visual communicators. Laszlo Moholy-Nagy, a Hungarian constructivist, pushed new techniques in graphic design. A constant experimenter with photography, light and transparency, he stated that typography is “communication in its most intense form” (Meggs 280). Combined with his investigations into kinetic motion, Moholy-Nagy can be considered a pioneer of interactive visual communication design.

When World War II Nazi persecution forced the Bauhaus to shut down in 1933, many Bauhaus faculty moved to America. Walter Gropius taught architecture at Harvard, and Moholy-Nagy established the New Bauhaus in Chicago (now called the Institute of Design). The European influences mixed with the capitalistic fervor of post-war America and established the New York School. Paul Rand was one American designer who molded the design and design education landscape. To build off of Moholy-Nagy’s kinetic experiments, Saul Bass pushed time-based and kinetic design into Hollywood, with emotional and beautiful typographic film titles in the 1960s.

In parallel, visual communication design and design education flourished in Switzerland. Seeking a “Bauhausian” objective unity, Armin Hofmann “applied a deep sense of aesthetic values and understanding to both teaching and designing” (Meggs 327). With others such as Josef Muller-Brockmann and Siegfried Obermatt, the Swiss school of design has been able to carry the early design and design education values into modern day.

From the School of Handicraft to the New York and Swiss schools, three common themes of these visual communication design education roots emerged. Visual communicators are trained as generalists, not specialists in a particular skill. By nature, they work closely with the needs of the industry, and are driven by advances in technology.
The Adjusting Designer

The early holistic design ideology translated well with every generation of visual communication designers and design education programs. Many formally educated in design were taught a proven design process not a particular skill. If a client approached a designer with a idea or concept, he/she would decide whether the client needs a billboard or a brochure. The designer would then design the chosen route with the client's best interests. A designer would not say, "I don't design billboards, I only do brochures. I know a good billboard designer down the road, I could refer you to."

The visual communicator’s role began to expand in the late 1980s. In 1989 Tim Berners-Lee began his World Wide Web project, a packaging of existing Internet connectivity with a designer and consumer-ready interface (Veen 3). This "project" evolved into a whole new genre of mass communication, a universal phenomenon with huge social and cultural implications. As one indication of its impact, Forrester Research calculated that advertising on the World Wide Web alone was worth as much as $17.4 billion dollars in 2001 (Thorson, Wells and Rogers 25). With the visual, multimedia and informational make-up, and its obvious ties to the consumer market, visual communications were being asked to design for this demanding new medium.

This was not an easy adjustment for many designers for the following reasons. Firstly, the advent of digital production of design occurred only a few years prior to the World Wide Web boom. Many designers were just getting acquainted with the new vocabulary of their personal computer. Some had just put away their T-squares and pencils, to make way for their mouse and keyboard. Design and production had become one and the same in the digital realm (Staples, 6). Second, the Web introduced new theories of design. The CMYK color model was stark compared to the RGB screen-based color model. Information design theories were now coupled with interface and interactive design. An end product or communication made way for user-centered experiences. Motion and sound emerged as new variables for the visual communicator. Lastly, designers experienced a loss of presentation control. Even designers who had adjusted well to the first and second points, had trouble with this paradigm shift. Some visual communicators began designing for the screen with controlled software and presentational interfaces.

Unfortunately for designers, the Web is a variable and unstable medium. Some colors may not be visible,
and when they are visible they may shift hue. Printer-friendly Pantone color chips, which provide visual communicator's solaces when their chosen maroon looks pink on the PC monitor, were deemed useless in this communication channel. Presentation and typeface size because an unknown constraint. Even interface design experts had to twist with the fact that users will always be tempted to "drive" with another layer of interface, the one provided by the Internet browser. There were new rules, new vocabulary, and new insecurities for designers.

Suddenly, a line was drawn between those who designed for the Web, and those who did not. Many were compelled to say, "I don't design Web sites." Client began to seek out Web designers themselves. Such designers were often self-taught and separated themselves by their technical proficient. In "Us vs Them", Nancy Nowacek, an independent designer in Brooklyn, New York identifies this phenomenon (191).

Since the Web, however, the climate has changed. Now every designer goes of his or her way to define a specialty and work narrowly within the segment. Niches abound. Web site-designers, in particular, seem to travel the farthest to differentiate themselves from those who are not Web designers—namely, those who work to print. If you're not in New Media, you must be old school. (Nowacek 187)

The Adjustment of Design Education

Since the School of Handicraft in 1888, many design schools and programs emerged worldwide. Most followed the same blueprint, by combining practical training with design theory. However, three specific roads were paved in design education.

A budding visual communicator has choices of which type of education he/she would like to pursue. Meredith Davis (Department Chair, North Carolina State University), Hugh Dubberly (Vice President Netscape/AOL) and members of the Advance for Design, collaborated to categorize the different types of programs (164).

First, students can attend an institution for vocational training in art and design. These are most often two or three year programs, where the reward at the end is a certificate or an associate degree. These schools offer training in practical skills and methods of visual communication. They are intended to provide students with enough tools and software training to be employable. Second, they can also choose a
Four-year professional undergraduate program. These are comprehensive education programs, intended to fully prepare students to enter a professional career in the arts. With primarily studio classes offered, students are immersed in visual arts theory and history as well as being given proper instruction of skills and technique. These programs are most often found in leading schools and departments of art and design, and offer a limited amount of liberal arts courses to supplement the design courses. Lastly, students can choose a four-year college or university department of art and design. This education is intended to cultivate informed understanding of art and design, the ability to observe and think critically, as well as providing basic art and technical skills. Through general education requirements, students must pursue other paths of exploration provided by the university, often parallel to art and design, but outside the immediate department.

Each track has strengths and weaknesses. When the professional undergraduate programs may fully prepare students to enter the industry, they are often too expensive or selective for many young designers. Also, they often do not offer other choices of exploration. Vocational training may teach software and technique, however they lack a design theory foundation. Graduates of these programs often lack the informed understanding of their decision making that the industry values. Four-year college or university departments of art and design provide an opportunity for a well-rounded design education, and is considered more accessible than professional undergraduate program. However, the governing force of curriculum development of such departments are outside the immediate interests of art and design.

Therefore, these programs often inherently lack the ability to adjust quickly to the needs of the industry. This thesis focuses on four-year college or university departments of art and design.

When the Web emerged as a new form of communication, the four-year design departments saw the line that was splitting the design community. However, creating a track to help prepare students to enter this field has met many obstacles.

First, changing curricula is not easy. When a student enters a particular program, he/she gets on board to a department's course plan. Thus, no major curriculum changes can be made immediately by the department. Also, if change is attempted by the department, curricular approval takes anywhere between one to three years in some instances. Second, a department cannot typically add a course without removing
another course. Adding a course is most easily done by redefining an existing one. This is an easier process at some design schools, where art and design is the primary focus. Third, there is a lack of design educators willing to push the change. Design professors, in some cases, are being asked to teach techniques that they only have a very limited understanding of. In other cases, students have a better understanding of the new vocabulary than their instructors. Lastly, the amount of resources needed to stay on top of the technology can be overwhelming. It's more than the thousands of dollars needed for PC and software upgrades each year. Time is also a factor. Even for the savviest instructors, it takes a lot of time to teach the tools. Thus, tool-training eked into a fixed amount of studio hours, compromising primary education agendas.

Davis, Dubberly and members of the Advance for Design, framed this problem. In a briefing paper on Curriculum for Experience Design they identified the results of lagging interaction design curricula at four-year universities and colleges. They concluded that 1) students are putting together their own interaction design education by piecing together an interdisciplinary ensemble of courses; and 2) without advice from practitioners or professional experience, faculty are forming interaction design courses. Many design departments are ignoring new skills and problem variables needed by visual communicators (Davis and Dubberly, et al. 164).

The Problem

New means of communication has created a void between the design practice and design education community. Even with many talented self-learners leading the way (out of necessity), professionals in interactive design prefer to hire visual communicators with a strong design background. However, many four-year design programs are either too segmented or under resourced to provide students with design vocabulary, theories and skills specific to communicate via the Web. How might a design curriculum help integrate the interactive designer with the rest of the design community, thus enhancing the transition students have from school to practice?
With the philosophy of a program being defined individually by a department's faculty and their design convictions, a solution to this problem is not considered prescriptive. Rather, it's meant as a recommendation that can help four-year programs thread the new design techniques through their existing program.
CHAPTER 3

INVESTIGATION METHODS

To gather information to support the hypothesis of this paper and to help formulate results, three independent survey efforts were conducted. The surveys gathered both qualitative and quantitative information from current interactive design students, new graduates of four-year design programs, and Web professionals who hire newly graduated designers. The design of this investigation was intended to gather student attitudes regarding their design education and interaction design. Web professionals were surveyed to gather what they valued in a designer's education, and to comment on their experience and success rate with graduates of four-year design programs.

All three groups of survey participants were asked questions on three primary subjects: 1) faults of design education, 2) tasks of an interactive visual communicator, and software.

Current Students: Studio Design

Students were surveyed in the beginning and end of a summer course on Interactive Design at The Ohio State University. The course, Interaction and Visual Interface Design (Design 673), was provided through the Department of Industrial, Interior, and Visual Communication Design (referred to as the "design" department).

The sample was originally designed to help frame the role software has in design curriculum. With further investigation, it was evident that software was just a small part of a larger problem. Even though software has been de-emphasized in the discussion of the thesis, many conclusions can be made regarding its role in separating the design community. It also contributes to the proposed solution.
The Course Background

The background of Design 673 comments on the nature of curriculum change at four-year universities. With faculty and industry seeing the need of interactive design, to expedite the process, the department chose to reclassify an existing course. Thus, a course that used to focus on advanced typography, was rewritten to examine design problems in an interactive environment. Undergraduate seniors can then choose to take the course as an elective. There were basic design prerequisites required for students to participate. However, students from other disciplines were encouraged to take the class, and were asked to get approval from the course instructor.

The department was also aware that interactive design covers more than designing in the Web environment. Interactive designers also design in a CD-ROM environment. With that in mind, they classified the course as repeatable. This meant that students could take the course twice and earn university credit each time. The course was then offered twice a year. In the autumn it was designed around Web communication. In the winter, students learn the inherent qualities of interactive media and its relationship to teaching and learning, while creating a CD-ROM deliverable. This interactive combination was their solution to preparing students for interactive communication.

Design 673

The section used for this study was the first time Design 673 was taught in the summer session. It was an attempt by the department to show the university a need for more resources. They offered the class with the hope: "if you offer it, they will come." The students did come. The course was filled very quickly and many students requested to be added. To encourage student enrollment, prerequisites were waived with less discretion than previous sections of the course. The general excitement for the course helped the design department document the potential of the subject matter, from a financial viewpoint.

This section of Design 673 was designed to provide a general introduction into interactive design and technology with a corporate communication emphasis. Students were asked to create business-related solutions within a Web environment. Interactive and interface design and Web design process, roles and best practices were the primary concepts covered in the course. The second objective of the course was to
provide a technical background as well as introducing and explaining the vocabulary used in Web design.

The third objective of the class was to provide students enough knowledge of the current tools to be able to prototype their projects. Process-related assignments included: a business plan, a Web site navigation flow chart, an intermediate presentation of concepts and page types, and a final presentation of their prototype. Technical assignments included: a writing exercise with HTML, a graphic image compression exercise, and a Web site. The software used in the class was Macromedia Dreamweaver, Adobe Photoshop, and Adobe ImageReady.

Current Students: Sample Design

The type of students that enrolled in Design 673 that summer were multidisciplinary, a characteristic possibly due to the lax prerequisites. This created a diverse mix of students. Prior to giving the survey, it was clear that a prominent part of the class did not have a visual communication design background.

Ideally, all of the students would be enrolled in the design department, with the intentions of pursuing a career in design. However, fresh opinions on the role of interface design and design curriculum were welcomed, and all students were encouraged to participate, regardless of their particular major. In the survey the students were asked to provide their major. Therefore, individual qualitative data could be considered appropriately.

For the purpose of this thesis, this sample was able to contribute by offering insight into how to expose students to tools that can ease their transition from school to practice. Also, the class provides a snapshot of their immediate needs as designers for the Web.

The 20 students in the class were not the full sample of survey participants. Students were given the choice to participate in the study. Therefore, only 12 turned in the first survey. The second survey had even fewer participants, with six.

The system used to recruit the students to participate in the survey was conducted in compliance with the guidelines outlined by the Office of Human Risk at The Ohio State University. Students of Design 673 were not required to take the surveys. Both surveys made clear the intentions of the study as well as the
confidentiality of their responses. Since the instructor acted also as the secondary investigator of this research, there was an added risk of the students feeling compelled to take the survey, to avoid an adverse effect on their grade. To avoid this, students were asked to not use their name as an identifier of the surveys. However, to match the responses, students were asked to provide a password on both surveys. They were provided blank envelopes to return the surveys. Also, to add a final layer of security, all the envelopes were unopened until after all of the grades were submitted.

Appendix A and B show the surveys used for this phase of the investigation.

Quantitative Questions

There were two quantitative-type questions on each of the two surveys. One asked the students to rank seven basic facets of Web design in order of importance. The facets were: design/interface theory, file architecture, usability testing, design history, art, software application proficiency, and programming proficiency. Research, another facet, was mistakenly omitted from the first survey, and consequently was removed from any resulting conclusions based from this question.

Considering most students in this class had not taken any interactive design type classes prior to taking this class, this question was intended to discover any changes in opinions after taking the class. Any rise in ranking over the term may point to a facet of Web design that was either unknown or under appreciated prior to taking the class. The exact question was, “Rank the following Web design skills/subjects in the order of importance to be a Web designer (1 being most important – 7 being least important).” Unlike similar questions described in other surveys, participants were assigning each facet only one number, rather than ranking each individually. This ranking system (sometimes called a “likert scale”), is easier for participants, but it provides less information.

The course touched on all aspects listed in this question. Students were provided with basic design theory concepts as well as interface design best practices. File architecture was emphasized when learning how to create and manage a Web site. Usability testing methods and principles were the topics of one lecture. Art and aesthetics drove presentations and concept/prototype development. Students were given the task of writing an HTML document without the use of authoring software. Eventually the tool was taught
as a quicker means of development. Programming was highlighted through the exposure of augmentative means of controlling the Web presentation such as Cascading Style Sheets (CSS) and JavaScript.

The second quantitative question that contributes to the results of this study is: "How do you prefer to learn software applications (check one) – in a class setting – at home with a book – software help/tutorial, – on a project." This question adds to the discussion of the role software has in the proposed solution.

**Qualitative Questions**

Both surveys given to the students were abundantly open-ended questions. This allowed participants to expand on their responses.

In the survey given to the class at the beginning of the term, they were asked about their area of specialization, career aspirations, purpose for taking the class, and expectations of the class. These questions were included to help understand that student's particular viewpoint and background.

In both surveys, the remaining open-ended questions were focused on software application training, and its role in a design program. As this thesis evolved, these application-related questions became less relevant.

One open-ended question that contributed to the results of this study is: "What role do you think software application training should take in a visual communication design program." Along with its quantitative counterpart, it contributes to a discussion regarding the role software has in proposed solution.
Newly Graduated Students: Study Design

Chronologically, this was the earliest and most time dependent of all of the surveys. This survey was designed to capture a student’s opinion of their recent undergraduate design education and their expectations of the role of interface design in the industry. It was crucial for the purpose of this study to reach students after completing their educational experience, yet prior to working. The questions revolved around the theme of all three studies: 1) facets of design education, 2) tasks of an interactive visual communicator, and 3) software.

To create an interesting juxtaposition, a follow-up survey was given to those who were willing to participate. This survey was conducted six months after their first survey. It was intended to reveal if their opinions of their education had evolved after being in the industry for a short time.

The perspectives harvested from this set of surveys can contribute to this study in two ways: 1) it can help clarify if their education is widening or closing the gap in the design community illustrated in the problem statement of this thesis. 2) It can also help target curriculum gaps that could be addressed by the solution.

Newly Graduated Students: Sample Design

The sample of students used in this set of surveys were determined on the type of design department they attended. Earlier in this thesis, three types of design programs were outlined: vocational training in art and design, four-year professional undergraduate program, or four-year college or university department of art and design. Because the focus of this study is on four-year colleges or universities, vocational training programs were omitted from the sampling of participants.

Even though the remaining two types of programs handle design education differently, due to equal length programs and access to university resources, each were used in this survey. However, only interdisciplinary academic environments were used. Therefore, only four-year undergraduate degree programs that were part of a bigger university were asked to participate. The reasoning behind this is twofold. It provides consistent data to contribute to the proposed solution. Also, this study is assuming that a
design or art department must work within a non-art and design budget model. For departments under this type of model, the process of obtaining additional resources (faculty, classes, software) often face more resistance than art school budget models.

Twenty-five schools were contacted. In the end, five schools participated: The Ohio State University, Ohio University, Central Michigan University, Carnegie Mellon University, and University of Alberta.

Ohio University, Central Michigan University and University of Alberta all have design programs that would be categorized as a four-year college or university department of art and design. Whereas The Ohio State University and Carnegie Mellon are considered professional undergraduate programs. Even though schools from the east coast, south and west were all invited to participate, the only non-Midwest school to participate was University of Alberta.

The system used to contact the students was conducted in compliance with the guidelines outlined by the Office of Human Risk at The Ohio State University. Firstly, an e-mail communication was sent to the chair of the department being asked to participate. This note explained the purpose of the study and asked the chair if they would be willing to recruit recent graduates to participate. If willing, the chair would then forward an e-mail communication prepared specifically for the students. Invited to participate in the survey which was conducted on-line, the newly graduated student then could answer and submit the 16 question survey at their own pace and convenience. The questions were a combination of qualitative and quantitative type questions.

Appendix C and D show the surveys used for this phase of the investigation.

**Quantitative Questions**

When open-ended questions allow participants to provide personal insight, quantitative type questions provide numbers and averages that can point to trends, needs and concerns of the whole. Facets of design education, expected tasks of an interactive visual communicator, and software expectations were the subjects of these questions in both surveys.
Facets of Design Education

Recent graduates were asked to rank how well they thought their department met some basic criteria of Web design. They are as follows: color theory, design theory, interface design, design history, art, usability testing, HTML, programming, and software training.

These nine elements are a broad sampling of the facets that prepare a designer to communicate via the Web. Business professionals might want to include marketing, advertising, or copywriting. Interface design professionals would want to include cognitive science courses. It was important to include both theoretical and technical facets. Basically, these represent the two sides of the "gap" in the design community. Thus, this question is designed to see how well design programs are contributing to filling the void.

The question was, "From your educational experience, rank how well your department met the following degree requirements." The ranking system was based on a 5 point scale method. A 5 was the highest ranking (perfectly) and a 1 is the lowest (not at all). For example: students who felt their education covered design theory perfectly would mark a 5 in that category. Average overall rankings were determined by taking the sum of each criteria's rankings and dividing by the amount of participants, 22. This question was worded the same for the first survey and the follow-up.

Expected Tasks of an Interactive Visual Communicator

Participants were asked to indicate particular tasks that they felt they would need to perform as a Web-based visual communicator. The actual question for the first survey was, "What tasks do you expect to be doing in your first Web related job, post graduation?" The tasks they had to choose from are: Web layout, Web structure design (architecture), HTML coding, other scripting, using Web authoring tools, usability testing, Web site maintenance, concept design, animation, storyboarding, presentations and copy writing. For result purposes, a ranking was determined by calculating the frequency each task was selected.
The follow-up survey, given to the new graduates six months after the first survey, contained a question regarding the same tasks. However, the question itself had to be reworded. With a small amount of work experience underway, the question asked, "Are you asked to perform any of the following tasks in your job?"

The purpose of this question is to document what tasks a Web designer has been tasked with during the new graduate's first six months on the job. The follow-up survey gathers their initial experience, and provides a picture of their expectations.

*Software Expectations*

Even though software was de-emphasized for the purpose of this thesis, this investigates the tools new graduates have been exposed to. A certain amount of exposure to the current tools of the trade potentially can contribute to closing the gap in the design community. Therefore, software expectations do contribute to the discussion of this problem.

The software chosen for this question range in use but all can be used to some degree in the Web authoring process. They are as follows: Macromedia Dreamweaver, Director, Fireworks, Flash and Freehand; Adobe Photoshop, Go Live and Illustrator; Microsoft FrontPage and Word. This selection is a sample of software applications, and covers the current major competitors.

Macromedia Dreamweaver, Adobe Go Live, and Microsoft FrontPage are Web authoring tools. Each have their differences in interface and features, but they all write HTML. Adobe Photoshop and Macromedia Fireworks are raster-based image manipulation programs. Fireworks is used primarily to slice and compose graphics for the Web. Photoshop (with ImageReady) can do the same, and much more. Macromedia Director and Flash are animation tools, used to develop Web and stand-alone presentations and applications. Flash is a vector-based program, thus creating smaller, Web-ready files. Macromedia Freehand and Illustrator are drawing programs, used for concept development and illustration. Microsoft Word is a word processing tool that claims to be able to write HTML when needed.
On the first survey, participants were asked, "What software do you feel prepared to use right away on the job?" They were provided the list and asked to mark all the software programs that applied. A ranking was determined by calculating the frequency each task was selected.

On the follow-up survey, participants were asked, "What software have you used since graduating?" The same software choices were listed.

Preparation and Readiness

Other qualitative questions asked about the readiness of new graduates to enter the workforce as a Web designer. On the first survey, one question asked, "How prepared do you feel you are to enter the Web industry? (5 very ready — 1 not at all.)" Preparation for the industry was a primary interest of the investigation. However, with industry preparation being a concern for most disciplines, and with the relatively low amount of survey participants received, the focus of this investigation is concentrated more on easing the transition for students.

Qualitative Questions

Gathering of qualitative-type responses happened through the facilitation of "comment" questions. For all of the quantitative-type questions asked, an optional comment field was included. It stated, "Please add any additional information if you feel you need to clarify a response."

The first survey contained a less response-restrictive question, "Why did you decide to go into design?" This question was intended to contribute to the discussion of this thesis.

Follow-up Survey

On the follow-up survey, given approximately six months after the first survey, participants were asked what type of position they filled in the design field, if they filled a position at all. Much of this survey was inconsequential if the not-so-new graduate was unemployed. However, their reasons for not working were valuable.
In the final question, they were also allowed to elaborate on how to optimally prepare design students to be Web-based visual communicators. This gave recent graduates who had some experience under their belt to provide their own solutions to the problem.

Web Professionals: Study Design

This component of the study was a chance to add some perspective from the professionals who hire interactive designers, with the purpose of designing for the Web.

Industry professionals have been considered in undergraduate design curriculum recommendations before. NASAD (National Association of Arts and Design), which is a council that creates art and design curriculum guidelines, is made up of art and design educators and professionals. Generally, however, art and design academics consider industry professionals as being short-sighted when evaluating the needs of undergraduate design education. The basis of this opinion is clear: the industry has short-sighted needs. When clients are asking for dynamic and visually engaging Web sites, there is the industry desires new hires who know the latest software tool that can accommodate their needs.

In “Experience vs. Education,” Jeffery Keedy echoes that remark (87). He criticizes that practitioners often become so involved in their immediate needs they lose touch with what is going on in the classroom. Even though educational design programs must feed the monster with new recruits every semester or quarter, generally the professionals take an anti-intellectual approach to design. Any role of education, outside the domain of their particular brand need (such as developed articulation, strengthened convictions) often lacks credibility in their eyes. Unlike disciplines where scholarly research often heightens after graduation, design research often stagnates.

Web Professionals: Sample Design

Even though there are two sides to the proposed “gap” in the design community, this survey focused on the interactive design side. Therefore, Art Directors, Studio Producers and Corporate Design Managers who were involved in interactive design were chosen to be contacted. These professionals provided value to this study in four ways. First, they validated the role and influence of design education in
the design community. Second, their results help point to facets of Web design that they value in design education. Third, they comment on the type of tasks of a Web related design position. Finally, they provide a snapshot of their current desires of software proficiencies.

One hundred and eleven professionals were contacted. The final sample consisted of owners and managers of small and large design firms, located all across the continental United States. This study attempted to find a sample of professionals from large and small design firms and departments. A diverse sample of hiring experience was also attempted. It was assumed that a population consisting of strictly professionals from large design departments, who have hired hundreds of Web based visual communicators would provide a one-sided perspective.

This approach was appropriate considering the difficulty of persuading professionals to participate. Those who did participate generally had an interest in the subject and provided compelling comments.

The system used to contact Web professionals was conducted in compliance with the guidelines outlined by the Office of Human Risk at The Ohio State University. The vehicle used to contact Web professionals was the AIGA (American Institute of Graphic Arts) Web site. An open and searchable member directory provided contact information for specific types of designers. Only Art Directors, Studio Producers and Corporate Design Managers who were involved in interactive design were chosen to be contacted. An e-mail communication was then sent to the employees, describing the purpose of the study. In consideration of their time, two survey options were provided: a phone interview or an on-line survey. The e-mail directly forwarded the subjects to the on-line survey consisting of 15 quantitative and open-ended questions. No Web professionals were interested in conducting the survey on the phone.

Appendix E shows the survey used for this phase of the investigation.
Quantitative Questions

The multiple choice type questions directed to Web professionals paralleled the question given to new graduates. This was done to be able to make fair comparisons of the expectations of new graduates with the needs of the industry. The juxtaposition of the two are reported in the Result Findings of this thesis.

Facets of Design Education

This sample was asked to rank how much design education should focus on specific areas of Web design. They are as follows: color theory, design theory, interface design, design history, art, usability testing, HTML, programming and software training. The same ranking system used on the new graduate survey applied as well. Participants were asked to assign a score to each facet, 5 being the highest ranking (very important) and 1 being the lowest ranking (not at all important).

The selection of facets of Web based visual communication, though not covering every aspect of the field, is balanced between theoretical areas and technical. The proposed "gap" in the design community states that many designers are graduating with little exposure to Web and interactive concepts and techniques. This question provides the industry's point of view of what should be used to help new graduates be exposed to all aspects of visual communication design.

Expected Tasks of an Interactive Visual Communicator

The second question that matched the new graduate survey asked Web professionals, "When hiring a Web designer, check the tasks you expect them to perform." The tasks listed are same listed to new graduates: Web layout, Web structure design (architecture), HTML coding, other scripting, using Web authoring tools, usability testing, Web site maintenance, concept design, animations, storyboarding, presentations and copy writing. Each category was ranked upon the frequency it was marked.
This question allows professionals to remark on their needs while separating the needs of design education. In the question related to facets of design education, a professional may rank HTML as a very important facet that should be included in design education curriculum, but he/she may not expect a new hire to actually code any HTML in their office. It is a very dualistic approach. Either they expect a certain task, or they don’t. Like most of the questions, they were allowed to comment on the answer.

Software Expectations

The last qualitative-type question, designed to be compared to the new graduate survey, focused on their software needs. Though not completely applicable to the core of this thesis, this question intrigues many students who are grappling with the question of the day, “what software should I know to get a job?”

In an ad hoc interview with a Web professional at a large American insurance agency, he was surprised what interns he interviewed could actually do. “I think students take their design classes and expect that’s all they need to know and do to get a job,” he said. Tool knowledge is essential on a business’s return on investment (ROI) when hiring a new designer.

The Validation of Design Education

Web professionals were also asked multiple choice questions that help clarify what they look for in a new hire candidate. One question asked what qualification they valued most when evaluating a new job candidate, 1) years of professional experience, 2) years of education, or 3) portfolio. In a related question, they were asked what skills they weigh most heavily when hiring a new Web designer: 1) design/layout theory, 2) needed software package, 3) programming/coding, or 4) pre-design research. Finally, they were asked what type of educational experience their most successful new hires had, 1) four-year undergraduate degree in design/visual communication, 2) four-year undergraduate degree in another discipline, 3) master’s degree, 4) two-year associate/technical degree/certificate, or 5) self-taught.

The intention of this series of questions was to capture how much the industry values design education and validates its role in the design community. It will also test Keeley’s statement, which generalizes the industry as being unappreciative of design education and short-sighted.
Qualitative Questions

Much like the surveys given to new graduates, open-ended opinions were acquired from Web professionals through the use of a common field after most multiple choice questions.

One question was designed for Web professionals to elaborate on their most productive new-hires. It followed a multiple choice question which captured the type of education their most successful newly graduated designers had. It was intended to find out how design education contributed to their success. The question was: "Do you feel that their success was attributed to their design education, or lack there off? (please explain)?" This information could help point to "best-practices" of undergraduate design education. Such practices could be incorporated into the proposed solution.

Investigation Methods Summary

Overall, the methods used in this investigation gathered data from most perspective-types surrounding the design and design education community. The surveys were intended to not only gather opinions and quantifiable data, but to also show change in perspectives. Current students were surveyed before and after experiencing an interactive related course. New graduates were surveyed within 60 days and again 5 to 6 months after graduation. Further investigations could expand the methods by including another survey a year after graduation. Another phase of research that could contribute to this study is the surveying of faculty and department chairs.
CHAPTER 4

INVESTIGATION RESULTS

The methods of investigation gathered information from several different viewpoints surrounding undergraduate design education. Like many investigations, some results are more applicable to the problem of this thesis than others. 1) The results help support the evident "gap" in the visual communication design community. 2) It provides evidence of an uneasy transition design students have from their undergraduate education to practice. 3) It also points to elements that can contribute to the proposed solution. In some cases, the results frame new questions and directions that other investigations could follow.

There are two types of information gathered, qualitative and quantitative data. With the relatively small sample populations, making assumptions using the quantitative data is painting with a very broad brush, however, the results do help contribute to the discussion and proposed solutions.

CURRENT STUDENT: Sample Results

Outlined in the methods section of this thesis, the nature of the particular semester section gave signs that the sample was going to be made up of a mix of design and non-design majors. The following graph shows the make up of the 15 students who participated in the first survey.
Current Student Result Sample Majors

- VC Design (6)
- Landscape Architecture (2)
- Art Education (1)
- City and Regional Planning (1)
- Communication (1)
- Industrial Design (1)
- Industrial Engineering (1)

Figure 4.1: Distribution of major types of students who participated in the first current student survey

Only 3 subjects had a visual communication background. The remaining students were majoring in Industrial Engineering, Communications, Art Education, and Landscape Architecture. Only seven completed the second survey, given to students near the end of the term.

Current Students: Qualitative Results

In the study aimed at current students, because of the evolved focus of this thesis, very few open-ended questions were ultimately deemed useful for this paper.

One question contributes to the discussion regarding the role software has in the proposed solution: “What role do you think software application training should take in a visual communication design program?” The following is a sample of the results:

“Whether a student learns on his/her own, or from an instructor, either way he/she will need to learn the tools of the trade.”

“I think it should be just as much of a priority as the theory behind good design”
“Design classes should teach design first and foremost — use the software in a way to strengthen design concepts.”

“Secondary to theory”

“I think it should have some formal role, even if it is only a voluntary workshop that professors or students teach. ... I really don’t want to take a class on [Adobe] Illustrator or something.”

“It should be somewhere high on a priority list. It is important if you want to efficiently... design an effective Web page.”

“Not that important to master it, but like to know it a little at least.”

“In a design program, it’s useful to know common programs used in the profession. Theory and concepts should be first before people learn the programs. Otherwise, students design by the programs, limitations rather than their design abilities. Important role, but not the focus.”

“I’m a fan of theory-based learning, so long as a sequence of hands-on exercises are learned somewhere within the program.”

Many responses were similar. Generally, students felt that software training is important in a design program, but should be integrated within a theoretically-based curriculum.
Current students were asked to rank various facets of Web design: design/ interface theory, file architecture, usability testing, design history, art, software application proficiency, and programming proficiency. Participants were not scoring each facet individually. They assigned a ranking to the entire set. Therefore, only one 7 was assigned to the least important subject. Only one 6 was assigned to the second least important subject, etcetera, by adding up the scores of each facet, and dividing by the number of participants, an overall ranking was constructed. The question was asked on both of the two surveys given to the students. Please note, the lowest score had the highest ranking. This is different from the other scoring systems used in this thesis. It was intended to encourage participants to prioritize the importance.

In the first survey, design/interface theory was ranked the highest. Software proficiency, file architecture, usability testing, art, programming proficiency and design history were ranked second to last respectively. In the second survey, given near the end of the term, two facets moved up from its previous ranking. Usability testing moved from fourth to a tie with file architecture for third. Programming moved from the sixth most important ranking to the fifth.
Figure 4.2: How current students ranked the importance of various facets of Web design, first and second survey.

The table reflects the change of scores, rather than ranking. Even though usability testing rose in ranking, it received a lower score on the second survey. The importance of file architecture lessened while retaining a ranking of third. Also, software proficiency retained a second ranking, yet had a significantly increased score from the first survey to the second. Therefore, any findings should consider the change of scores as well as the rankings.
Preferred Style of Learning

Current students were also asked to pick their preferred style of learning software. Their choices were in a class setting, at home with a book, software help/tutorials, or on a project. In a class setting an instructor trains students how to use the software, often in a lecture format. Software taught on a project does not insinuate that any formal instruction was performed. Often, they are merely exposed to the software application in class. The necessity of using a tool to complete a project is a common way that many students learn software. The results of this question are shown as follows:

Figure 4.3: Distribution of preferred styles of learning software

Newly Graduated Students: Sample Results

The first survey given to new graduates consisted of 22 participants, from five different schools. The five schools that participated were Carnegie Melon, Central Michigan University, Ohio State University, and the University of Alberta. When taking the first survey, the students had graduated within the previous 60 days.
Participants were asked what type of design program they attended. They were provided with three choices, industrial design based, art based, or technical based. Industrial design based programs present visual communication from a rational and systematical approach. Since it is a more accurate labeling, the results refer to industrial design based as rational design based. An art based school refers to a visual communication program that is rooted in self-expression and the fine arts. Technical based design programs strongly focus on software and the more executional aspects of design, such as scripting and programming.

These choices do not necessarily relate to the three types of design programs illustrated in the theory section of this thesis (vocational training in art and design, four-year professional undergraduate, and four-year college or university department of art and design). There are some correlations. Many vocational training programs are considered technologically based, focusing on the tools more than theory. These are often one to three-year programs. However, a four-year university may wrap their curriculum around the technical aspects of design (software, programming) as well. A four-year university department of art and design is often an art-based design program. These programs generally offer Bachelor of Fine Art (BFA) degrees in art with a concentration in graphic design. Four-year professional undergraduate programs are also typically rational design based programs. They teach a systematical, and often user-centric, approach to solving visual problems. These programs offer a design-specific degree, such as Bachelor of Science in Design. The programs are comprehensive enough to provide aesthetic and pragmatic preparation.

However, some professional undergraduate programs are still considered art-based. Pratt University in New York City, for example, is considered a professional undergraduate program in design. However, it has a strong focus in art and self-expression. Similarly, Carnegie Mellon has roots in rational design. The program takes such a strong approach in teaching tools that one participant in this study categorized the program as “technical.”

The following is a chart that illustrates how the new graduates categorized their department:
According to the results, this sample covers the two major types of four-year undergraduate design programs: art based and rational design based. This assures a fairly equal representation in the results. Since technical based programs are most often less than four-year programs, they fall out of the scope of this thesis.

The students primarily graduated with a Bachelor of Fine Arts (BFA) and Bachelor of Science in Design (BSID and BDES). A handful graduated with a Bachelor of Applied Arts (BAA) or Bachelor of Arts (BA). One participant received a Bachelor of Humanities and Arts (BHA), a combined degree of design and psychology offered at Carnegie Mellon University.

The following chart illustrates the degree types of the first survey given to new graduates:
Even though it was mentioned earlier in this thesis that the type of program often correlates to the type of degree students receive, these results show how such generalizations can be misleading. For example, Carnegie Mellon is considered a professional undergraduate program, and is aligned with a rational approach to design. However, with the exception of one BFA, all of the new graduates received BFAs rather than a design specific degree. Ohio State University, also an industrial design oriented professional undergraduate program, offers a design specific Bachelor of Science in Design (the degree was recently changed from a Bachelor of Science in Industrial Design, which is why three of the Ohio State Participants categorized their degree as a BSID rather than the BSD). Conversely, the University of Alberta is considered an art-based design program. However, this sample of students graduated with a BDes, rather than a BFA.

The second survey was given approximately six months after the first. Participants of the first survey had the option to participate in the follow up survey. Of the 18 who agreed to participate, only 6 completed the second survey.
Newly Graduated Students: Qualitative Results

New graduates were allowed to elaborate on why they decided to go into design as a career. Their answers varied. However, some underlined themes emerged.

Some chose design for the freedom of the profession:

"I could do freelance and work at home, and I love to design" – Central Michigan University

"...design allows me to create within and explore many different disciplines and aspects of life." – University of Alberta.

Others chose design because it provided a more profitable alternative to a career in art:

"It was presented to me as a profitable artistic career" – University of Alberta

"I wanted to use my creative talents in my profession, but I also realized the practicality of needing some kind of income that strictly art would be unable to provide" – Ohio State University

"...the Mac was a creative tool and graphic designers could have a lot of career opportunities." – Ohio University

Many chose design because of how it combines art with problem solving and technology:

"I wanted to combine two areas I was interested in: art and math/science/engineering" – Carnegie Mellon University

"It was the midpoint of art and science" – Carnegie Mellon University
"I have an artistic background, [and a] fascination with technology and beautiful composition." – Central Michigan University

Comments: Facets of Design Education

An option to comment after each question was used to gather most of the new graduate’s qualitative responses for both surveys. Not all participants took advantage of this outlet to express or explain their ideas.

After ranking how well their alma mater met various Web design related criteria, some chose to further defend their university.

"The lower scores I applied don’t necessarily mean I was not satisfied in these areas. For instance, basic programming was available if you wanted..." – Carnegie Mellon University

"The U of A had an excellent incorporation of fine arts and interdisciplinary courses" – University of Alberta

Others took the opportunity to make recommendations.

"I feel OSU was very thorough in the overall theories and more permanent aspects of the field, however, the technology training side of things left little to be desired, and required primarily on-your-own training." – Ohio State University

"I think the university could benefit dramatically by adding a Web design pathway." – University of Alberta

"Fine arts [is] a big part of the program along with design theory and history. I feel we are lacking in the technical aspect. All the programs (software applications) were basically self-taught." – Central Michigan University
One took the time to address the heart of the issue.

"The university program is much more theory/practice biased than many of the technically focused programs...As a result, much of the technical knowledge (i.e. proficiency with various applications – Photoshop, Flash etc.) is learned after the program on the job...It is shopping for work...I have found that many firms see the value of the theory-based training in the portfolio, but are concerned with the training time needed to build the application proficiency required for the job." – University of Alberta

Comment: Preparation

One question asked students to rank how prepared they felt they were to enter the design field doing any kind of Web-related design work. They ranked a 5 for very prepared and 1 for not at all. The final average score was 2.64. This middle-of-the-road score was not as compelling and useful as their comments (thus the score was not used for analysis in the qualitative sections of this paper).

One comment really illustrates the "us vs. them" design values, often culturized in the university environment.

"I feel I can get by...I am hoping to find a job that is primarily print design and not Web-based." – Carnegie Mellon University

Others illustrate the fear the growing visual communication field can cause in a student.

"The only way I feel OK about my preparation is because of the additional classes which I elected to pick up." – Central Michigan University

"The industry is very intimidating. In a field of such diverse and advanced technology, it is impossible to ever be fully prepared." – Central Michigan University

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Lastly, some were frank with their disinterest of designing for the Web.

"I am not really at all, but on the other hand, I am not someone who has any real interest in becoming a Web designer." - University of Alberta

Follow-Up Survey

Six of the twenty-two original participants took the follow-up survey. Of this survey, new graduates were given a chance to describe their job. The job descriptions really point to the holistic role designers take up and should be prepared for. This is the job of a new graduate from the University of Alberta who earlier stated her disinterest in Web design:

"I am currently working for a [non] profit arts society. My role is to design the website, as well as all communications for the year." - University of Alberta

Others echoed the same type of renaissance-role sentiment.

"Primarily a print designer, I do some New media and video." - University of Alberta

"Resizing images, creating photos, mocking up pages based on existing templates, updating flash games, occasionally designing ads and posters." - Ohio State University

The final question allowed participants to elaborate on how to optimally prepare designers to work as Web designers. This gave recent graduates who had a little experience under their belt to provide their own solutions to the problem. Some students' opinions pointed to the need of shrouding more Web-related concepts into a design curriculum.

"There seems to be a lot of need for designers who know JavaScript and (Macromedia) Flash." - Ohio State University
"The program which I attended never pushed [me] to acquire the skills needed to be a
good Web-designer, such as... HTML, JavaScript. This was an option in which you, as a
student, had to obtain yourself." – Central Michigan University

Newly Graduated Students: Quantitative Results

Newly graduated students were asked three primary quantitative-based questions. The questions
were regarding 1) facets of design education, 2) expected tasks of an interactive visual communicator, and
3) software expectations. These results are compelling when compared to the Web professional results. A
justification is outlined later in this thesis.

Facets of Design Education

Students were asked to comment on how well their department covered various facets of Web
based visual communication. Each facet was scored on a scale of 5. I represents a perfect score, and 1 was
the lowest. The components were as follows: color theory, design theory, interface design, design history, art, usability testing, HTML, programming, and software training. According to this sample, design
programs generally focus the most on design theory and the least on programming and HTML. Design
theory received the highest overall ranking of 4.295. Programming was placed last while receiving a
ranking of 2.10. HTML received a ranking of 2.25.
Figure 4.6: Average scores of how well undergraduate design education departments covered various facets of Web design within their program, as provided by new graduate survey participants.

After design theory, the two areas that departments seem to cover the most is design history (3.95) and interface design (3.59). Almost directly in the middle of the scale is software training (3.33).

**Expected Tasks of an Interactive Visual Communicator**

Participants were asked to mark particular tasks that they expect to do as a Web designer. The tasks they had to choose from are: Web layout, Web structure design (architecture), HTML coding, other scripting, using Web authoring tools, usability testing, Web site maintenance, concept design, animations, storyboarding, presentations and copy writing. A ranking was determined by calculating the frequency each task was selected.
Sixteen out of twenty-two participants felt that concept design was an expected task of a Web designer. Presentations (14), storyboarding (12), Web layout (11) and animation creation (11) all are expected by a majority of recent graduate participants. Only 1 participant expects to do any scripting other than HTML as a Web designer. Besides scripting, few expect to do much HTML coding (3), use a Web authoring tool (3), maintain a Web site (4), copy write (4), or usability testing (6). 9 expect to do some kind of Web structure design.
Software Expectations

Software expectations are vulnerable to biased results. Many programs are equipped with labs of only a certain type of software. If a student has only been exposed to Macromedia Dreamweaver, then they may not know enough about the alternative to expect to use it. However, the reputation of some software packages precedes themselves. In other words, the student who only knows Dreamweaver, may have heard of Adobe GoLive, and thus feel that he should learn that program to prepare himself, or vis-a-vis. The software chosen for this question range in use, but all can be used to some degree in the Web authoring process. They are as follows: Macromedia Dreamweaver, Fireworks, Flash and Freehand, Adobe Photoshop, Go Live and Illustrator, Microsoft FrontPage and Word. This selection represents the major competitors.

Twenty of twenty-two participants expect to use Adobe Photoshop and Illustrator in some capacity. This is more than who expect to use Microsoft Word (18), a very common productivity tool. Dreamweaver (12), Flash (12) and Director (12) are expected by a majority of participants. Adobe GoLive (3) and Microsoft Front Page (1) do not seem to be software packages that these recent graduates are concerned about knowing. The results are illustrated in the following chart:
Web Professionals: Sample Design

The Web professional survey sample consisted of 20 participants, from varying sized companies and design firms. Studio Managers, Corporate Design Managers, and Art Directors were targeted. With 111 professionals contacted, the 18 percent who did participate provided valuable feedback.

It was stated earlier in this paper that often industry feedback regarding design education is short-sighted. Immediate needs usually overshadow the benefits of other rewarding aspects of design. However, it can be assumed that those who had the time to read the purpose of the survey and decided to participate generally have some interest in the value of design education. It can be viewed that those with the most short-sighted of needs are often too consumed filling such needs to partake in a survey that they received in their e-mail inbox with a subject line that reads "Design Education Research."
The results represent a diverse sample population for this study. The following chart shows the amount of Web-based visual communicators who were hired by each Web professional survey participant during their career.

![Web Professional Participants: Web Based Visual Communicators Hired During Career](chart)

Figure 4.8: Amount of Web-based visual communicators hired by each Web professional survey participant through the duration of their career.

The professionals had a mixed amount of experience hiring designers for Web purposes. Six subjects had only hired 1 or 2 designers in the past. Five had hired from 3 to 7, five had hired from 8 to 15, and four professionals had experience hiring 15 or more designers. This includes one subject who has hired hundreds of Web designers.

A diverse sample was also established by using participants with varying sizes of Web based design departments. The following is a chart that breaks down the sample based on the amount of Web-based visual communicators working in their firm or department at the time the survey was conducted.
Six participants employed one Web designer at the time the survey was taken. Eight subjects had 2 to 4 Web designers in house, and three had 12 or more. This includes one participant who had 30 Web designers working in his firm. The final three participants did not have any designers on staff for Web design purposes. These professionals hire Web designers contractually for specific projects.

Web Professionals: Qualitative Results

Overall, the Web professionals who did participate contributed rich open-ended responses. Many took the time to comment on at least one question on the survey.

Design Education Attributes of Successful New Hires

A multiple-choice question asked Web professionals what type of educational experience their most successful hires had. The choices were: 1) four-year undergraduate degree in design/visual communication, 2) four-year undergraduate degree in another discipline (with a field to enter the other
discipline), 3) master's degree, 4) two-year associate/technical degree/certificate, 5) self-taught. This was followed by an open-ended question asking them to elaborate on their response. The question was, “Do you feel that their success was attributed to their design education, or lack thereof (please explain)?”

The qualitative results of this survey shows that Web professional’s most successful hires were primarily educated with a four-year undergraduate degree in design/visual communication. However, education was rarely the only sign of a successful hire, as indicated by the following responses.

“The typical worker I look for has not only received a visual arts degree but also has a self-taught background with technology and code.”

“Success has been based more on work ethics and problem solving.”

“Self-taught is fine, so is [having a] Master’s, but neither lead to the conclusion that the individual is talented enough to think of an idea and [implement it].”

“Success in design has very little to with the degree you have, and everything to do with how well you learn.”

“Success comes from the effort put into the goal, not necessarily conforming to a pre-designed program.”

Comments: Facets of Design Education

After ranking how they would weigh each facet of Web design in a undergraduate curriculum, many participants chose to add a comment. This remark helps frame the gap in the design community:

“Interface design theory, as opposed to design theory is a much more valuable skill, and a distinction that many traditional designers converting from non-interactive design fail to make. Usability testing and the ability to think and act at the level of the user are extremely important in interface design.”
Comments: Software Proficiencies

To make a comparison to the expectations of new graduates, Web professionals were asked what software they expect new hires to be proficient in using. The quantitative results are outlined in the next section. Many participants elaborated on the subject.

Some emphasized that software training is only a small part of preparing a student to design for the Web medium. Firstly, the software platform of choice is often decided on a client-to-client basis, thus making the ability to learn new tools quickly as important as knowing certain packages.

“Different projects require different tools. Many times client IT departments will request a project be built in FrontPage because the buy into the Microsoft product line.”

“Software requirements often depend upon client needs and system/server technologies being utilized.”

Second, there are concepts and skills specific to Web design that transcend the need to master a particular tool of the trade, such as HTML.

“I will shy away from any designer that uses Dreamweaver or FrontPage exclusively to design. The applications write code that is dysfunctional for some browsers. Originality is work and the understanding of the technology that creates originality is what I seek in an applicant.”

“We will not consider anyone who uses a WYSIWYG (What You See Is What You Get) editor (ie. Macromedia Dreamweaver, Microsoft FrontPage).”

“I look for someone who knows more than a software package.”

“The above software stunts it all, then you get into the nitty-gritty with the HTML coding.”
One participant chose to list all of the software he expects new hires to know: "PowerPoint, Excel, After Effects, QuickTime, Windows Media Player, Maya, Other motion graphics/3D based experience software, etc." The applications he listed were all worthy of being included in the list, and can be used at some level of the Web design process.

**Web Professionals: Quantitative Results**

Web professionals were asked three primary quantitative-based questions, designed to parallel the group of quantitative type questions asked to new graduates. These questions focused on 1) facets of design education, 2) expected tasks of an interactive visual communicator, and 3) software expectations. A full evaluation of these results are made when compared to the results of the new graduates later in this paper. The following are the isolated results of each question.

**Facets of Design Education**

Web professionals were asked to rank how they would weigh various facets of Web design in an undergraduate design curriculum. Each facet was scored on a scale of 5, 5 represents a perfect score, and 1 was the lowest. An average score was calculated by adding the scores of each component and dividing by the amount of participants (25). The components were as follows: color theory, design theory, interface design, design history, art, usability testing, HTML, programming and software training. According to this sample, the industry heavily values interface design (4.40), design theory (4.00), usability testing (4.00) and color theory (3.70). Art (3.45) and design history (3.45) received modest scores. Programming (3.35), rHTML (3.30) and software training ranked lowest on their scale. However, even the lowest scores were above the median of 2.5.
**Expected Tasks of an Interactive Visual Communicator**

Participants were asked to mark particular tasks that they expect new hires to do as a Web designer. The tasks they had to choose from are: Web layout, Web structure design (architecture), HTML coding, CSS, scripting, using Web authoring tools, usability testing, Web site maintenance, concept design, animations, storyboarding, presentations and copy writing. A ranking was determined by calculating the frequency each task was selected.

Of the 20 who participated, 19 expect new hires to layout Web pages. 18 expect them to handle Web structure design as well as designing concepts (18). A majority also have HTML coding (17) and the use of a Web authoring tool (14) in mind. Storyboarding (11), animation (10), presentations (9), site maintenance (9), and other scripting (7) scored lower. Only one participant expects a new-hire designer to write copy.

**Software Expectations**

Software proficiency expectations were evaluated the same way the expected tasks were scored. Web professionals were asked to rank the software application they expect a new hire to know. The programs were the same: Macromedia Dreamweaver, Fireworks, Flash and Freehand, Adobe Photoshop, Go Live and Illustrator, Microsoft FrontPage and Word.

One-hundred percent of the participants consider Adobe Photoshop to be a program a new applicant should know. 18 of 20 professionals expect new hires to also know Adobe Illustrator, with only three expecting knowledge of its competitor, Macromedia Freehand. Flash also scored very high (17). Its sister multimedia tool, Director, received five marks. Dreamweaver scored highest for Web authoring tools (10), with Adobe Go Live (4) and Microsoft FrontPage (2) trailing. 6 professionals expect new hires to be proficient with Microsoft Word.
The Validation of Design Education

This sample was also asked a second group of questions that identifies their most successful hires, and the role design education took in preparing those employees.

One question in this series of questions asked Web professionals which qualifications they weigh the most when hiring a new visual communicator. The choices were 1) years of professional experience, 2) years of education or 3) portfolio. Overwhelmingly, the Web professionals value a candidate’s portfolio the most, as shown below:

![Bar Chart: Most Valued Qualifications When Hiring]

Figure 4.11: Distribution of the most valued qualifications of new hires as indicated by the surveyed Web professionals

Another question of this series asked, “What skills do you weigh most heavily when hiring a new Web designer? The applicants proficiency with...” The choices were, 1) design/layout theory, 2) needed software package, 3) programming/coding, or 4) pre-design research. The results show that the industry still values a theoretical background in their new hires. The responses are illustrated in the following chart.
In the third question in this series of questions, Web professionals were asked what type of educational experience their most successful hires had. The choices were: 1) four-year undergraduate degree in design/visual communication, 2) four-year undergraduate degree in another discipline, 3) master's degree, 4) two-year associates/technical degree/certificate, 5) self-taught. The results are shown below.
Figure 4.3: Distribution of the type of education received by successful hires as indicated by the surveyed Web professionals.

In this question, their most successful hires and a four-year undergraduate degree in design or visual communications. However, the open-ended questions add value to these responses. As they indicated, a degree alone does not guarantee success.

Investigation Results Summary

There was a relatively low participation rate for all surveys. 60% of the interactive design students participated in the first current student survey, and only 30% of the class participated in the second survey. 20% of the schools that were contacted agreed to participate in the new graduate survey, contributing to only 22 participants of the first survey. 31% of those new graduates completed the follow-up survey. 18% of the invited Web professionals submitted a survey. The validity of the quantitative results would have increased
with higher turnouts. However, the results fulfilled the needs of the thesis as planned out by the methods. They provided enough information from a variety of perspectives to be expounded in the following results finding section. They also contribute to the proposed solution.
CHAPTER 5

RESULT FINDINGS

The results of the investigation lead to various avenues of discussion. Each survey provide opportunities to speculate how the results occurred as well as the impact they may have on the thesis. Findings were also uncovered through a comparison of different survey results.

*Current Student Expanded Awareness*

When asked to rank the importance of various facets of design, the results show how student’s opinions changed slightly from the beginning of the quarter to the end. A change in ranking and average score should be considered in evaluating the results. Usability testing is one facet that increased its ranking (from 4 to 5), yet the actual average score dropped.

The only concept that rose both in the average score and ranking was *programming proficiency*. With all of the facets in the question exposed to students during the class, this shows an increased appreciation for scripting skills. In the beginning of the class, many students had envisioned a very elaborate Web site prototypes as final projects. After being introduced to hand-coding HTML (which is a very slow way of authoring Web pages for many), some were hoping Macromedia Dreamweaver would speed up the process and enrich the product. Even though Dreamweaver is a WYSIWYG authoring program that includes the ability to include some dynamic elements into a Web page, students soon realized its limitations. Often students ideas could only be achieved by including JavaScript or other Web based scripting language.
As the appreciation for programming rose, so did software proficiency. Though not overcoming
design theory as the most valued aspect of Web design, it scored over a point higher in the average score.
HTML and programming often is an abstract concept for students who rely on a good eye and a
WYSIWYG editor for most of their visual design work. The increased score may be attributed to the
realization of how well software assists the process, even with limitations.

Software Learning Preference

The current student results made it clear that students prefer to learn software in a class setting or
while doing a project over trying to learn through tutorials or at home with a book. Software applications
are tools that many design programs do not have the resources to teach specifically. Curriculum hinged on
theory often does not allow the time needed to show students how to master current software applications.
Learning software problem-by-problem and project-by-project is a way that many students in design
become skilled. This approach to teaching is more accommodating for under resourced
programs. Faculty expose students to enough of the applications to get them to solve a particular problem.
Some faculty do not take this approach. They decide to push all of the learning in the hands of the student
through books and tutorials. Even though this may nurture self-learning attitudes, a lack of some software
coaching can paralyze their performance. The results support this idea.

Difficulty to Categorize Design Programs

With combinations of visual communication program types (art based, rational based, technical
based) and degrees (BFA, B.A., BDES), the new graduate sample results show how difficult it is to put
design programs in certain categories. It illustrates the necessity for standards and guidelines to establish
some consistency. These are currently outlined by groups such as NASAD. Even NASAD documents that
try to categorize the types of programs use words such as “often” and “usually” to cover the complexity of
the design education landscape.
New Graduate Awareness of "Gap"

The results show that new graduates were aware of the "gap" in the design community from within their respective programs. Some noticed their program's struggle to provide them with complete exposure to theory and technically based issues. This is reflected by one participant's comment: "I feel we are lacking in the technical aspect." The graduates who supported their program in qualitative responses were highlighting the great design theory it provided. One new graduated stated: "I feel OSU was very thorough in the overall theories and more permanent aspects."

Students also recognized the void after they entered into the work force. They discovered that design versatility was a valuable characteristic. By simply not having an "us vs. them" type of mentality more opportunities existed. Most of the new graduate follow-up survey participants made an easy transition, and were prepared to take different types of visual communication design roles. For example, one University of Alberta graduate characterized her current job as primarily print based, yet she does "some new media and video." For another, the transition was not successful. When asked a reason for not being employed, he stated, "I would attribute my unemployment within the design field to not being prepared." Unwritten in his comment, there are other reasons for his failure to be employed, such as a poor economy and his rural geographic location. However, he graduated from a program that is not structured to provide much interactive design exposure. He is completely aware of the "gap" and attributes it to a lacking education. Even though this void is not entirely a result of design education, it can be a catalyst to help fill it.

Successful New Hires and Design Education

This investigation does not make the assumption that one particular way of educating undergraduates is a recipe for success. For any student to be successful, in any field, they usually have to put in the extra effort and go above and beyond expectations. Comments from Web professionals support that statement. For example, one participant stated, "Success in design has very little to with the degree you have, and everything to do with how well you learn." This study is intended to find a way to aid the transition students make from school to practice. These professionals have often witnessed this transition
many times. Their responses point to concepts that can be introduced into a program. For example, one professional stated, “Visual design programs...have seemingly failed to traditionally provide adequate programming skills in the graduates I typically seek to work with.” Therefore, if students were exposed to an interactive design concept or skill, such as scripting, it provides direction. Some students may not take the path, yet will still be aware of the role scripting plays in solving visual problems. Others will build on the exposure to prepare themselves to be successful in that particular niche of the design community.

Converting from Non-Interactive to Interactive Design

When commenting on design education, one Web professional said the following: “Interface design theory, as opposed to design theory is a much more valuable skill, and a distinction that many traditional designers converting from non-interactive design fail to make.”

An interesting word was used by this professional: converting. According to Webster’s New World Dictionary, to convert is to “change; transform.” The idea of a designer transforming from being a traditional designer to an interactive designer supports the hypothesis of this paper. It intimates that there is a gap between problem solving through the means of traditional media and the realm of interactive media. Without an “us vs. them” mentality, there would be no need to make a transformation. Perhaps in the future, visual communicators will not have to make this conversion.

The Validation of Design Education

Three questions were aimed to validate the role education has within the professional design community. The results of these questions provide an interesting snapshot of the basic needs of the industry. The results claim that those who are hiring designers for Web related design positions generally are attracted to candidates with a strong design theory background and an impressive portfolio. Commonly, they also have had good luck with new hires with a four-year undergraduate education in visual communication.
Before analyzing these results, the qualitative remarks must be considered. Many professionals stated that it is usually more than an education that makes a good employee. Work ethic, problem solving skills, and how well the candidate learns are a few qualities that can help assure a student's success in the industry. The first question (on qualifications) illustrates this point. The other two questions show that professionals value design theory and have had success with educated employees. However, not one claimed to weigh a candidate's education over a strong portfolio when considering them for employment.

Even with such warnings, and the fact that a design education does not assure anything without the ability to translate education to a quality portfolio of work, the results show a general appreciation by the industry for education. It somewhat contradicts Keedy's observation that professionals take an anti-intellectual approach to design. If professionals were as short-sighted as assumed by Keedy, the immediate needs of software proficiency would have overshadowed design when weighing skills of a candidate.

Overall, this series of questions validates the role of design education. Usually, a four-year education provides the industry with new hires that possess a strong foundation in design skills and stick-to-itiveness (needed to complete a degree). This thesis is focused on using education to close a gap that exists in the community. It is important to know that education has a substantial enough role to help mold the design landscape. It would be hard to make an argument for using design education to help fill the void if the industry labeled it as inconsequential for their needs. Visual communication design is a rare field where education has historically had to validate its usefulness time and again.

**Justification of Web Professionals and Newly Graduated Students**

Two surveys that are particularly interesting when compared are the expectations of the students after graduation and the expectations of the industry.
Three Similar Questions

Even though the newly graduated and Web professional samples were asked unique questions, relating to their expectations, the three major quantitative areas were similar. Those questions pertain to facets of design education, expected tasks to perform, and expected software to know. When juxtaposed, the results of these two groups provide interesting conclusions. Some results speak to the core of this thesis argument, while others show a snapshot of current software trend.

Facets of Design Education

Both students and Web supervisors were asked to rank facets of Web design on a scale of 1 to 5 (facets listed earlier). Students were asked to rank them based on how well their design department met the criteria. Web supervisors were asked how they would weigh each facet of design in an undergraduate design education, to best prepare new graduates to work for them. With the relatively equal amount of participants (22 students, 28 Web supervisors), the samples are valid for comparison.
Figure 5.1: Average scores of how well undergraduate design education departments covered various facets of Web design within their program (as indicated by new graduate survey participants) compared to the average scores of how Web professionals ranked the importance the same facets should have in a design curriculum.

In the chart above, the categories are organized to show the least technical facets on the left, leading to more technical facets on the right. Deciding the technical nature of each facet was done through an ad hoc heuristic investigation. This orientation allows a viewer to see the general trend from the two perspectives.

Theory is not only being stressed the most in the classrooms, but it is also appreciated highly by the industry. Industry ranked interface design theory, design theory, and color theory as the most important aspects of a design curriculum. As one Web supervisor commented, "Build a solid design understanding first. Software can always be learned along the way." Students felt that the three most well-covered facets of design in their education is design theory, design history, and interface design.
Art was considered average in importance by both sides (with similar scores as well, 3.37, 3.49). This validates the connection art has with Web design. Neither of the greatest or least importance, art can be considered the glue that holds this discipline together.

Notice the general difference in the average scores. The lowest score of a Web supervisor is 3.15, for software training. The lowest score for a student was 2.00, for programming. That indicates that, in a whole, the Web industry is looking for more coverage in all aspects of Web design but the education was providing. Even though software training received the lowest score by Web supervisors, a score of 3.15 is considered of average importance (higher than the median of 2.5).

**Usability Testing**

The industry placed higher importance on some technical facets than the design programs provided to the students. Usability testing, in particular, tied with the second highest ranking by the industry. The importance of empirical usability methodologies was not made as clear to the students in their educational programs. In a semester or quarter, students have very little opportunity to reflect critically about their work from a usability standpoint. Even more often, there is not enough time or resources to conduct empirical task-oriented testing.

**HTML and Programming**

Even though not ranked very high, knowledge of HTML and programming skills are still valued more by the industry than the design curriculum provided. One professional commented: “Visual design programs... have seemingly failed to traditionally provide adequate programming skills.” It is the opinion of others surveyed that for visual communicators to truly excel in the practice, there must be a marriage of technical proficiency and solid design fundamentals.

The dotted line on the chart represents the results of the six participants who followed up (n=2). One noteworthy change was in programming. It made a jump from a score of 2.2 to a score of 3.0. This is distorted due to the uneven sample comparison. However, of the six, three kept the same score, two changed their score from a 4 to a 3, and one changed the score from a 2 to 4. Apparently, one student from
Central Michigan University thought he was more exposed to programming concepts in his education after some time in the field than he did six months prior. Possibly, he didn’t realize how well he was prepared until he worked in the field for a short time.

Expected Tasks of an Interactive Visual Communicator

The second quantitative question relates to the expected tasks to perform as Web-based visual communicators. Students were asked what tasks they expect to perform, and Web professionals were asked what tasks they expect new hires to perform. These 12 tasks were determined based on the steps in the Web design process (listed earlier in this paper). In the follow-up survey to new graduates they were asked what tasks they were expected to perform at their job. A comparison is shown below:

![Expected Tasks of a Web Based Visual Communication Designer](image)

Figure 5.2: Frequency of tasks expected to perform as a Web designer (as provided by new graduate survey participants) compared to tasks Web professionals expect new hires to perform.
The percentages represent the frequency in which the particular task was marked by the participants. For example, 50% of new graduates marked Web layout as an unexpected task in the design field.

The comparison shows that new graduates had lower expectations to perform some basic tasks related to Web design. The only aspects of the design process in which they may be anticipating too much are developing presentations and copy writing. Web professionals and new graduates match closely on four points: usability testing, concept design, animating, and storyboarding. Usability testing scored relatively low by new graduates but was not considered a high-priority expectation by the industry either. This may be an indication of the shortsighted mentality many practitioners have when evaluating the needs of the industry. Often, reducing usability testing is perceived as a quick way to save money (Nielsen). Concept design, animating and storyboarding are tasks that are not specific to visual communicators who design for the Web. Even the most foundational visual communication programs stress concept design and storyboarding.

The biggest discrepancy concerns Web specific tasks, such as HTML and Web authoring tools. It would be safe to say that 90% of the students surveyed would be somewhat blindsided if asked to write or understand HTML or use a Web authoring tool (e.g. Macromedia Dreamweaver). Whereas, 75%-80% of Web professionals expect these type of skill proficiencies from their new hires.

Software Expectations

The results of the qualitative comparison of facets of Web design in education show that students thought that their department trained them to use today’s software packages better than they were trained to write HTML or remedial scripting. The industry ranked software training as the least important aspect design departments should be focusing on. This is due to the speed of the application industry. Software packages come and go. With the speed it takes to make design curriculum changes, by the time they implemented specific software training courses, the industry would be demanding something different.
Survey results show that 75% of Web professionals participants allow for software training for new hires. However, they do have software proficiency expectations. The following chart shows the software expectations of students vs. the needs of the industry, according to this modest sample:

![Software Expectations](image)

**Figure 5.3:** Software expected to be used in a Web designer (as provided by new graduate survey participants) compared to the software Web professionals expect new hires to know proficiently.

This question presented 10 basic design tools (listed earlier). The tools are common software applications used during different steps in the design process. Industry participants were asked to indicate which applications they would expect a new hire to know. Students were asked which packages they were expected to use.

Eight-five percent of industry professionals surveyed expect newly hired visual communicators to be comfortable using Flash, a Web-based animation authoring tool. Separating the expected tasks that Flash can help solve with the name and function of that particular application, one can make conclusions that...
support the main argument of this thesis. The industry need designers who can design within a timeline, incorporating motion in an interactive environment. Only 50 percent of the students expected to use the application after graduation.
CHAPTER 6

DISCUSSION

A quickly changing visual communication design landscape and inadequate abilities to change undergraduate design curriculum swiftly has contributed to a gap in the design community. On one side are traditional designers, and on the other are interactive designers. This is causing disparity among two visual problem solving arenas that should be under one visual communication umbrella. Historically, design education has always been driven by the needs of the industry, yet it has become harder for many design programs to graduate designers who are aware of the big picture. This investigation surveyed current students, newly graduated designers, and Web professionals to gather a perspective of the "gap" in the design community, as well as to collect ideas for a possible solution.

The results show that students, who sometimes pursue a career in visual communication design because of the combination of art and technology, are often aware of their program's inability to show the entire spectrum of design. Also, those with a diverse exposure to both traditional and interactive design concepts underwent an easier transition from school to practice. Some new graduate participants who did not expect to take on interactive positions ultimately took positions which require some interactive design awareness and skills. The results also illustrated that the industry values a strong theory-based education, thus validating undergraduate design education's role in a suggested solution.
Suggested Solution: Curriculum Thread

In "The Education of a Graphic Designer," edited by Steven Heller, Max Bruinsma takes a stand in his paper, Design Interactive Education. He states that the digital age of multimedia and the Internet has set designers back hundreds of years. He doesn't mean that designers are now having to learn how to slip a matrix into the bottom of a two-part type mold (a procedure used in Gutenberg's system for casting type from the 15th century). He is referring to how designers of today are taking on broader roles, "who know enough of each specialization to direct the totality of the ever-more-complex design process" (Bruinsma 61). His comparison is to the type of role the ultimate designers of human history took, such as Leonardo DaVinci. Such Renaissance thinkers were so aware of the big picture, that they often stopped considering "how" to do something, but took the time to answer "why?" Bruinsma uses the phrase design generalist which refers to the type of designer today who can organize all of the communication complexities of today's technological contexts to solve problems.

This paper argues that the design community has a void. Visual communicators are solving complex information related problems, but often not understanding the constraints and limitations of their fellow visual communicator colleagues in interactive or traditional design. The intent of this discussion is to show how the investigation results point to the use of a curriculum thread to help students prepare to be design generalists, who can address a broad range of problems and applications.

What is an Interactive Curriculum Thread?

This thesis is defining and applying the term curriculum thread as it relates to undergraduate interactive design education. It allows students to build adjunct awareness of specialized concepts year to year in a design program that may not be well suited to offer an entire class on the secondary subject. When trying to grasp the idea of a curriculum thread, keep in mind that a thread is very thin, often invisible and always flexible. Also, one thread does not make a complete curriculum.
Thin Thread

From a general perspective, a thread is an abstract conceptualization of introducing and building particular ideas throughout a student's education. This is not a new concept in education. The alphabet five-year-olds learn in kindergarten are used again in first grade, which builds a foundation for the words they will be spelling in second grade, and so on. It is a constructivist's approach to learning, as echoed by Richard Rorty (1991): Knowledge is in the constructive process rather than a finding; it is not the content stored in memory but the activity of constructing it.

An undergraduate education curriculum plan typically is a path for developing skills and understandings through the use of courses and pre-requirements. Course A must be taken before Course B, which must be taken before Course C. It is implied that students need to go through the academic rigor of the course A and B to have the needed set of skills and awareness to be successful in Course C. This is natural in a design curriculum. In foundation classes, students often must learn drawing and visualizing skills before taking a graphic design course; Typography I must be taken before the student is ready to take Typography II.

Different from a curriculum plan, a thread is a much thinner and concentrated construction of ideas. To build on the thread metaphor, a curriculum plan is the "rope" that students climb to complete the program. A thread is just one strand intertwined in that rope. Because it is so thin, it is a great way to stay relevant with design technology and practices, without the need of a curricular overhaul.

Invisible Thread

A thread is more discrete than a curriculum plan. If the basis of sequencing certain classes has a primary educational agenda, a thread can be considered a secondary agenda. For example, if the primary agenda of a series of graphic design courses is to develop problem solving awareness and skills that are applicable in the field, a thread can be woven through that series of courses with a secondary agenda of introducing students to becoming more aware of copyright laws. Pieces of information concerning copyright laws will be inserted into relevant lessons through the series. Therefore, while no course was ever
strictly devoted to teaching copyright laws as they relate to a designer, a student will complete the series with a sustained understanding of the importance of copyright laws as a designer. This can be done invisibly, with very little altering of syllabi, no need to change course descriptions, and without the necessity of adding a course, which can be a very slow and cumbersome process under a university’s structure.

Relevance to the Course

For a thread to be invisible it must seamlessly slip into a curriculum. Therefore, a particular lesson of a thread should be relevant to the course and the particular lesson of the course. A thread agenda can involve a singular concept. For example, copyright and fair-use material could be included in an early visual communication lesson where students are manipulating images for the first time. It can also easily relate to topics in photography courses or any course where a student is creating or using found images.

If a concept is not quite relevant to the course or lesson it weakens the effectiveness of the thread. First, students may become confused or may make wrong assumptions. Second, it can disrupt the rhythm of a course. Third, if students cannot make a logical connection with the threaded concept, they may perceive it as a waste of time and disregard the lesson.

Flexible Thread

A thread can crossover to different areas of study very easily, and does not have to be confined to a certain path of courses. In other words, these strands do not necessarily have to be part of the primary sequence of knowledge and skill development. This characteristic makes a thread possible to be achieved by one faculty member. To build on the example used above, one instructor may think that copyright is an issue that should be emphasized to budding designers. Yet the instructor may only teach Graphic Design I, Photography I, and Graphic Design IV. The instructor can then weave copyright issues into both the
photography and graphic design courses through various ways. Even though it is possible for one instructor to implement, it takes more than the inclusion of one person’s vision to get the most out of a curriculum thread.

Communication

Probably the most important aspect of instilling a secondary agenda or weaving in a “thread” is communication. If a faculty member would like to push copyright issues in a manner that somewhat goes outside the ordinary syllabi or course descriptions, then he/she should communicate this to his/her colleagues in his department. First, they should be aware of the thread so that they would like to contribute to it as well. Second, there may be philosophical conflicts. Such conflicts could be harmful to the overall goal of the department. Using the same example, perhaps incorporating a thread to weave in copyright issues is inconsistent with the overall mission of the design program. It is possible that the program is so rooted into the self-expressive aspects of design, that introducing copyright subject matter is thought of as hindering the exploratory process. This is a very real concern for some visual communication design programs.

A curriculum thread is not intended to be a license for faculty to teach what they want. It is a way to teach on subjects that may not be included in their standard curriculum plan, and are synchronous with the ideals of the department.
Figure 6.1: A visualization of the thinness and flexibility of a curriculum thread; two different paths are shown here as examples.
Relevance to Thesis

The curriculum thread is a proposed solution. The purpose of this paper is to expose the void in the design community and to recommend ways undergraduate education can help close the gap, thus easing the transition visual communication students take from school to practice. Survey results of students, graduates and the Web professionals helped establish the problem by showing the lacking exposure to interactive design concepts when juxtaposed with the roles new visual communication graduates will be taking (even when they have no intention of taking such roles). Even under a broad budget model with restricted resources, a four-year undergraduate design department can help expose students to interactive design concepts, thus dissipating the "us vs. them" mentality of traditional and interactive designers.

One way of closing the gap is by incorporating an interactive curriculum "thread." If interactive concepts were woven into traditional design classes, students would learn the big picture of visual communication design activity from the start. Visual communication students who learn information design will quickly relate environmental way-finding to electronic navigation. Print design specialists will be aware of the nuances of readability of certain type faces from print to screen.

The thin and flexible characteristics of a thread make it a viable way for even the most under-resourced programs help close the gap. The only basic requirements to implement an interactive curriculum thread is 1) a faculty and program dedication to the importance of incorporating interactive design, and 2) consistent communication. Having appropriate interactive related software applications available for lectures and small exercises is a recommendation, but is not a requirement.

Faculty and Program Dedication

The flexibility of a curriculum thread makes it possible for a single instructor to establish one based on his/her design convictions. However, for students to gain the most from the thread, the entire visual communication staff should concur with the initiative. For smaller departments the visual communication staff may only be one or two instructors. For larger departments, with 10 to 12 visual
communication instructors, this becomes a larger challenge. Without collaboration, interactive concepts risk becoming isolated pieces of a syllabi. It is important for each faculty to pass-the-baton from one to another.

For more traditional design-oriented instructors, even including the smallest interactive relational material may seem like a weighty task. Many are still adjusting to changes the digital world has made on the print-design process. However, if the initiative resides on the visual communication design department level, each incorporated piece of material will be small. For example, a fundamental design theory instructor may only have to compare and contrast the RGB color model with the CMYK model in a Design I or Color Theory class. When the small pieces accumulate, then a substantial student awareness occurs.

Some instructors may have to introduce themselves to new concepts. An illustration instructor may have to learn the variables and limitations of screen resolution before weaving in a lesson on using the Web to display illustrations. A dedicated staff will help pick up the pieces for those members who agree with the thread concept, but do not feel comfortable inserting pieces of interactive material into their courses. Fellow staff could assist in guest lectures. Also, as long as an instructor is aware of where and what interactive content could be related to their overall course goal, then often he could recruit students in his class to help pull it in. With syntactical elements of interactive design being taught as early as junior-high these days, some students may be prepared to assist. As more new instructors with some interactive experience fill university positions, this becomes less of a factor.

Consistent Communication

Faculty need to communicate how they are incorporating their piece of the thread to the rest of the staff. This avoids redundancy and helps maximize the sequential building process. The thinness of the thread does make it vulnerable to being broken fairly easily, especially without consistent communication. If instructor A (Design I) and instructor B (Design 2) both introduce JPEG and GIF compression schemes into their classes, then there was a lack of communication. Compression schemes are an important facet
of designing for interactive purposes, but instructor B could have taken the small amount of exposure the
students had and built on it. He/she could have possibly introduced PNG (another compression scheme), or
spoke of the effects anti-aliasing has on image compression.

Larger Programs

One may assume that the need for an interactive thread becomes less relevant for departments with
the available resources to hire many faculty members. After all, the more financially prosperous
departments have the means for an “interactive track”, or series of interactive related courses. Larger
programs with many different types of classes to offer have a tendency to segment design students
immediately. This is a phenomenon that Nancy Newacek is leery of, as stated in her article “Us vs. Them.”
Such tracks have a tendency to widen the gap of those who “do” (interactive design) and those who “do
not” (traditional designers). Curriculum threads could be used in these types of programs to keep the
traditional designers aware of the interactive means of design, and vice-versa.

Interactive Concepts

There has been some hint to what types of concepts could make up an interactive thread, such as
color models and screen resolution. To actually determine what items could be woven into a curriculum,
the focus of this paper should not be forgotten. Such a thread is not intended to make interactive designers
out of all designers. It is intended to expose all visual communication design students to interactive
courses. Therefore, while students may be exposed to designing over a timeline, they will not graduate as
experts in animation. As much as designers should be aware of all the possibilities in visual
communication, one can not expect a designer to be an expert in all areas. Naturally, some visual
communication design students will gravitate to certain aspects of the field. Some will be animators or
illustrators. Others will be Web designers or Multimedia experts. Many will have a strong interest in print
design or way finding. A thread is intended to help keep all of these design specialists under one visual
communication umbrella.
Many interactive concepts can be extracted from the roots of the Web design industry. Because their results were less short-sighted as originally estimated, they can help point to some of the areas of interactive design. Web professionals ranked interface design theory and usability testing very high when asked to weigh the importance of various facets of Web design. 70 percent and more of the same sample would assign the tasks of Web layout, Web structure design (file architecture), HTML coding, concept design and the use of Web authoring tools to a visual communication designer. Finally, the two highest interactive related software packages that they expect some proficiency in are Macromedia Flash and Dreamweaver.

After compiling these results, interactive design concepts can be grouped into two categories: interactive process and interactive execution. Actual concepts must be granular enough to be woven into a course seamlessly, without taking the course off of the main path. Both type of concepts range in specificity.

Interactive Process

Concepts of an interactive process include all pre-design related research and interface design theory. Typically these concepts are broad and aimed at providing interactive design processes and theories. The following process related concepts can be used in an interactive design thread (in no. order of importance or sequence):

- The Internet
- The Web design process
- Determining Web audience
- Roles of a Web designer
- Product testing
- Methods of usability testing for electronic-based presentations
- Heuristic evaluations
- Navigational mapping/structure design

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• Model of publishing to the Web
• User download speeds
• Internet browser/testting
• Web interface culture/best practices
• Web statistics
• HTML and how it compares to traditional means of design
• Fair-use
• Copyright laws
• RGB color model
• Additive vs. subtractive color model
• Reflected light vs. projected light
• Purpose of style sheets
• Affordances as they apply to 2-D
• Screen readability
• Streaming
• Plugins
• Timelines

Interactive Execution

Concepts of interactive execution include pragmatic pieces that need to be understood to actually design in an interactive environment. Typically, these concepts are more specific in nature and are aimed at providing a minimal amount of interactive design skill training. The following execution related concepts can be used in an interactive design thread (in no order of importance or sequence):

• Web file structure/organization
• File nomenclature
• Screen resolution differences
• Web-ready image formats and compression schemes
• Web page file size
• Interlaced/progressive image downloads
• Screen fonts
• Anti-aliased type
• Purpose and basic structure of JavaScript

By breaking the concepts into two categories (process and execution), it would allow a department that was using a thread to decide the degree of exposure to interactive design concepts they can afford to allow. Based on lack of time, lab resources, or a lack of staff support, a program could introduce students to the process-oriented aspects only.

**Implementation of an Interactive Curriculum Thread**

The visual communication program type that would benefit most from an interactive thread is used as a model. The example is a small four-year undergraduate art and design department. It would not be considered a professional design program, nor is it vocational in nature. Graduates receive a BFA from a primarily art-based design program. NASAD considers a BFA a "professional degree," whether it is achieved through a professional design program or a four-year university art and design program. Such a degree should consist of 25–35% of visual communication courses, 20–30% of supported art and design courses, 16–15% of studies in art and design history, and 25–35% in general studies and electives (NASAD, 90). Being part of a larger non-art and design university structure, this program model has budget and curriculum restraints, preventing courses and faculty to be easily added. It is assumed that students do have access to a design lab, complete with the needed software. It should be noted that a plan is only a skeleton in many cases. The year or order that a student takes particular classes are not always as rigid as they are in professional design programs.
In most university curriculum plans there are required classes as well as electives. In an ar-based visual communication program there are usually three groups of department requirements, other than the university general education requirements: 1) design foundation classes, specialization studio courses, and art history classes. The foundation courses are typically made up of drawing, figure drawing, design, 3-D design, and painting. Some schools also have photography or printmaking foundation requirements. This depends on the program. The specialization studio courses usually include the sequence of courses for the major concentration. It also consists of classes that are specifically required for the specialization. For the purpose of this paper, the BFA specialization is visual communication. Courses in printmaking, typography, and photography may also be required as specialization studio courses. Art history requirements vary as well. Typically, BFA candidates must take a complete survey of art history, from ancient art to modern.

Electives

BFA candidates usually have a choice of studio electives they must take, other than their specialization. In this case, it is due to the lack of visual communication specific courses. In many cases students can fill these electives with independent learning courses with a willing instructor and other classmates. Otherwise, they take advanced level courses in other areas, such as illustration, photography, drawing or sculpture to complete their major requirements.

When outlining a model BFA course plan, electives could not be assumed. Therefore, only the required foundation, specialization, and art history courses were used in the model thread. However, throughout a design program certain elective classes outside the department can be strongly recommended to help support the interactive thread. Departments such as Journalism or Computer Science have often fit interactive related courses into their curriculum. This has caused some BFA advisors to refer design students interested in interactive design to other programs outside the art and design department.

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This act of turning students away widens the visual communication gap. Rather than doing this, interdisciplinary collaborations can be achieved. With some cross-campus communication, departments can combine their strengths and resources. This can be particularly helpful in the more technical concepts, such as HTML or scripting. Though requiring a student to take an HTML class from the Computer Science department would not fit the invisible and thin characteristics of a curriculum thread, the mere recommendation of such classes do.

Sam Houston State University is an example of an art department that utilized other resources to provide interactive design options. As stated on their Web site, students can earn a degree called Multimedia Authoring and Communication (MAC). Courses in the Department of Art, Communication, and Computer Science are shared in this program (2003). If the art department incorporated an interactive thread, then students would already have some context of interactive concepts and a better chance to succeed in the interactive-specific classes. An interactive thread increases awareness of their options as designers, and helps students see the positive benefits of taking a class outside of their department or pursuing an interdisciplinary type degree. The benefits are also reciprocated. Students with an art and design background often contribute positively to non-design focused class environments.
Figure 6.2: An abstract visualization of the model interactive curriculum thread used in this thesis, with points to indicate places where the thread was implemented, in relation to the type of class and year.
Extra Concepts

In this model curriculum thread, concepts are categorized in three groups. Two of the groups have already been explained in detail: interactive process and interactive execution. The third group has not been described as yet: extra-concepts. This category contains concepts that could be included in the interactive thread outside the immediate control of the visual communication department. The elective recommendations mentioned earlier would be considered an extra contribution to the thread. Since visual communication faculty will not be offering such classes, they rely on other departments. Another example of an extra concept are interactive design related topics that could be extracted from general education courses. In some courses, visual communication faculty may have more influence to encourage the change, such as in history classes. Overall, these extras are simply ways to maximize the effectiveness of the interactive curriculum thread.

Bloom's Taxonomy

In 1956, Benjamin Bloom created a taxonomy for categorizing levels of how people learn. There are six levels. The early levels focus on simple recall and lower levels of thinking. As the levels get progressively higher so does the learner's synthesis of information. The levels are as follows:

Level 1 - Knowledge, students demonstrate their memory of previously-learned material. Facts, terms, and basic concepts are recalled. Level 2 - Comprehension, students exhibit an understanding of the facts through organization, comparing, and translating. Level 3 - Application, students apply acquired knowledge and facts to solve problems to new circumstances. Level 4 - Analysis, students identify motives and causes and find evidence to support generalizations. Level 5 - Synthetic, students start to propose new solutions while creating new patterns. Level 6 - Evaluation, students are now able to present and defend opinions and validity of ideas based on acquired information (Bloom 1).

An interactive curriculum thread is a progression of knowledge through the insertion of interactive design-related topics within a visual communication design program. Bloom's taxonomy is an appropriate way to track the implementation of a curriculum thread from a cognitive development standpoint.
In the model curriculum thread used in this discussion, examples are shown of which level of understanding could be achieved with such thread ideas. Faculty can use these as goals when trying to implement the thread. Some concepts show more than one level, as examples of the range of goals that can be set. Interactive process concepts are normally foundational, thus instructors should have modest goals of basic knowledge and comprehension (Bloom's levels 1 and 2). Because they are applicable in nature, interactive execution concepts achieve higher levels of understanding (Bloom's levels 3 and 4). Since the purpose of a thread is primarily to explore concepts, actual synthesis and evaluation of interactive design material is not expected (Bloom's levels 5 and 6). However, if a thread is used effectively, students would be able to achieve the higher levels of critical thinking quicker when put in a specific interactive design learning situation. Such situations may be in recommended electives courses, specific visual communication interactive design courses, or the work environment.

Year One

The first year of a typical four-year university visual communication BFA program consist of 30 credits hours. Fifteen of the 30 hours are normally filled by general education requirements. Some programs and universities require specific classes in English, Social Science and Natural Science. Other schools are not so specific. Any design related courses are usually foundational in nature. Students partake in introductory drawing and design studio classes as well as an introduction into visual arts lecture class.

The first visual arts lecture class is an effective place to start introducing interactive design as a part of a designer's repertoire. These classes are typically broad surveys of the arts and visual communication. The usual goal is to introduce students to theory and philosophy through an analysis of the principles, problems and techniques of the artist and visual communicator. To begin an interactive thread in this model program, the Internet could be introduced as a communication design solution used by visual communicators. It is also an appropriate opportunity to provide a small briefing on the history of the Internet.
Foundational design studio classes provide other opportunities to initiate an interactive thread. With many early design classes focusing more on visualizing and hand-skills, process related concepts are the easiest to include. Any execution related elements should be difficult to implement without the use of a computer to demonstrate. In the model used for this paper, the Web design process would be an appropriate concept to introduce to students in a class where design elements, principles and processes are being introduced. It would fit into any discussion regarding the pragmatics of design application. Of course, the Web design process is only one example of a design process in visual communication.

The second design class (Design II) is still considered foundational. It typically introduces color theory and applies the principles to a variety of materials and media. This interactive thread model suggests using screen based presentations as one form of media. This allows for the opportunity to weave in a discussion about the RGB color model, additive color vs. subtractive, and the difference between reflective and projected color. Art students become so accustomed to mixing colors a certain way, that this exposure is important in guiding them to consider the inherent differences of designing for screen-based presentations.

Since this class can often be a budding designer’s first exposure to creating and saving files for screen based presentations, file structure and nomenclature best practices can be introduced here. Whether the project is Web related or not, students can be exposed to practical naming conventions as well as effective ways to organize files and folders within a disk space. If a student starts organizing files in manner that translate well to a Web structure early, it will decrease errors and frustrations when designing for the Web in the future.

The general education requirements are typically English, Social Science and Natural Science courses the first year. With some help with the English department, an extra course could be woven into a basic writing course that would help students prepare to design for screen based presentations. Typically people read sequentially, from the top to the bottom of a page, etc. Interactive communication vehicles, such as the World Wide Web, has caused writers to be forced to write non-linearly. Users now have the
choice to jump to an entirely different message. Non-linear communication is the foundation of Web interface environments and structure. Interdisciplinary collaboration is needed to include this concept.

<table>
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<tr>
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<th>Course</th>
<th>Description</th>
<th>Introductions</th>
<th>Notes</th>
</tr>
</thead>
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<td>Introduction</td>
<td>Introduction</td>
<td>Notes</td>
</tr>
<tr>
<td></td>
<td>Practice</td>
<td>Presentation</td>
<td>Notes</td>
<td>Notes</td>
</tr>
</tbody>
</table>

Figure 6.3: A model curriculum thread for the first year of a typical BFA program
Year Two

The second year usually introduces art history classes and visual communication specializations. University general requirements typically decrease the second year. In this curriculum thread model, 21 of 30 total second year credits are general education requirements. In the second year, visual communication students are formally introduced to visual communication as well as the technology of the field. Typographic concepts and principles are typically introduced in the second year as well. Some programs incorporate typography into the primary visual communication series of courses. For the purpose of this model, a specific course in typography is offered.

In Visual Communication I, the interactive thread can build off the assumption that students have already been exposed to the threaded concepts of the year before. Students are typically learning roles of visual communicator at this point. This provides an opportunity to describe roles of interactive visual communicators, such as a Web designer. Web audience, the Web interface culture and best practices of interface design could also be introduced in parallel to the traditional design counterparts. Execution related interactive concepts could also be exercised in class. Screen resolution differences and Web-ready graphic formats and compression schemes are two concepts that are fundamental and discrete enough to incorporate into an introductory level visual communication class.

In the typography course many process and execution related interactive parallels can be made. When readability of certain type is discussed, there should be a discussion on the differences of readability from paper to screen. This can lead to small lessons on screen font families and anti-aliased type. This also provides an opportunity to discuss the purpose of style sheets, which globally manages type faces within a document. Cascading Style Sheets (CSS) is an interactive designer's mode of managing and controlling type faces in Web based presentations.

One specialization that most BFA programs require is a 3-D design course. This does not particularly refer to computer aided 3-D design. It is a course that applies 2-D design principles to mass, space and volume. When designing in a 3-D environment, affordances of forms and textures is a concept that would be discussed. Affordances are perceptions people make about how to interact with certain
materials. For example, a door knob affords grabbing and a flat metal plate affords pushing. Interactive designers try to create perceived affordances on 2-D screen based interfaces. For example, an image that appears to be beveled on a screen affords pushing. This comparison can be made as a contribution to the interactive curriculum thrust.

Finally, interactive related topics could be woven into the first two classes of the required series of art history classes. Because of the highly structured and typically cut-and-dried art history curriculum, this is considered an extra concept. One topic that lays foundation as well as applying historical perspective to modern day interactive design is how people have depicted a series of events over time. As far back as the origination of cave paintings, humans have told stories by describing a series of events over time. Parallels can be made to how humans have evolved into communicating within an electronic interactive environment and timeline.
Figure 6.4: A model curriculum strand for the second year of a typical BFA program
Year Three

Typically in the third year, general education course requirements dwindle and are replaced by the learners' first choice of art and design studio electives. Also, students usually complete the third required art history class. This completes the survey of history, into modern art and design movements. Specializations are also highly emphasized in the third year. For visual communication students, design studios start bringing in practical learning experiences such as in-class business collaborations.

In Visual Communications II and III, the focus shifts from design syntax and semantics to pragmatics. More opportunities are available to weave in concepts related to the interactive design process and execution. For example, when students learn about the steps it takes to prepare work to be published in the printing realm, this process can be compared to similar processes of interactive designers. For Web-based communications, it can be compared to the Web host and server relationships. Multimedia-based communications can make parallels to the process of burning and replicating CD-ROMs.

Also, when the students go through a proofing process for the first time with a class project or business collaboration, interactive proofing methods can be discussed. For electronic media this usually entails the viewing of the presentation on various types of computers, screen resolutions and platforms used by the audience. For Web-based communications, work should be tested and proofed on various browser types and versions.

While introducing the electronic proofing process, some execution-related topics could be exposed as well. Opportunities arise to discuss the importance of HTML and graphic file size when disseminating a message through the Internet. Students can also learn ways to enhance electronic presentations through the use of interlaced or progressive image formatting.

In Visual Communication III, practical applications become more advanced and multifaceted. Problems with layers of complex information are introduced. Whether the primary project is a book, an informational poster, or a way-finding problem, interactive design parallels can be made. The process of distilling and organizing large amounts of information is similar to the process of organizing a Web structure and navigational map. Also, with electronic-based testing already introduced, usability testing

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methods can be woven into the early stages of solving such intricate problems. Students can be introduced to empirical and heuristic ways of evaluating a system. This thread can help students see how information design processes and solutions can transcend traditional and electronic media.

Printmaking classes, which are often required by some BFA programs, provide an opportunity to make interactive parallels. The post-Gutenberg and pre-digital way of printing letters, words, and texts required the setting of letters on a rigid grid for a printing press. Metal letters were meticulously placed line by line on a block, separated by thin strips of lead. To place letters outside the grid was not something done frivolously. It required painstaking realignment by the typesetter. Typesetting in the digital age introduced WYSIWYG editors where letters could be placed anywhere on the page, and even overlap. Authoring Web pages is reminiscent of the old way of type setting. For a designer to set letters where they wish on a Web page, it usually requires the writing and organization of tables, a structural element in HTML. Even though the technologies are much different, these parallels can be made.
<table>
<thead>
<tr>
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<th>Content</th>
<th>Short Description</th>
<th>Year</th>
<th>Expected Outcomes</th>
<th>Notes</th>
</tr>
</thead>
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</tr>
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<td>Module 2</td>
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<td>The use of digital tools and software in the creation of graphic design projects</td>
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<td>11 vert</td>
<td>The exploration of traditional and contemporary graphic design techniques and their integration in the digital environment</td>
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<td>Develop an understanding of traditional and contemporary graphic design techniques and their application in the digital environment.</td>
<td></td>
</tr>
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<td>The analysis of graphic design projects and their impact on society</td>
<td>1</td>
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<td>1</td>
<td>Develop critical thinking and problem-solving skills necessary for success in graphic design.</td>
<td></td>
</tr>
</tbody>
</table>

Figure 6.5: A model curriculum thread for the third year of a typical BFA program
Year Four

For visual communication students the fourth year may entail an internship. It is often where non-
studio electives are offered. As mentioned before, many students may use this opportunity take independent
studies to explore specific design problems. Recommendations could be made encouraging students to take
other specific classes outside of the department. For BFA students the fourth year challenge is to complete
their university required credits (usually 120-124), complete an internship, and put together an exhibition or
senior thesis. This becomes difficult, and a fair amount of students end up taking another semester to finish
their degree.

If a program has the resources to introduced interactive concepts, without the implementation of a
thread, they will usually be introduced in Visual Communications IV and V. For example, Central
Michigan University introduce Web design as one four-week project in the Graphic Design IV. This is the
class where faculty could begin to see results from an interactive curriculum thread. Students would already
be exposed to many concepts of interactive design and would not be starting from ground zero. The
transition would be easier for many students. However, the thread does not stop at year four. Opportunities
now exist to push their exposure further with the ultimate goal of easing their transition into the industry.

Visual Communications IV provides an opportunity to introduce the purpose and structure of
HTML. At this point, students should be aware of what HTML is. This aspect of the interactive thread will
give them a chance to actually see, read and understand the fundamentals of HTML. Also, in this advanced
problem solving environment students can be introduced to authoring within a timeline. This method of
design takes the viewing control away from the observer and in the hands of the system. This fundamental
of communicating through animation can be related to many interactive design mediums (Web,
CD-ROM, video).
The final Visual Communication specific studio could weave in the purpose of scripting languages in Web and multimedia authoring. Some Web professionals who participated in this study mentioned they would prefer visual communication design students to be more exposed to these specific programming related topics. Since many visual communication programs are not resourced enough to provide a strong scripting thread, class elective recommendations can also push students to stronger exposure.

Other fourth-year specialization courses in illustration and photography can include other interactive concepts. The definition of streaming and the function of third-party plug-ins can be woven into an illustration class. Fair use and copyright laws can be used in a lecture on electronic media within a photography course.

Figure 6.6: A model curriculum thread for the fourth year of a typical BFA program
The Role of Software In a Curriculum Thread

In the article "The New Design Basics", Lorette Staples stated, "In days of yore, there were reasons why the details of offset printing weren't covered in Graphic Design II (Staples 7). It wasn't the priority. It wasn't what the class was all about. But these are different times. Design and production are one and the same in the digital realm." Staples is echoing the thoughts of many design educators who have witnessed design's transition from traditional means of production to digital.

In an informal interview with a visual communication design instructor, it was mentioned how the change has influenced how designers teach, learn, and work. It has also transformed how design students sell their talents. Designers didn't used to put every tool used to develop photographs or their résumé. They didn't write, "strong T-square skills." Yet today, design students wear the software programs they know like badges. During a senior portfolio review at a small vocational design school, when inquired what they want to do after graduating, proud students would say, "I want to use Photoshop or Quark." This is a sign of the times.

In four-year undergraduate design departments, software and design educators have developed an odd relationship. Software is like the weird, geeky nephew in the family of intellectuals. He's not very polite, and doesn't really get along with the rest. Always bragging about what he can do, he can't think for himself. He's also always asking for money. However, he is family, and must be invited to all gatherings. In fact, events just aren't the same without him. Everyone smiles, makes small talk, and tries to understand him. For the most part, most simply wish that this was a time they could pick their relative.

Software is a necessary component in design education and practice. 100 percent of Web professionals who participated in this investigation expect new hires to be proficient in Adobe Photoshop. Macromedia Flash was a desired tool-to-know by 85% of the same sample. Current students sense the importance as well. Statements such as "I think [software] should be just as much a priority as the theory behind good design," show why current students ranked software proficiency as the second most important aspect of Web design prior to taking an interactive design course (their sentiment was even stronger.)

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after taking the class. Some new graduates have felt the pressure, reverberated in the comments by an Ohio State graduate: "There seems to be a lot of need for designers who know…Flash."

In this study the industry placed some of the more lasting aspects of design higher when prioritizing undergraduate visual communication education (design theory, color theory, interface design theory). They know that a new hire who knows Photoshop very well is less useful if he/she can't justify their decision making with solid problem solving and aesthetic rationale. Yet, the business world's bottom line is the return on investment (ROI). An applicant with solid fundamentals and a good handle of the needed applications is always going to be a safer investment over the talented designer who needs weeks or months of training before reaching a deadline. Often, the industry does not have weeks to wait. The most successful new hires had the sturdy foundation of design theory, and took the time and effort to learn the technical aspects as well.

A four-year undergraduate design program, whose budget model corresponds to the university’s guidelines, has to make choices if they want to prepare students with some practical experience. Besides investing in solid software and hardware assets with a refresh schedule that makes an attempt to keep up with the industry, departments have to decide whether they are going to focus or expose.

Some programs have the resources to expose students in software packages. At Cal Berkley, for instance, students enrolled in their undergraduate graphic design program can take Adobe Photoshop I, Macromedia Flash I or many others from a series of software specific courses. These classes are strictly intended to show students the way around a particular package. They teach concepts such as “using layers” or “creating a motion tween.” They are strictly syntactical without any of the messy semantics. Meaning of decision making is left for the theory based designed courses, taken in parallel. This a fantastic option for some. To relate it the previous software analogy, the “weird nephew” may be in the same house, but he eats dinner in a different room.

However, it is not a valid option for most departments. A typical department in a four-year undergraduate program has one or two visual communication instructors. If there are two, the instructors usually split four to five graphic design courses and one or two typography classes. They also can be
assigned to teach photography, printmaking, 2D design, 3D design or design history. To train students on both traditional and interactive packages, there are at least 12 software applications needed to be taught. One course will probably not be enough. In order to add courses, more teaching resources would be needed. If they were able to hire faculty or split the responsibility and create such training courses, it could take years to get university approval. By chance that the courses were approved, the question arises: where are these course going to be taught? Very often these departments share one design lab that is used for class instruction and open lab hours. Unfortunately the other open labs on campus often do not have the same type of software or versions. This reality is the model this paper has used to thread interactive concepts.

The other option is to incorporate software instruction into courses. However, this is always at the sacrifice of theoretical instruction. To compromise as little valuable time as possible, students don’t become trained in the tools, but they are exposed to them. When applying and exploring concepts to projects and exercises, they are forced to learn the software. In a way, by only exposing students to software, teachers are putting a lot of responsibility on the students to go above and beyond. This is not a bad option for programs that pride themselves in creating designers who can think for themselves. It’s also a good excuse for some faculty to separate themselves from the tools.

This investigation results show merit for both training and exposing philosophy. One study shows that 50% of the students who participated in the current student survey prefer to learn software in a class setting (training). 42% prefer to learn software by being driven by a project (exposure). These styles are preferred somewhat equally by students. What is clear is that students do not prefer to learn software solely through a book or electronic tutorials. It should not be assumed that students always know what is best for their education. However, design students know how necessary it is for them to learn the tools of the trade, a remark supported by the qualitative results of this paper.
Software and the Interactive Thread

This thesis introduces the idea of threading interactive concepts into a curriculum to help students become more aware of the big picture of design, and thus contributing to closing a gap in the design community. Software applications can be vessels used to introduce interactive design concepts. Students can be exposed to concepts as well as the tools that are used in the trade.

For example, if the concept of **screen fonts** were threaded into a basic typography course, Macromedia Dreamweaver can be used to expose students to the concept. Such an exercise would not be intended to teach the application, nor teach how to make Web pages. The simple task of opening up a new Web page in Dreamweaver and seeing the screen font families the application provides as default choices is a way of using a software program as a vessel to thread an interactive design concept. Students are then exposed to both the concept as well as an interactive tool used in the field. When taking more advanced visual communication courses, the student will be a little more familiar with both the concept and the software.

To use software to maximize the positive effects of an interactive “thread,” there are some basic recommendations to follow.

**Active Demonstration**

Interactive threads are **active measures** faculty can take to incorporate interactive design concepts into courses that traditionally do not incorporate such ideas. When using software to illustrate points, faculty **should** be active in demonstrating the software. This may require a little extra work required by the instructor to learn how to use the software application to demonstrate the concept. However, the demonstrations, like the threads, should not be too long or involved. If needed, another person can do it. The most ideal person, other than the instructor, would be a student in the class with some experience in interactive design. This would lessen the effort to include the thread in the course. A strong and succinct demonstration allow students to make an immediate connection from theory to practice as well help show the broad range of visual communication influences.
Keep Exercises Simple

After a short demonstration, it is most effective to allow students to try it out themselves. Current student responses support this statement: "I'm a fan of theory-based learning, so long as a sequence of hands-on exercises are learned somewhere within the program." This is also commonly documented in teaching best-practices. An activity is an kinesthetic technique that assists in retaining information. Even though the objective of using software to illustrate concepts is not to teach or train software, a small exercise improves the chances of the student being familiar with a particular software environment in the future. Again, it is important to keep it small and preferably contained within the same class period.

Use Different Applications

First, when using software to expose certain concepts, one should try to use different applications if possible. When the intent is to expose students to software, rather than train them, then a broad exposure is effective. There are always competing brands even within the industry. In this investigation, 50 percent of Web professionals expect students to know Dreamweaver. Yet, 20 percent expect students to know Adobe Go Live and 10 percent expect Microsoft FrontPage proficiency. It makes sense to use the thread to let students try the different applications. Of course the ability to do this is dependent on what software packages the particular lab has available.

In a non-intimidating manner, students are allowed to be introduced to software applications that may become more important to them down the road. In the case of using similar program types (Web authoring, animation), it also gives students a chance to see some similarities and differences of software interfaces.

Critics may say that the multiple exposure of different applications confuse students. The idea is not to spend too much time in each program, but rather to use the programs to stage such threads in courses that are not primarily interactive. In a class where interactive design was the primary focus, exposing students to many different programs is not an effective tactic. In that case, much like in all design studio courses, faculty should simplify the amount of software training and support.
Interactive Curriculum Thread Summary

As Artin Hoffman stated in 1965, to achieve unity within the design community we must realign our whole way of thinking (Hoffman 12). Design education is the root of any realignment efforts. Students graduating today will be responsible for either contributing to further widening or closing the gap between traditional and interactive designers in the design community. Interactive design should not be segmented and students should not be pushed away from visual communication education to learn interactive design. This is justified by the fact that 75% of all Web professionals who participated in this study stated that their most successful hires have a visual communication background. Design related theories and principles are valued by the industry. This points to the notion that interactive design education belongs in the design department. This solution can help the visual communication community take ownership of a field that, in some ways, has been claimed by others. The proposed curriculum thread is a way art and design programs can initiate realignment efforts.

The solution may seem naive, from a curriculum development standpoint. It does make a lot of assumptions. An understanding of the problem, a willingness to change the problem, and the time to try to change the problem are three major assumptions. Many programs may consciously be taking a blind-eye to the issue. Others may recognize the quandary but think they have enough responsibility simply keeping their traditional design program afloat. Some may think that their program has already addressed the problem. Even those programs should make sure that their interactive and traditional curriculum tracks are not too separated from each other.

It should also be restated that this solution is not prescriptive. The assurance of a successful transition into practice is always in the hand of the individual student. As the results show, many students already take the initiative to self-teach, and open as many doors as possible, even in programs that lack interactive design exposure.
Limitations

Literature regarding interactive design education is scarce. Visual Communication design is a field where an individual does not necessarily need higher education to advance and be successful. The community is speckled with self-taught designers alongside MFAs. This is even more exaggerated in interactive design. Even those with advanced degrees who enter academia may not necessarily write. “Publish or perish” is the underlined mantra for faculty of some design schools, but not all. Being attached to art academia, many design educators are expected to enter their work into exhibitions, alongside fellow sculptors and painters. Other fields do not have this option. Master’s candidates in the sciences or humanities do not have the option of producing a project rather than writing a thesis. Therefore, there are a relative few who push to analyze subjects such as undergraduate design education.

There are also obvious limitations in the study sample. With only 54 total participants in the study, the samples only reflect a small glimpse of the design education and community landscape. To gain a stronger impression of the state of the design “gap” and resulting influence of a curriculum thread, more quantitative data would be needed.

Future Investigations

This paper was able to frame a problem and propose a solution. A suitable second phase of research would build a larger sample of student, new graduate and Web professional participants. It should also have questionnaires more closely aligned with the proposed solution, include design department chairs in the surveys, and ultimately test the curriculum thread solution.

Larger Sample

As mentioned above, one limitation of the information received was the general lack of participants. Even though the sample population provided solid enough data to support generalities, pronounce the proposed problem, and point to possible solutions, it was too small to be held in any scientific esteem. Future investigations should include current visual communication students of a diverse
university sampling to build on the one class surveyed for this paper. The new graduates sample should increase and represent a more inclusive geographic demographic. The Web-professional survey was already quite diverse, but more participants would strengthen the validity of this paper.

Apply the Proposed Solution

When this investigation initiated, it was primarily aimed at gathering data regarding software’s role in an undergraduate design curriculum. As it evolved, the scope of the paper strayed away from software and focused more on the current status of the design community. Although many survey questions still remained relevant and contributed to this paper, many were too software orientated. In a second phase of research, questions should apply to the proposed benefits of a curriculum thread.

Department Chairs

The missing sample in this investigation are faculty and department chairs. Although many ad hoc interviews of design faculty helped formulate ideas within this paper, the proposed solution should be scrutinized by visual communication instructors. After all, a curriculum thread would greatly influence the way faculty plan their courses.

Test the Solution

Ultimately the curriculum thread should be tested in a visual communication design program. To track the effectiveness of the thread, questions that cover basic levels of Bloom’s taxonomy (examples used in the model curriculum thread in this thesis) can be used as assessment guides. Even though the end goal of the solution is to ease the transition visual communication students take from school to practice, effects of implementing this solution can be seen in other ways. For example, students who have been continually exposed to interactive concepts should enjoy quicker success in any classes or independent studies that are primarily interactive based. Also, the solution will push visual design students with a stronger interest in
interactive design to take classes in other departments. Without a thread, some students may not know of
the relevance for such classes. The thread may also help to break down the insecurities of students who
may have believed that HTML, scripting, and multimedia type classes were too technically advanced.


Nielsen, Jakob, Kara P. Coyne, “A Useful Investment: Usability testing costs - but it pays for itself in the long run.” *CIO Magazine*, February, 15 2006


*Sam Houston State University Art Department – Disciplines*. Sam Houston State University. 24 April 2003 <http://www.shsu.edu/~art_www/Templates/disciplines/>. 102


APPENDIX A

CURRENT STUDENT SURVEY 1

The following is the first survey that was given to students in an Interactive Design course at The Ohio State University. It was printed and handed to students, who were invited to participate by filling out the questionnaire and returning it in a blank envelope. The returned envelopes were not read by the instructor until after the grades were submitted.

Survey 1 to Students of Design 673, Summer 2002

The purpose of this survey is to acquire a snapshot of your perspective of Web design in the early stages of this class. This survey has 12 questions and should take you from 5-10 minutes to complete.

All information you provide will be confidential. The data will be separated from your identifiers, and the identifiers will only be used for tracking responses with a similar post-class survey, if willing. You are not required to participate in this survey.

Please return the completed survey in a sealed envelope. Participating in this survey and the opinions given in this survey IN NO WAY will be reflected in the evaluation process of this course. To assure you of this, the surveys will not be read until after grades are submitted this quarter.

1. Identifier (4 digit number or password) __________________

This is used for data tracking purposes, please be sure to remember this identifier for future survey participation.
2. What is your major or area of specialization?

3. What career do you intend to go into after graduation?

4. Why did you take this course?

5. After hearing the course overview what do you expect to learn?

6. Rank the following Web design skills/subjects in the order of importance to be a Web designer (1 being most important - 7 being least important):

   - Design interface theory
   - File architecture
   - Usability testing
   - Design history
7. What classes associated to design did you take prior to taking this class

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<th>Class</th>
<th>Description of class</th>
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8. What skills have you already learned outside of class that will help your progress in this class, and where did you learn the skill

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<th>Skill</th>
<th>Where (home, work, training)</th>
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9. How do you most prefer to learn software applications (check one)
   ___ in a class setting
   ___ at home with a book
   ___ software help/tutorial features
   ___ on a project

   comment (optional):

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

10. How important is it, in your opinion, that you master a software application prior to working on a class or work project using that software?

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

11. What role do you think software application training should take in a visual communication design program?

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
12. Please add any other comments regarding software application instructions role in a visual communication design program. (optional)

If you have any questions, feel free to contact either Phillip Diol or R. Brian Stone:

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APPENDIX B

CURRENT STUDENT SURVEY 2

The following is the second survey that was given to students in an Interactive Design course at The Ohio State University. It was printed and handed to students, who were invited to participate by filling out the questionnaire and returning it in a blank envelope. The returned envelopes were not read by the instructor until after the grades were submitted.

Survey 1 to Students of Design 673, Summer 2002 (post-class)

The purpose of this survey is to acquire a snapshot of your perspective of web design at the end of this class. This survey is 11 questions and should take you from 5-10 minutes to take.

All information you provide will be confidential. The data will be separated from your identifiers, and the identifiers will only be used for tracking responses with the class survey given earlier in the quarter. You are not required to participate in this survey.

Please return the completed survey in a sealed envelope. Participating in this survey and the opinions given in this survey IN NO WAY will be reflected in the evaluation process of this course. To assure you of this, the surveys will not be read until after grades are submitted this quarter.

1. Identifier ______________ (for tracking purposes)
2. Did the class meet your initial expectations?

3. What skills learned outside of class helped your progress, and where did you learn the skill?

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<th>Skill</th>
<th>Where (home, work, training)</th>
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4. How do you most prefer to learn software applications? (check one)
   ___ in class setting
   ___ at home with a book
   ___ software help/tutorial features
   ___ on a project
5. How important is it, in your opinion, that you master a software application prior to working on a class or work project using that software?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

6. What role do you think software application training should take in a visual communication design program?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

7. Do you feel prepared after this class to work in the field of web design? Yes/No

If yes, what skills did you learn in class that helped you feel prepared?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
If no, What do you feel you should spend more time mastering/learning?
(check all that apply)

___ more software training
___ more design/interface theory
___ more usability testing
___ more programming (HTML)
___ more flash

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APPENDIX C

NEW GRADUATE SURVEY 1

The following is the first survey that was given to new visual communication design graduates one - two months after graduation. The survey was conducted on-line. Faculty of various universities were asked to contact recent graduates as participants. New graduates were then greeted with an introductory page on the Web survey, which gave them the choice of participating in the survey.

Student Survey 1 - for recent design graduates of a four-year university

About You

1. What is your name?

2. What university did you attend?

3. What month and year did you graduate (are you going to graduate)? i.e. May, 2002

4. What type of degree did you graduate with? i.e. BA, BAA, DFA, etc.

5. What was your major?

6. What was your minor?

7. Why did you decide to go into design? (briefly)

About Your School

8. How would you categorize the design department of the school you graduated with?
   - art based
   - industrial design based
   - technical based

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9. From your educational experience, rank how well your department met the following degree requirements: (5 perfectly - 1 not at all)

- Color Theory
- Design Theory
- Interface Design Theory
- Design History
- Art
- Usability Testing
- HTML
- Basic Programming
- Software Training

Comments? (optional)

Please add any additional information if you feel you need to clarify a response.

10. Where did you learn Web authoring software?

- on your own
- in class
- other (If other please clarify:)

11. How prepared do you feel you are to enter the Web industry?

(5 very ready - 1 not at all) ___% Preparedness

Comments? (optional)

Please add any additional information if you feel you need to clarify a response.

12. What percentage of your readiness is attributed to what you learned at school?

13. What percentage of your readiness is attributed to what you learned outside of school?

Comments? (optional)
Please add any additional information if you feel you need to clarify a response.

**About Your Expectations**

14. What tasks do you expect to be doing in your first Web related job, post graduation? (check all that apply)

- Web Design
- Web Site Structure Design
- HTML Coding
- Other Scripting (Java, Java Script, ASP, etc.)
- Using Web Authoring Tools
- Usability Testing
- Maintaining Web Site
- Concept Design
- Animations
- Storyboarding
- Presentations
- Copy Writing

Comments? (optional)

Please add any additional information if you feel you need to clarify a response.

15. What software do you feel prepared to use right away on the job? (check all that apply)

- Macromedia Dreamweaver
- Macromedia Fireworks
- Macromedia Flash
- Macromedia Director
- Macromedia Freehand
Adobe Photoshop
Adobe Go Live
Adobe Illustrator
Microsoft Frontpage
Microsoft Word

Comments? (optional)
Please add any additional information if you feel you need to clarify a response.

**Future Interest?**
16. Would you be interested in participating in a similar survey in 5-6 months?
   Yes  No

If you answered Yes, please indicate your most current e-mail address:
If you answered Yes, and you are not sure what your e-mail address will be in 5-6 months and you don't mind if we call you, please provide a phone number as an additional contact (this is optional):

If you have any questions, feel free to contact either Phillip Diol or R. Brian Stone:

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APPENDIX D

NEW GRADUATE SURVEY 2

The following is the follow-up survey that was given to new visual communication design graduates five to six months after graduation. The survey was conducted online. Participants were contacted only if they indicated that they were willing by clicking "yes" on question 16 of the first survey. Like the first survey, new graduates were greeted with an introductory page before the Web survey, which gave them the choice of partaking in the survey.

Student Survey 2; for recent design graduates of a four-year university

1. What is your name? (to match up with previous survey)
2. Are you satisfied with your choice to go into Design?
   Yes No
3. From your educational experience, rank how well your department met the following degree requirements: (5 perfectly - 1 not at all)
   Color Theory
   Design Theory
   Interface Design Theory
   Design History
   Art
   Usability Testing
   HTML

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Basic Programming
Software Training
Comments? (optional)
Please add any additional information if you feel you need to clarify a response.

4. Are you currently employed?
   Yes  No
   If not, what would you attribute to not being employed?
   Can not find a job (poor job market)
   Can find a job, but waiting for the right job
   Enrolled in graduate school
Comments? (optional)
Please add any additional information if you feel you need to clarify a response.

The following questions apply only to those who answered “Yes” to question 4.
if you answered No, scroll down and submit. Thanks!

5. After some work experience, how prepared do you feel you were to enter the design industry after you graduated?  ____ % Preparedness
Comments? (optional)
Please add any additional information if you feel you need to clarify a response.

6. Are there any courses or training you wish your design department would have provided to prepare you to work?
   Yes  No
   If YES, please explain...
7. How large is your current employer?
   1 - 10 employees
   10 - 50 employees
   50 - 100 employees
   100 - 500 employees
   500 - 10,000 employees
   10,000+ employees

8. What is your job title?

9. Please provide a brief job description of your current position...

10. Is your current position design related?
    Yes No
    If YES, what type of design?
    (check all that apply)
    Industrial
    Interior
    Interactive
    Visual
    Print
    Experience
    Product

Comments? (optional)
Please add any additional information if you feel you need to clarify a response.

11. Do you feel comfortable in your current position?
    Yes No
    Comments? (optional)
12. Are you asked to perform any of the following tasks in your job?

(check all that apply)

- Web Layout
- Web Site Structure Design
- HTML Coding
- Other Scripting (Java, Java Script, ASP, etc.)
- Using Web Authoring Tools
- Usability Testing
- Maintaining Web Site
- Concept Design
- Animations
- Story boarding
- Presentations
- Copy Writing

Comments? (optional)

Please add any additional information if you feel you need to clarify a response.

13. What software have you used since graduating?

(check all that apply)

- Macromedia Dreamweaver
- Macromedia Fireworks
- Macromedia Flash
- Macromedia Director
- Macromedia Freehand
- Adobe Photoshop
Comment(s) (optional)
Please add any additional information if you feel you need to clarify a response.

14. Please list any software applications you had to learn on-the-job.

15. Does your current employer offer software training?
   Yes  No

16. Please add any general comments on how to optimally prepare designers to work as Web designers, if that's where their interests in design lies.
   (optional)

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APPENDIX E

WEB PROFESSIONAL SURVEY

The following is the survey that was given to Web professionals who are in the position to hire newly graduated visual communication designers. The survey was conducted on-line. Contacts of Web professionals were acquired through the AIGA members directory. Web professionals were greeted with an introductory page before the Web survey, which gave them the choice of participating in the survey.

Web Professional Survey - for Web Supervisors

About You
1. What is the name of your business? (optional)
2. How many Web designers work in your firm?
3. How many Web designers have you hired in your career (approx.)?

Design Education
4. Which qualification do you weigh most heavily when hiring a new Web designer?
The applicants...
   Years of professional experience
   Years of education
   Web portfolio
Comments? (optional)
Please add any additional information if you feel you need to clarify a response.
5. Who skills do you weigh most heavily when hiring a new Web designer?

The applicant’s proficiency with...

- design/layout theory
- needed software packages
- programming/coding
- pre-design research

6. Generally, what educational experience has your most successful new hires had?

- 4-year undergraduate degree in design/visual communication
- 4-year undergraduate degree in another discipline: (which discipline)
- Masters degree
- 2-year associate/technical degree/certificate
- Self-taught

7. Do you feel that their success was attributed to their design education, or lack thereof (please explain)?

8. Listed below are facets of Web design. Please rank how heavily any design program (that prepares students to work as a Web designer) should weigh each facet when developing their curricula...

(5 very important - 1 not at all important)

- Color Theory
- Design Theory
- Interface Design Theory
- Design History
- Art
- Usability Testing
- HTML
- Basic Programming
- Software Training
5. When hiring a Web designer, check the tasks you expect them to perform?
(check all that apply)
Web Layout
Web Site Structure Design
HTML Coding
Other Scripting (Java, JavaScript, ASP, etc.)
Using Web Authoring Tools
Usability Testing
Maintaining Web Site
Concept Design
Animation
Storyboarding
Presentations
Copy Writing
Comments? (optional)
Please add any additional information if you feel you need to clarify a response.

Software
10. When hiring a new Web designer, check the software you expect them to be proficient in.
(check all that apply)
Macromedia Dreamweaver
Macromedia Fireworks
Macromedia Flash
Macromedia Director
11. Do you offer (or allow for) software training?
   Yes  No
   If you answered Yes, how much time do you allow new hires to get up to speed with the software?
   Comments? (optional)
   Please add any additional information if you feel you need to clarify a response.

Thank you for participating!

If you have any questions, feel free to contact either Phillip Diol or R. Brian Stone.

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