# Image Making and Meaning: Educational benefits to studying Design in the 21st century

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## Abstract

Over the past 27 years, the influence of technology has revolutionized the professional practice of Design and its products produced. At the same time, technology has also created more advanced and complex pedagogy for design education. However regardless of technology's influence, critical thinking, problem solving, and presentation are still founding principles that must be explored, experienced, and comprehended.

In the United States, primary and secondary educational institutions do not focus on Design per se, they have Graphics, Architectural Drafting, and Photography listed under 'Tech Ed.' Colleges and universities vary based on how many different design disciplines they offer. Some have entire schools devoted to design or large departments that offer a multitude of options. Other smaller programs offer Graphic Design under 'Commercial Arts' or within 'Marketing Communications' departments. At the present time, technological influence or the connection to business are the main identifiers for affiliation.

I believe Design should be used to create a more whole-minded educational experience. It blends both science and technology with art and humanities—a dynamic integration. From the initial visualization to the final presentation, a project can employ reading and research, math, drawing a concept, technological production, writing an argument, collaboration, and presenting the project. I will present examples of successful integrated learning experiences that yield both amateur and professional results as well as create exciting learning environments for students and professionals alike.

## Introduction

When I begin a design project in class, I always tell my students to define the characteristics of the project first, proceed with research, reflect on the definition, create and produce the solution, and finally, evaluate their response. At first, students are overwhelmed with the task. I explain that although one must always be conscious of the whole, many complex tasks need to be divided into smaller pieces. When I thoroughly explain the Design Process as a plan of action, they learn to trust the process, their abilities, as well as the knowledge I provide. There's another benefit to learning this way: Students gain confidence in themselves, as their broader skill sets develop, and their outlook on working in the Design profession improves.

I try to influence my students by offering a methodology, a way of thinking about and practicing Design. I lecture on how Design has been integral to man's life for thousands of years. Throughout history, people have used the technology available to them at the time to reveal answers to daily questions and enrich their lives through meaningful solutions. Pre-historic people were able to create meaning and clarity, in what must have felt like a chaotic world, through the use of visual information and the adaptation of materials in their environment. They planned hunts, drew on cave walls, devised ritual ceremonies, and made tools and clothing for their survival. Human systems of writing reveal how each civilization designed solutions by blending the period's technology with the need to communicate in a meaningful way. The Sumerians designed clay tablets carved with pictographics, numerals and personal names in orderly columns. This system was developed to answer the need to record information on their extensive temple economy. Eastern Islamic and Western European scribes created manuscripts, composing religious texts with "illuminated" visuals in the belief that a more complete spiritual

experience would be provided. The Gutenberg press, with its movable type, developed out of the demand for more books, the availability of paper and the successful integration of relief block printing. Presently, computer scientists and designers have created the virtual writing and reading systems we use today in response to the need to transfer data between global research sites. [Meggs, 2006]

We live in a world where we spend most of our time interacting with designed environments: the houses and neighborhoods we live in, the workplace environments, the places we shop, the money we use, the clothing we wear, the religious spaces of worship, educational learning environments and virtual spaces on the Internet. All these examples and more are contexts enveloped by different meanings and functions. Their commonality is they have all been designed. We are now affected by extreme weather conditions on the one hand, and on the other by virtual characters in the Internet world of Second Life™. If we understand the significance of Design, we will have more success adapting and responding to the changing landscape of our personal and professional lives. I believe that using the methodology of Design in education, from kindergarten through graduate school, can provide a great foundation for critical thinking and problem solving. Its methodologies are easily utilized, no matter what career an individual chooses or what small problem needs to be fixed at home.

Design means many things to many people. The definition in the *American Heritage Dictionary* states that design means: "1. To conceive in the mind, invent. 2. To form a plan for… 3. To have a goal or purpose, intend." Design as a professional practice, however, takes on additional meanings. The AIGA, a professional association for design in the United States, says that, "Great design always connects with people. Designers inspire, provoke, validate, entertain and provide utility for people. To truly connect, designers need to have compassion and empathy for their audiences. Designers need to understand the relationship between what they produce and the meaning their product has for others. And they need to observe the people they are designing for in their own environments." [AIGA, 2007] The great American 20th century designer, Charles Eames, offered this definition of design: "A plan for arranging elements in such a way as to best accomplish a particular purpose." [Eames 1972] And John Heskett, a scholar on the subject, describes it this way, "Design, stripped to its essence, can be defined as the human nature to shape and make our environment in ways without precedent in nature, to serve our needs and give meaning to our lives." [Heskett, 2002]

Peter Lunenfeld opens his *Preface* to Brenda Laurel's book, *Design Research*, with the statement that "Today, design is a category beyond categories." He claims that we now live in a world defined by the "Design Cluster" (a term he coined in reference to Marshall McLuhan's term "Gutenberg Galaxy" [McLulan, 1962]). Lunenfeld goes on to state that there is plenty of space for great design work to be completed. But, additionally, he pushes the reader to consider that the Design industry is more vast and interdisciplinary than ever before. [Laurel, 2003] The Design Cluster includes the design solution, but it

also includes the process of designing, design research, engineering, business and marketing statistics, storytelling, and empathetic analysis. As we contemplate the impact of the Design Cluster, we begin to understand the importance of design in education. Some skills that are regularly part of the traditional liberal arts, science, or technology education are integrated into the design process.

In addition, technology has now become the dominant way communication happens. The Internet, cell phones, PDAs, and digital television, all contribute and influence the experiences we have and our perceptions of the world. Communication using text and image has become more immediate. The need to accurately decipher the meaning of things is more valuable than a decade ago. The world may seem smaller, but it has become more complex. Design, with its processes, provides a way of thinking, of approaching an issue or problem, and of establishing more clarity in communication. If utilized as a pedagogical structure in developing more integrated learning experiences in the United States, design can have enormous power to create great thinkers, solve problems and create meaningful communication.

## The Importance of Design and its Power

Design is more pervasive than ever. As a profession, it has more practioners and graduating students than ever before. Design can change the way we live, work, look and function. It can change human behavior and communication. Since Design's significance has grown over the last fifty years I want to provide an encapsulated view on why design matters.

After World War II, a new phase developed in the industrialized world as corporate globalism became a dominant practice. Large American companies began to consolidate and expand by moving into Europe and beyond. The shift was primarily based on growing consumer desire for material goods, as well as multitudes of technological innovations developed during War II. The War delayed many new processes and products from being released. But after the War, America's record population growth and Europe's devastation created the perfect catalyst for the mass production and distribution of goods.

After War II, American spirits were high, business was good, and the nation had a can-do attitude. Huge numbers of consumers were ready for the future. The possibility of choice was the new consumer's expectation. Because of this need for more choice, by the mid 1950s design and technology delivered product options to consumers with more personalized products able to decorate the vast amount of new homes being built across America. For example, one 1957 American furniture maker offered twenty different styles of sofas, eighteen styles of love seats and thirty-nine different upholstered chairs. [Hine, 1986] The Dupont Corporation began developing and manufacturing a range of new synthetic fabrics, and Tupperware began its large-scale production of household goods made out of plastic in a variety of styles and colors. [Sparke, 2000]

Many of these large American corporations also began to establish European subsidiaries as part of the European reconstruction under the Marshall Plan. [Hogan, 1987] Although the American business model for industry was imported to Europe and did affect the way manufacturing was done, each country retained its own cultural values and processes which, in turn, influenced their design and manufacturing of products. Europe was well known for its indigenous, craft-based, small-scale business model. This model continued to have an impact on how Europe transformed itself after War II. The infusion of American money and mass manufacturing know-how was embraced, but also integrated into their existing business models. The result was often similar products, but with a very different design style. These products were affected by place, people's values, expectations and cultural heritage. The same technology was often used, but the outcome was dramatically different, as evidenced, for example, by Italy's production of textiles, furniture, ceramics, glass and passion for pressed metal. In America, goods that had chromed surfaces were elaborately decorated—the more elaborate the better. In contrast, Italians preferred pressed metal goods that were softer, less detailed and more sculptural in form. [Sparke, 2000] Obviously, both designs styles were valid, since each responded to consumer tastes, cultural differences and expectations. Countries and businesses quickly began to understand that design, linked with certain processes of manufacturing and influenced by meaningful connections to people, place or lifestyle, created more effective and desired products.

Understanding this connection led businesses to develop more sophisticated marketing campaigns for their products, presenting messages specifically targeted at consumer desires and expectations. Companies sought more graphic designers, and by the end of the 20$^{th}$ century, the US graphic design industry had grown so large that the US Census Bureau issued an economic report on it in 2002. A 2004 report, *The US Graphic Design Business 1997–2009* by the Strategies for Management, Inc., provides further detail stating that there were 60,000 salaried graphic designers, 74,000 freelancers, and 16,000 individual graphic design businesses in the United States. 90% of the businesses had fewer than 10 employees, and 15% of these businesses were newly created each year. Design firms generated, on average, $7.8 billion in yearly business and freelancers generated approximately $3.4 billion in gross receipts yearly. [Webb, 2004].

During the 1970s, 80s and 90s the consumer culture continued to be dominate. Products and their meanings were now closely linked to one's concept of lifestyle. Hence, during the late 1970s and 80s the embrace of the 'high-tech' lifestyle was influenced by electronic products being created out of Japan. The belief in technological utopianism was reflected in the new electronic design aesthetic. The products had a sleek, structural or mechanical look. The inside components were revealed as part of the exterior design. This new aesthetic language was self-referential, exposing the structural components, making them visible. A London-based furniture designer Ron Arad adopted the same language for his creations during

this period by exposing the scaffolding clamps for a shelving system he designed. [Sparke, 2000] Another example was I.M. Pei's architectural design of the Jacob Javits Convention Center in New York City. The building was started in 1979 and completed by 1986. It was created out of exposed steel, glass, and space frame. [Artifice, 2007] Upon entering this building, the viewer is thrown into a space filled with light, geometry, and high-tech structure.

Japan's commitment to packaging and repackaging electronic products created a design aesthetic that had global influence, but more importantly it also changed people's behavior with technology. This was apparent in the design and production of the "Walkman." The Walkman was introduced in 1982. It was portable and provided linked earphones. This small electronic device became an extension of the body. It allowed freedom of movement. It was radical, creating a new type of private listening space within the public sphere. People sometimes sang or danced to their own music in their own world, though doing so in a public space for all to see. The public accepted this new behavior of public isolation (or disengagement with others) because others' music did not affect them (only the occasional out burst of performance). The Walkman forever changed the nature of accepted cultural public vs. private behavior. It was the forerunner to the "iPod," which accomplished the same result, but on a grander and more complex scale.

The Digital Revolution began as the 1980s and 90s marched onward creating the world we live in today. During this period, the world embraced the personal computer or "PC." Envisioning a world where everyone would own a PC, numerous corporations developed hardware and software interfaces that were easy-to-use and compact. Improvements in technology and design advanced rapidly, and within a decade the possibility of everyone owning a computer came into focus. PC users now could be anyone wanting to integrate technology into their business and personal lifestyle.

Cell phones also revolutionized human behavior. Early designs were large and cumbersome, but by the early 21$^{st}$ century they became compact and affordable. This, coupled with the cultural belief that everyone should have a cell phone for personal security and instant communication, created society's reliance on and acceptance of cell phones today. People regularly talk on cell phones in appropriate and inappropriate public places, which has led to the passage of laws and/or regulations forbidding cell phone usage by Governments and private institutions. Cell phones are also routinely used for documentation and communication of daily activities, because they are currently equipped with much of the technology laptops employ (although smaller in scale). Freedom to move, play, work, listen, create and communicate is held within the palm of your hand. The cell phone is becoming the new digital tool for Design.

These influences immensely changed cultural behavior by creating more private spaces for work and personal enjoyment. This technology changed cultural behavior by engaging its consumer in more flexible, customized, portable, quicker and efficient devices for communication and business. It also

changed the nature of design and how it was completed, because it integrated more technology than ever before, rapidly changing the professional Design industry in just fifteen years.

*Technology and Design*

Over the past 27 years, the PC has revolutionized the Design industry. During the early 1980s, designers most commonly used their hands and other technological tools to visualize ideas. Hand-drawn marker-comps were commonplace for package designs, architectural ideas, logos, layouts, video storyboards, etc. Technology was integrated by the use of press type, drafting tools, proportion wheels, tri-angles, waxing machines, stat-cameras, typesetting computers, pin-bars, layout boards with non-repro pencils, negative plates, etc. These technological tools, however, employed highly specialized skills to produce the final product. For example, the idea was drawn by the designer and delivered to the production coordinator, who then either ordered photographs or illustrations, or had the production department produce the project for offset printing or video editing. Everyone participating in the process had a role to play, and their roles were specific to their skill and job.

During the late 1980s and 90s, the PC was adopted by the Design industry and many of these specialized skills were integrated, or became obsolete and the adoption of the PC was relatively fast. Designers either embraced the technology, or ran in the other direction yelling and screaming. But by the end of the 20$^{th}$ century, the industry had been transformed. If a designer was not willing to adopt the PC, he or she would likely be terminated. Some might argue that a good designer can visualize their ideas utilizing anything that will communicate. I would agree. But by the year 2000, if a designer wanted to construct a building, publish a book, print a poster, make a TV commercial, invent new toothpaste packaging, or produce a website, it was essential that they understood how technology impacted their project. They also needed to understand how technology disseminated information, as well as how their project would impact society.

*Amateurism*

Digital technology has been integrated, with all its hardware and software, into many of our daily processes for years. Today, many people use technology to creatively solve issues that affect them. They use technology to design a garden, customize a car purchase, create a scrapbook, plan their weekly food purchases, and design playlists for their iPods. People believe that using software or hardware tools enables them to produce well-designed objects or experiences, without really thinking or asking questions. The Design industry believes that, though technology is now an asset to the profession, it also leads amateurs to believe that they too are "experts." Many people not trained in design or even educated to understand the design process, create amateur results—bad design that devalues professional Design.

I believe that technology should be viewed as a beneficial tool, not a replacement for critical thought and conceptual development. I believe that design, with its processes, is a way of thinking creatively and

solving problems. Therefore, it should be integrated into education at all levels. It should not just be presented as an artistic or trade activity. It should be viewed as a learning process that is integral to understanding complex relationships between disciplines and that collaboration is necessary. I believe that if design is integrated into education, people will begin to better understand the value of the design process. This integration will produce a better understanding of why professional design is valuable, as well as develop more creative, critical thinkers and problem solvers for society overall.

*The Third Culture*

C.P. Snow's 1963 lecture, *The Two Cultures: and a Second Look* asks for the introduction of a "Third Culture," one that can bridge the two spheres of arts/humanities and science/technology together. [Snow, 1963] Design, in the 21st century, is a valuable bridge between the two spheres, because it embraces the arts with visualization at its core. It integrates the humanities and sciences with critical research for better understanding of functionality and/or target audiences. Concepts must be communicated with written and oral presentations, not just visualization. Sociological research is conducted utilizing focus groups. Product testing is necessary for form and function comprehension. Collaboration and interdisciplinary study is necessary for many solutions to be realized. And new technology is always being introduced, which must continually be absorbed. At the time of C.P. Snow's lecture, design was available for analysis, but it was not considered a scholarly activity. It was viewed mostly as a trade. Design has matured over the past 50 years, and I believe it should now be considered part of the "Third Culture." It is a bridge that, by its very process, integrates the two cultures. As Richard Koshalek, the president of Art Center College of Design, states, "I think designers are the alchemists of the future." [Pink, 2005] Mr. Koshalek's use of the term "alchemists" sheds light on the designer's ability to successfully blend different items together, producing a new whole.

## The Design Process <Figure 1> The Design Process

The Design Process starts with inspiration, a definition, or a concept. Inspiration comes from a unique kind of perception directed by heredity, past associations, and various inner qualities of the person who perceives. [Bevlin, 1992] Designers are constantly being inspired by the worlds they live in. As a designer, I am often inspired by nature. Nature, with its instincts and laws, annually produces dazzling beauty and superb objects that function seamlessly in their various contexts. Others may be inspired by technology, language, performance, or other cultures. Whatever the inspiration, the process of design creates a structure for thinking, action and comprehension.

In the Design profession, specific communications are created in reference to clients' projects. These projects can be structural, decorative, promotional, educational, textural, etc. An example may be to design and produce a development campaign packet to raise $10 million for a university, or to design a

downtown center for a suburban town that utilizes Smart Growth philosophies. Whatever the task presented, the Design Process is employed. The Process dissects the whole project, producing manageable parts, where multi-disciplinary and collaborative action take place.

*Definition*

The Definition of the project is extremely important to the Design Process. It dictates specifics about the project's intentions. It helps focus and narrow possibilities, creating requirements and providing limitations. It clarifies what the project is, its meaning, why is it important, how it is to be accomplished, which processes or types of dissemination techniques might be used, where it might be placed in the world, as well as when and for how long the project will exist. Interpersonal and collaboration skills are necessary at this phase. The designer must be able to work with the client, account representatives, strategic marketing managers, and vendors. If the firm is small and versatile, they might engage in writing a strategic plan, or conduct initial research to help focus the Definition. Designers should be equipped to predict (using past systems of reference) if the Definition is valid in response to its intended purpose, and, if not, seek a new Definition using new relationships. Overall, the designer must be able to understand the whole project, its intentions and its expected results to create the right Definition. Daniel Pink, author of *A Whole New Mind,* describes this ability as "symphonic thinking." He describes symphonic thinking as the ability to synthesize rather than to analyze; to see relationships between seemingly unrelated fields; to detect broad patterns rather than deliver specific answers; and to invent something new by combining elements nobody else thought to pair. [Pink, 2005] Symphonic thinking is a necessity as the Definition is being created. Having the skill to enable the best Definitions to be produced, but to be changed if required, is an asset for the beginning of any project.

*Creativity*

Creativity and Inspiration are very significant to the Design Process. Brainstorming—letting your mind loose in divergent directions without imposed judgments or editing—is most commonly used at this stage in the process. Other names for this stage are Inventing and (the one I like to use) Play. Designers are like scientists or inventors. They need to play, tinker with ideas and generate concepts that are related to the issue at hand. We encourage children to play and use their imaginations to be creative and learn. The Design Process requires creative people to play and be imaginative too. No matter how absurd the resulting ideas may be, allowing your imagination to run wild can generate unanticipated multiple concepts. Play can be done in groups, or individually. It can employ words, pictures, video, sound, technology, or kinetic movement through space. Play should be contextual and/or universal, and it should be frivolous as well as serious. The importance of technology on the creative process of Play should be considered, but not over-emphasized. Because of its dominance in our culture, designers must take advantage of technology's benefits, which can range from producing faster, more diverse results to

revealing a concept that cannot be produced any other way. Though when working with my students, I try to create a balance when addressing Play. Besides technological techniques, which are most likely the first techniques they will use, I push them to step away from technology and address Play from dissimilar viewpoints. This leads them to produce a much better range of ideas. Whatever this stage in the Design Process reveals, often the only issues hindering Play are budgets, deadlines and ones own limitations.

*Analysis*

Once the creative concepts have been developed, the designer must go back to the Definition to begin the Analysis phase. Each concept is analyzed; producing many questions to illuminate which concepts will be most successful. Analyzing all the concepts in reference to the Definition, reins in the project, highlighting its intentions and target audience. More targeted research will be conducted during this phase. Typically, focus groups are utilized. Product testing might be required. Oral presentations to clients and target audiences are usually completed. Much of the time, multiple solutions are presented and the process reveals the best solutions. At any time during this phase, the Definition can be revised, based on the analysis gathered. By the end of the Analysis phase, clarity and certainty emerges.

*Production*

Throughout the Production phase, the designer must have a direction on how to produce the solution to the project. Much of the time, technology is embedded in this phase. The print, fashion and textile industries—as well as urban design, web programming, television/radio production and manufacturing—all use technological production techniques. Even after the production direction is chosen, however, a responsible designer still must ask questions about the processes or types of dissemination techniques to be used, should problems arise. It is quite possible, especially if a new material is being used, for readjustments to be made "on-the-fly." For example, adjustments might have to be made in paper, because of shipping issues or problems with supply. Budgets are cut at the last minute; deadlines are shorter or extended, changing the workflow; or vendors are not effective. Designers usually collaborate with other teams of people within the Production phase: directors, editors, actors, and musicians for TV commercials; web programmers and animators for websites; photographers, illustrators and printing houses for printed collateral; fabricators of all types for industrial designs; engineers and architects for community redesign. Because design is such a collaborative process, a designer must always be open to change and ready to creatively handle unanticipated issues.

*Clarification*

Lastly Clarification, or Evaluation, must be completed at the end of the each project. It is necessary to evaluate the whole project's process to appraise its result. Is the client satisfied? Does the project function as intended? Did the project meet its marketing objectives and generate the anticipated results? What types of materials were used and how did they work? Did the process expose any problems that

were a surprise? Were new relationships invented? How can the process be improved? Clarification can be as informal as a call to the client and team members involved—touching base to reaffirm that the project was successful. Or, it can be extremely formal—meetings with all involved, a written report (including all research discovered and all visuals completed), pre-and post-benchmark research testing a product's effectiveness, and finally oral presentations. At times, this phase of the process can be difficult for a multitude of reasons, from dealing with a difficult client to evaluating a failed project. But when a thorough evaluation of the process is completed, more learning takes place.

The Design Process is beneficial in helping develop strategies to attack a project in a systematic way. It allows for focus, as well as flexibility. It ensures that creativity and play will be embedded into the process at the beginning. It brings structure to a collaborative process that can be extremely complex, helping to guide participants' expectations. I believe the Design Process should be viewed as an asset to the analysis of a problem and to building relationships between multiple disciplines, leading to the construction of Knowledge. The Design profession, because of its successful track record, regularly employs the Design Process, and I believe it should be regularly employed in the United States educational system as well.

## Educational Models of Design Integration the United States

*Civic Design at the University of Hartford, Hartford, Connecticut*

I thought it best to begin with an example of an integrated learning experience within the context of design education. As stated previously, design integrates diverse skills all through its process. Civic Design illustrates how different skills, such as critical thinking, technological improvement, visualization, writing, oral presentation and collaboration, are all developed during the students' year-long internship. Students' Learners Reports give evidence to their development, as well as a description of the program.

The need for innovative and imaginative approaches within the academic context led me to create a professional graphic design firm that designs and produces professional quality work. Six years ago, I founded Civic Design at the Hartford Art School, University of Hartford and became its creative director. In addition to enhancing the education of graphic design students, Civic Design is a valuable resource for the community. This situated-learning environment turns the classroom into a professional graphic design firm. The firm has a personality, characteristics and a mission that is unique. The "course" content consists of real job assignments. Participating students are junior and senior graphic design majors. They are "hired" for an academic year as interns. When assigned to a project, the interns usually work in teams, to learn the art of collaboration, as well as how to balance leadership and play supportive roles.

Working with various types of business clients, collaboration and interdisciplinary learning is emphasized as well. Clients are considered "partners" and are drawn from various communities within

and surrounding the University of Hartford: e.g. a mechanical engineering professor needed an elaborate web design for her engineering department; the architecture department wished to produce a high-end publicity brochure; a land trust needed development campaigns, a website, and an annual report; and a science museum needed exhibition design for two- and three-dimensional displays. The interns are required to learn about each project by conducting quantitative and qualitative research, working with outside vendors on specialized materials, presenting solutions through written and oral means, and collaborating with the creative director, each other and the clients. The clients are an important part of the educational experience. They are continuously involved with their projects, they make a donation to Civic Design, and their presence adds value to the interns' education. Their projects are meaningful to the interns, because they are real. Civic Design's methodology showcases how design intersects various disciplines illuminating why design is such a great conduit—or bridge—for achieving a more holistic educational experience. Furthermore, it also melds two other cultures, the professional and the academic.

Simulated design projects (projects that are not real) do little to acquaint students with the need for a deep understanding of audience attitudes and behaviors, or the methods for determining them. In comparison, the professional projects Civic Design completes require that all participants develop a deep understanding of each project's intended audience. Civic Design helps its clients complete a marketing strategy statement for each project. This enables the client and Civic Design to better understand the project's nature, its message and its audience. This helps focus the research effort, and the clients appreciate the ability to understand themselves and their project in a deeper, more meaningful way. For the interns, this research also helps reinforce the importance of understanding the nature of audience in producing more successful, meaningful solutions.

Besides the actual products that Civic Design produces on an annual basis, interns complete Learner's Reports. The following excerpts from the Reports highlight the learning experience from the student's point of view.

> What helped me the most was seeing other people's ideas and how they began researching. As a junior I was much less experienced than the seniors. Seeing them come in with type research and images helped me find a different way to approach a project and a different way to build ideas that had not been taught to me in classes. Before sketching it is very important to research depending on what your project is. The critiques are very important. I learned how important brainstorming is and how important it is to get an idea out in the open even if it is horrible. — *Stephanie Daurio*
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> Along with creating designs for local clients, we also read two books in Civic over the past two semesters. The first was *Talking Right* by Geoffrey Nunberg. This book explained the importance of language, and how the way one speaks and the words one

chooses to use can completely alter the meaning of what he/she is saying. This book and the regular group discussions we had encouraged me to consider exactly what I am communicating with the words and images that I present to the world. — *Julie Coleman*

I look at my work from a year ago and look at what I'm doing now and the difference is enormous. Civic has helped with my collaboration skills immensely. In Civic, working on the Springfield Science Museum project, we each contributed something different and worked with what each group member contributed and would discuss our decisions throughout the entire process. My presentation skills also improved. When presenting to a client, you need to know exactly what you want to say, and you need to be able to say it well. Having to present to actual clients is so much different than presenting to classmates. It takes you out of a comfort zone, which I feel is a necessary experience to have in the learning process. The responsibility to the client was also helpful. In a regular class, if you haven't met a deadline, it isn't always that big of a deal. Civic helped my time management skills greatly as well. Finishing everything on time for regular classes is time-consuming enough, but when Civic is added, it is really necessary to manage your time wisely. My technical skills also became more sophisticated due to Civic. I think that was one of the most valuable experiences of Civic. I feel that Civic has been one of the most, if not the absolute most valuable experiences I've ever had. It taught responsibility as well as self-discipline. — *Greg Norton*

I think this internship helped me improve on supportive skills through group critiques and being part of a project group, and leadership skills improved through being a group leader for two different projects. I know that my technical skills definitely improved because I learned a lot of things about the programs that I didn't know or didn't know very well before. Client contact was defiantly valuable and I learned how important the designer's responsibility to the client is. I feel that my presentation skills also improved and now I know how to better present my work to the client and explain the reasoning behind it. My collaboration skills improved because this class focuses on group work (common in many design firms, rather than individual based projects as in classroom settings) and I was always working with at least one or two others. I feel the Avery Heights book project helped me get somewhat of a sense of how quick the turnaround for projects can be because it was so fast-paced and there was pressure to meet a certain deadline. Through readings and discussions, I think critical thinking also improved because we talked about some things that really made you look at the world differently or wonder why certain words or language have such effects on people. — *Elizabeth O'Brien*

These comments expose the multitude of skills the interns learn, many of them transferable to other professions. With each project, skill sets are regularly interchanged, broadened, or condensed. It also highlights the density that learning Design offers.

*The AIGA "Scholastic" Instructor K–12 Poster and Activity Series*

In May 2006, the AIGA launched an educational initiative promoting design thinking in K–12 classrooms. Most of the activities are targeted toward 3rd and 4th graders, but can be adapted to other grades addressing higher or lower skill sets. This *AIGA/Scholastic Series* was developed by two American women, Hettie Jordan-Vilanova, designer and educator, and Dorothy Dunn, educator, and generously supported by the Target Corporation. The *Series* is a positive response to developing fun, creative, integrated learning experiences in American primary and secondary education that use design as a methodology for learning. The Series includes a design activity sheet and an accompanying poster promoting the activity. To date, there are four activities, each focusing on a different challenge. The first uses a recycled can to create a game. The second activity is to invent a new tool that is functional and references an animal. The third is to design a collage, focusing on a local landmark. Presently, the fourth activity focuses on color and math, specifically Geometry. Each activity is designed with multiple disciplines in mind, creating seamless integrated experiences for learning about art, math, social studies, science, etc.

The first activity, designed by Alexander Isley, Inc., asks students to initially study Andy Warhol's Pop Art *Soup Can Series.* Then it proceeds to ask questions such as, "Who will use your game? How will it work or be used? Is it an indoor or outdoor game? What materials are on hand to use? And is there a special name for your game and are there any rules? [AIGA, 2007] Asking questions is part of critical thinking. It highlights the importance of process, since asking questions leads to answers. Students are then asked to brainstorm, by sketching, building paper models, sharing ideas aloud, and experimenting with various materials. By analyzing this project from an integrated standpoint, one can see that dexterity skills are developed through drawing and model building; sharing ideas, through small groups or oral presentations, develops interpersonal skills; and experimentation with materials references engineering and science depending on the materials provided. Each activity is presented with an accompanying poster that promotes the activity and displays visual solutions. The poster is also an example of successful design itself. By viewing the posters, students are able to interpret visual cues through looking at others' work. This leads to initial thoughts on what they might do. Sharing visuals prior to the creative process may lead to copying. But if students reference their questions and use personal answers, their solutions will be individualistic and original. The other three activities are just as integrated as the first. They highlight disciplines and skills, such as science (with the study of animals), engineering (by analyzing

how machines work), language (with writing a story), social studies (by researching architecture and its history), and collaboration (by creating a quilt together).

The *Series* has been very successful. *Scholastic Instructor Magazine,* which is committed to supporting reading and learning around the world, bolstered the *Series* by publishing the activity sheet and poster in its bi-monthly publication, as well as on its website. The magazine has 20,000 subscribers and is highly targeted to K–12 educators. Target Corporation conducted a survey to measure educators' thoughts on the *Series* (258 educators responded nationwide). Survey results show that 78% of the respondents believe that design is an important teaching methodology in the classroom. 85% hung the poster up in their classroom. 50–66% reviewed the *Series* material, used it a resource, shared it with another teacher, or set it aside for future reference. 71% used Art resources to illustrate good design, with 51% utilizing photos, products, or other examples. 52% have access to art teachers and/or design professionals, compared to only 9% that do not teach or have any art/design connection. The most revealing results show that 61% use design to teach social or cultural studies; 59% use it for visual literacy; 56% for math and science; 35% for art's sake; and 33% for earth and the environment. [Target, 2007] I believe this survey indicates that educators understand the value of design to create integrated, creative and engaging curriculum for their students. The survey also indicates that, if given the choice, educators want more fieldtrips, more good design illustrations and a specialized curriculum that uses art and design as a resource to support their teaching efforts.

Ms. Dunn and Ms. Jordan-Vilanova both believe that professionals must understand their responsibility to help develop educational models. They also understand that design is still misunderstood in the United States as an essential structure for integrated learning. In most cases, design falls under art or technology education (design is neither and it is both). They explain the genesis for the *Series* as creating an essential partnership between many experts. The teacher is an expert. The designer is an expert. Put them together and they can create integrated curriculum. Securing support from a United States professional design organization, a corporation that is very concerned about design, and an educational publisher that cares deeply about learning is a beneficial way to fund a series like this and bring professionals into the fold of education. The reality is that meaningful projects ***can*** be developed to address integrated learning, and they ***can*** be successful in American schools. These types of projects can be fun for children, dynamic for teachers, and supportive for business since they develop critical and creative thinkers for the future.

*University of Minnesota's Design Camp*

The Design Institute is the University of Minnesota's think-tank on the future of design. It is based at the University's College of Design. The Design Institute's mission states, "The Design Institute operates at the intersections between the various fields of design theory and practice, makes fresh links with non-

design disciplines, and scans the horizon to understand how 'design' is being redefined in response to social and technological changes." [UMN, 2007] This mission statement clearly indicates how the College believes that design is an integral part of understanding the future of humankind. Since 2002, the Design Institute has hosted their week long Design Camp for teens 14–17. Over 500 teens have participated in the program, which focuses on teaching design through experiential learning in an interdisciplinary way. The teens choose one of six different workshops or "themes" offered and collaborate to design for everyday life activities. Teams of two facilitate the workshops; University of Minnesota faculty members pair with international guest designers collaborating with the teens and teaching assistants. One of the many Camp's benefits is that it introduces teens to a variety of careers the Design industry has to offer, but in a non-traditional way.

Students are most frequently introduced to design by how high schools, colleges or universities identify design's sub-categories e.g. architecture, industrial design, package design, fashion design, graphic design, computer graphics, etc. This sub-categorization is an accepted way of labeling, approved by many educational organizations that provide accreditation. Pedagogy at most institutions is built using this type of traditional sub-categorization. What Design Camp offers is an approach to design and learning that is interdisciplinary, collaborative and non-traditional. Throughout the week, the Design Process is embedded into students' learning, by creating an intersection between the various design categories and multiple skills development. This approach provides a more holistic way of learning design and solving challenges. I believe that Design Camp is producing real beneficial educational opportunities for the 21st century. It connects design and its processes to important issues that touch teens' everyday lives. It weaves together the various sub-categories of design, collaboration and interdisciplinary learning. And it creates learning that is truly meaningful to teenage students, since it makes connections to their concerns. (The teens have empathy for each of the workshops' solutions because they can relate to each other's feelings, motives and situations.) This type of learning builds a great foundation for understanding how to accomplish projects that are meaningful to others—one of the main ingredients to successful design, but more importantly successful leadership and citizenship.

Over the last five years, Design Camp workshops have included: Moving, Wearing, Resting, Playing, Dwelling, Eating, Morphing, Telling, Re/cycling, Urbaning, Gaming, Schooling and Parading. The teens are given workshop briefs ahead of time. They choose one workshop to participate in for the entire week. At the beginning of the week, all teens participate in what is called a "Bubbler" (another name for the Brainstorming session). The entire camp's attendees gather together and review the six briefs. Each brief is then given a Bubbler session, in which a variety of concepts are generated. Individual workshop groups then review the concepts, with further Bubbler sessions if needed. Each workshop uses everyday experiences as a jumping off point. Teens engage in fieldtrips, relate experiences through

discussion, visualize ideas, play with materials, and effectively present solutions to the camp at week's end. This type of collaboration and interdisciplinary work is vital for the teens' understanding of the Design Process, but also in understanding creativity. The teens learn to creatively solve problems together. They feel empowered by design.

The workshop "Dwelling" provides some insight into what teens were asked to think about. The workshop brief starts: "Do you make forts out of bedding and furniture? Do you like exploring parks, zoos, or gardens? We are always on the move between indoor spaces and outdoor spaces. What spaces attract you? What do these spaces communicate to you and about you? What kinds of new spaces could you create? We will explore found spaces, designed spaces, and make our own new spaces—places that challenge ideas about inside and outside, and question where we 'dwell.'" [UMN, 2007] This workshop (and all others) starts by asking questions. Then the teens are asked to analyze space and how an individual or society defines space, redefines space, and designs various spaces for purpose. This workshop integrates two- as well as three-dimensional design; thoughts on architecture and sculpture; textile and material analysis; and collaboration skills. It challenges teens to create solutions that are meaningful, functional, as well as foreign and unfamiliar. Teens' experimentation helps them gain an understanding of shelter and the kinds of shelter that are necessary vs. those that are indulgent.

Another workshop, "Morphing," asks teens to analyze and identify types of media that create meaning: "Do you think of your identity as a 'second skin'? Are you a DJ? Comic book artist? Do you make your own books? Do you host your own talk show? Do you hack into the chips in those recorded greeting cards? What do these activities say about who you are? Morphing is about changing form and undergoing transformation. Here is a chance to shape communications media by remixing it." [UMN, 2007] Again, questions are part of the process. Asking teens to critically think about who they are and how they become something else is essential to comprehending transformation. In this workshop (and many others), technology is integrated at various levels of the Design Process, from computers to electronic toys to sewing machines and musical instruments. Today, teens have an instinctual understanding of technology. By integrating technology in the workshops, teens are able to understand the power of technology as well as its limitations. Besides technology, two- and three-dimensional design skills are developed as well as performance and/or electronic analysis. This example fundamentally challenges teens to use design, creating identities that were connected to real or fantastical information.

The Camp's workshops showcase how an integrated design curriculum can result in learning that has broader implications than just creating future designers. Developing teenagers can be challenging to teach. Difficulty focusing for long periods of time, a high level of chaotic energy, and lots of self-absorption define a typical teen in the United States. If issues are presented in a creative meaningful way, teens can comprehend them and use design to produce solutions that enhance their world and beyond.

Janet Abrams, Design Institute director, elaborates, "The goal of Design Camp is to free the minds of the next-after-the-next generation of designers to see the world in a new way. We want them to leave the Camp fired up about their ability to rethink and reshape their own homes, communities, and cities. Some may decide to enroll in a design degree program…and become practicing designers. But at the very least, they will become more aware of their power, as creative citizens, to design better ways of living."
[UMN, 2007]

*Center for Integrated Design at the University of Hartford*

The Center for Integrated Design (CID) is based at the University of Hartford in Hartford, Connecticut. It is a multi-disciplinary organization, which provides Hartford and its surrounding communities with resources and solutions that address architectural, engineering, business and visual communication design issues. It is committed to establishing interdisciplinary and educational dialogues between the community, the University faculty and its students. The CID also provides educational opportunities to professionals in the design and business community for continuing and professional development. This professional integrated multi-disciplinary approach to problem solving that actively engages students in the process is what makes CID unique.

The Center works on projects that intersect four disciplines: architecture, engineering, business and visual communication design. A project may include all four disciplines, any combination of two or only one discipline. Governments, public entities, private entities, public K-12 schools, private K-12 schools, non-profits and other organizations may submit projects for consideration. The projects must have clearly defined goals and should be able to be completed primarily during the academic semesters. Currently, the projects are housed within the structure of existing curricula and classrooms of the four disciplines, and CID employs one director, four faculty members and two outside consultants.

In 2003, CID was formed to address a project for the Town of Bloomfield, Connecticut. The town perceived a need to redesign its town Center and enlisted the University of Hartford's educational expertise. Four University professors initiated a study, *The Bloomfield Center Study Project,* an interdisciplinary approach to teaching and working with a community. This study drew on three different disciplines: architecture, engineering and visual communication design. The CID created five real experiences for their students. The first was to enlist a team of three students (one from each discipline) to conduct research on the town Center under the guidance of the professors. Once the research was completed, the study moved into various classrooms, and the professors created four additional projects to engage their students.

The classes included: *Design Systems,* which completed a wayfinding project for the Bloomfield Town Center; *Architectural Site Planning,* which completed an entire Center re-design consisting of roads, buildings and streetscapes; *Architectural Design II,* which designed a cultural building for the

Center; *Civil Engineering Senior Design Project* (Lighting), which provided lighting design options; and *Filley Park Pond Water Quality Engineering Project*, which redesigned a watershed flooding problem. Again, the approach was similar to a real firm. Students were given a brief, they attended a community design charrette, they worked collaboratively (in teams of two) to write a strategy based on existing and new research (gained from the charrette), they interacted with the client on a regular basis, they researched appropriate outdoor materials and used technological tools to render their ideas, and presented their ideas to the town planner. All of student work was included in the *Bloomfield Center Study Report* and in a public presentation to the town council and the people of Bloomfield.

Presently, CID is conducting extensive research on "What makes communities livable? And what are the resources needed to design and build more livable communities in the future?" This research is being funded by the Hartford Foundation for Public Giving and involves a partnership between the CID and the Capitol Regional Council of Governments (CRCOG). At the beginning of this project, two community workshops were conducted. Participants took a Visual Preference Survey™ developed by Tony Nelessen, in which various community pictures were shown. The survey and Mr. Nelessen's lecture helped define what livable communities were, what aesthetics were most preferred, and how most communities showed similar preferences. After the survey, interactive dialogues were used to complete the collection of research data from all the participants. Four professors and five students were involved in conducting these workshops, along with two members from CRCOG. This project is another example of how interdisciplinary work and collaboration can be used to complete design projects. The professors, students, government officials and community members are working together to help envision a better-designed community. Focus group workshops, drawings, research and a written analysis will compose the final design report.

This approach to learning is important to the future of education. Global perspectives, symphonic systems skills, and creative collaboration are essential characteristics that knowledge-based cultures must demand from their professionals, as well as graduating students. The CID's dynamic interdisciplinary design process employs situated-learning experiences for students, offers professional development opportunities to the community, and enlists the University's faculty in civic engagement, providing the best possible mix of scholarly research, professional practice, education and civic engagement.

## Conclusion

C. P. Snow's 1959 lecture *The Two Cultures and the Scientific Revolution* spoke of two distinct cultures, the intellectual and the scientific that, in his opinion, were not successfully communicating with one another. Later in his 1963 essay, *The Two Cultures: and a Second Look* he asked if there could be a "Third Culture," "a combination of the two with misunderstandings." [Snow, 1963] This term Third

Culture has since been examined and written about from various angles. John Brockman, author and founder of the Edge Foundation, believes that mostly scientists are now communicating directly with the world as intellectuals themselves, through their own writing, replacing the traditional intellectuals that Snow referred to. [Brockman, 1991] Kevin Kelly, an author at *Wired Magazine,* expands this notion of scientists becoming the new intellectuals. Kelly's interest is in how technology has superseded everything else as the most important vehicle in creating culture, real or not. He refers to the "Techno-culture" mentioned earlier as an aesthetic. He states that this third technological culture is as international as science. "Technology generates opportunities: new things to explain; new ways of expression; new media of communications; and, if we are honest, new forms of destruction. Indeed, raw opportunity may be the only thing of lasting value that technology provides us. It's not going to solve our social ills, or bring meaning to our lives. For those, we need the other two cultures. What it does bring us—and this is sufficient—are possibilities." [Science, 2007] What is interesting about this statement is that it maintains that technology is simply a tool to create content, or possibilities in our lives. Kelly understands that we still need the other two cultures to bring meaning into our experiences. This is where Design can become the third culture, providing a path to meaning. Design is the fundamental human response to create order, a plan, structure, or meaning. Design should be viewed as the point of intersection, the catalyst to generate forward and creative thinking.

This point has not been lost on the government of the United Kingdom. Since 1944, the UK in fact, has devoted resources to the Design Council, a governmental agency focused on promoting the benefits of Design. Over the many years of its existence, the Council has helped Design remain in focus by promoting its contributions to society, business and education. Since the mid 1990s, the Council has retooled itself to influence and enable business, education and government to better understand Design's importance to the future of the UK. It has launched initiatives, such as "Design in Business Week," "Design in Education Week," and "Creative Britain," which focus on how the UK's design strengths can help improve the country's global standing. [DC, 2007] In 2002, the Council embarked on a new initiative that absolutely sees the value in partnering professionals (designers and professionals) with government agencies, businesses and schools to create learning environments that deliver more integrated thinking and methodology to existing systems and strategies. The Council published a report in 2007, *High-Level Skills for Higher Value,* which makes recommendations to address the skills gap in schools, colleges and universities, and the Design industry. The Council consulted over 4,000 professional designers to develop this report. The plan outlines three strategic initiatives: 1. To promote and improve design education in schools; 2. To strengthen the partnership between business and education, ensuring that design graduates have the right skills for the marketplace; and 3. To establish a collaborative, national strategy for design skills development and promote professional practice in the Design industry.

[DC, 2007] The Council firmly believes in design and its influence over society. They understand that designers intersect a multitude of businesses and disciplines. And they are committed to creating new initiatives for learning, because they understand the power design has to strengthen and support the UK's future in the world.

This type of support from the government of the UK is essential. The government clearly understands its responsibility, taking a leadership role. It asks the professional community to partner and become part of the solution in building these new learning environments, because to remain competitive everyone must participate by developing more integrated learning environments, as well as integrated work experiences.

I believe, as do others, that the United States should do the same. We should be inspired by this model and adapt it in accordance to our educational system. Presently, it might be difficult to convince our federal government to establish a design council or agency that promotes design. But we can try to convince professional organizations and businesses to get involved in developing new integrated models for our educational system. We also must convince professionals that becoming personally involved in these models is important to our country's future, as well as serving their own interests.

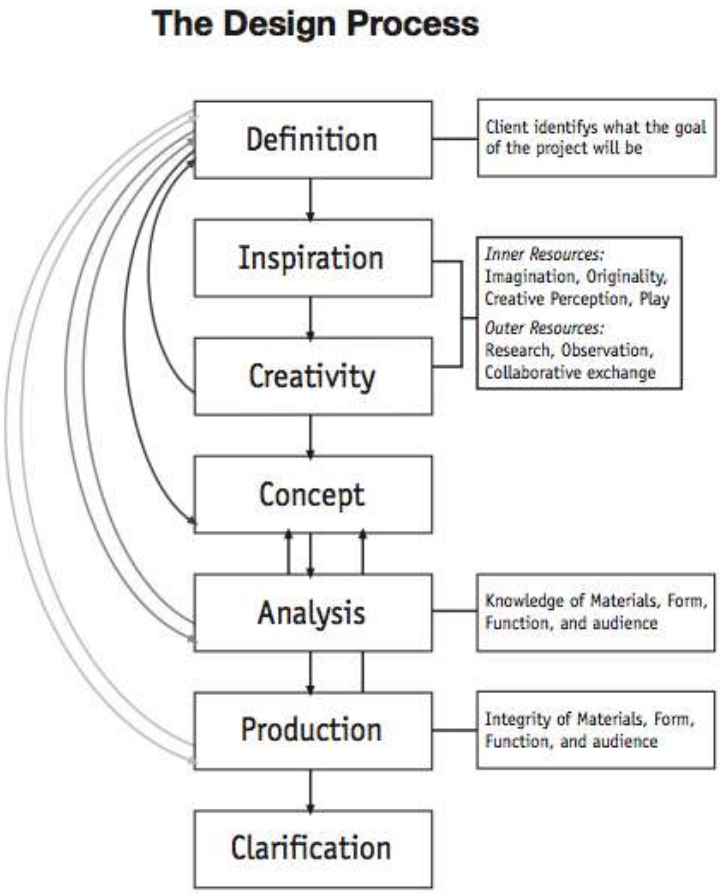
Currently, my community—the graphic design community—is split on this responsibility. I attended an AIGA conference in 2005 where a contentious debate erupted after designer and educator, Ellen Lupton, finished her lecture on the importance of the DIY (Do-It-Yourself) movement that has blossomed over the past decade. Ms. Lupton and her students at Maryland Institute College of Art developed a website that promotes and facilitates the DIY movement. They have published a book and regularly upload material for visitors to use. This quote from their website is an illustration on how design's importance is integral to our daily lives. "We might say that everyone is a designer (a particular kind of intellectual), because all people make decisions about their environment, their personal appearance, their media consumption, and so forth. To manipulate the messages and materials of design in an active, public way is to take on the social role of the designer." [DYI, 2007] In her lecture, she offered the suggestion that if everyone is beginning to understand the value of design, then why not help everyone understand it more thoroughly. If we can get the public to comprehend how Design's systems yield better results, then everyone will benefit. I believe this to be a positive approach to building a more intellectual society and to addressing the amateurism mentioned earlier. This philosophy will produce better-equipped design students. It will also produce better clients and actually raise the value of design, rather than diminish it. Other graphic design professionals argue that if everyone understands design and its processes then, because of technology and the ease of communication dissemination, everyone will just do it themselves, and the need for professionals will dry up. I would argue that design professionals must see themselves as part of the educational process, not just producers of products. They need to

expand their realm of services and become essential members in their communities, in turn helping to better design them. This can still be done through products and experiences, but it also can be through education, interdisciplinary work, creative system development and research.

The question is how do we convince American society that design is part of the answer in building a better educational future for our country? We might start by revisiting some of the progressive educational theories John Dewey put forth in the early 20th century, learn from our past history and then make anew. We should continue to utilize the important educational theories of constructivism and multiple intelligences, put forth by Bruner, Plaget and Gardner, as the basis for creating more situated-learning experiences that integrate design and its processes. We should ask what strengths and weaknesses are evident in the dominant educational regime of standardization and mechanization that we currently use in many American schools, and then ask how can we expand on these strengths to include integrated learning? And we should continue to analyze other countries' initiatives in reference to their educational models and ask how we can we learn from them. Additionally, Ms. Jordan-Vilanova and Ms. Dunn offer the suggestion of developing a communal network of design professionals and educators engaged in synthesizing the terms of both disciplines, by which a new language can be developed to create new strategies for learning.

In the 21st century, we are inundated with information, images, sounds, people, and product choices. Some believe that the world has become too overwhelming and chaotic. I argue that the value of design is more important than ever. Design can help us sift through the chaos. We need to be able to differentiate between important and unimportant information and make complex information understandable. Many more jobs require interdisciplinary work and creative problem solving. The skill set for Design will always be founded in critical thinking, visualization techniques, and language to generate meaning. But an expansion of skills that include diverse technological knowledge, quantitative and qualitative research, excellent interpersonal communications, and a sociological understanding of the human condition have become imperative for success. There are different views on what Design should be doing in the world, but I would argue that design is a great way to build an educational foundation for learning. It integrates all the necessary skills to be successful in the 21st century. It is a way of thinking that is more communal and inclusive rather than exclusive. And it is a great way to build bridges between "the two cultures" and between diverse disciplines, peoples, and worlds.

Figure 1

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