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Recommendations for Design Educators and Students Who Embrace Computer Technology

K C Yeoh, Nanyang Technological University, Singapore

Abstract: In view of what the strengths and limitations of computers in education are, it is interesting to note that the utilization of technology in pedagogy has many facets of inherent benefits as well as challenges. While teachers are caught in the conundrum of teaching a generation of technologically savvy students, they must also allow them the opportunities to explore their own strengths and weaknesses with a piece of so called anti-creativity equipment. To the students, computer technology is regarded as an extension of their central nervous systems and limbs whereby automation, accuracy, expediency, presentation, execution and implementation are made possible. In this paper, I intend to explore the influences of computer technology in design education as influenced by market-driven frameworks, followed by my recommendations for design educators and students.

Keywords: Design Education, Graphic Design, Creativity, Computer Technology, Ideation

Introduction

GRAPHIC DESIGN IS a conscious and intuitive effort to create and communicate meaningful order. The field is often measured by how well its designers offer creative solutions to their clients' unique problems. Anyone who understands the design process knows too well that computer software and hardware are just a fraction of the design equation. Yet, the utilization of technology in pedagogy has seemingly presented many facets of inherent benefits as well as challenges. Computer technology, made possible by hardware and software, is now one of the major devices used in conceptualizing, developing, and producing materials for graphic designers universally. Since many aspects of graphic design education are visually-based and the computer has become an important tool in the design processes, the very nature of creativity may be affected.

If so, how does computer technology influence the design process? What are the strengths and limitations of computers in education? Is it partly due to the fact that the field of graphic design has always been viewed in the service of the industry? As I map the trajectory of graphic design and technology, I beg the question: do computers undermine the creative process? By understanding the impact of computer technology in the design process through a lens that defines the graphic design profession within a market-driven framework and an educational system that prepares students for the field, I wish to construct a theory about the practice of graphic design in Singapore as she prepares herself as the center for creation and distribution of information in the Southeast Asia region.

Do Computers Undermine the Creative Process?

Creativity is an interesting topic spanning from many disciplines. It has become a catch phrase that means different things to different people. As a matter of fact, it is not applied to just people, it is also applied to processes, and products. The process of creating is complex with many factors influencing its success or failure. Designers could be driven by fad and techniques, clients may be pressured by economic concerns and politics and computers can be driven by technology. Because of its broad applications, creativity can be found at all levels of ability in any settings. Creativity, for the context of this paper is defined within the context of using effective methods, informed by an understanding of social, cultural, historical, and technical aspects of communication to achieve a desired goal. Is creativity being white washed when designers have to deal with factorial, situational and sometimes unavoidable realities, not to mention the vagaries of hardware and software issues? Can creativity still flourish under imposed limitations?

Such realities are tested in the foundational classes at Nanyang Technological University's new School of Art, Design and Media when we first opened our doors to a pioneer batch of 108 students on August 1, 2005. In preparing students for six areas of specializations in their second year, namely, Digital Animation, Digital Filmmaking, Digital Photography, Interactive Design, Product Design, and Visual Com-

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munication, one of the four studio-based foundational courses, 2D Design and Color Workshop, aims to develop conceptual and manual skills necessary for communicating design ideas. The course seeks to extend their knowledge base about the fundamental elements of 2-dimensional design, and color theory, as well as the range of procedures that make up design processes. Appreciation of fundamental aspects of good studentship such as prompt, regular attendance, self-motivation and direction, making contributions to peer learning and critique as well as cultural and ethical issues of design, like sensitivity to a range societal influence and respect for intellectual property are also stressed.

In making the project a reality, the students learn to ideate, execute, and interpersonally communicate with people. By understanding how the design process and systems work, educators can stress the importance of articulation during brainstorming because it permits conscious and autonomous self-reflection. Another important aspect, the ability to express ideas in drawing, is also important for them to visually interpret and create representations [see figure 1]. In freehand drawing, students use their hand-eye coordination to record their ideas onto a piece of paper without the support of mechanical tools. With sketching, they can quickly visualize their ideas easily, which can be expanded upon [see figures 2].

Is creativity found only in a small group of gifted people? After all, people often equate creativity with innate talent, impulsivity and non-conformist behavior but to design is to plan. Planning requires a process and this process involves discussions and interactions in various forms, visuals, verbal, nonverbal, concrete or even intuitionally-based. We need to think of organization as a way of facilitating creativity. We need to view ourselves, the environments in which we function, and the media we use in a relatively objective lens. If ideas are better structured, central, and accessible, creative innovations are likely to happen in problem-solving. The basic problem-solving methodology involves speculative formulation of reasoning, techniques, tools, and adequate information to resolve issues and select the ultimate solution that leads to an explicit goal [see figure 3]. The process of achieving an effective solution requires an understanding of the problem and evaluation of the technical accuracy of process and materials. The computer with its efficient, methodical, precise, and organizational capacities allows its users to organize information with various functions that can contribute to the whole design process. In a society preoccupied with visual imagery and a system that champions results over the process, the awing effect afforded by computer technology, it is quite understandable why computer technology has become an ideation and production tool.

Because ideation can take form on a piece of paper or on the screen, expertise is critical for ideation to happen, especially with the latter when software and hardware knowledge are involved. Different software tools can influence the interpretation and translation of thumbnail sketches on the computer. A pencil sketch is very different compared to one done with color markers or computers. The computer is a unique tool because it can evaluate the result before production [see figure 4]. Because of its high quality output, sketches from a computer output look finished and professional. Under the surface, there are many layers in the design process that get suspiciously buried under the veneers of a presentable artwork. The direct translation of ideas from the brain to a piece of paper is not quite the same when attempted on a computer screen. This is because our abilities to visualize ideas quickly are being limited by the capacities of the hardware and software. These limitations create a "convention" or standard set forth by interface designers and computer programmers who initially designed layout, graphics and image editing software for designers. On a macro level, the incessant proliferation of Apple Macintosh computers and IBM-compatibles in the field of design since the 1980's has created homogeneity in design and on a micro level, the strive for individuality is much harder to achieve. However, design students can be trained to break out of monotony by doing a lot of experimentation. Innate abilities aside, creativity also involves a thorough knowledge of one's field. This talent involves combinations of sensory, motor, and intellectual capacities, expenditure of great effort in reaching the end product and finally the element of opportunity (Cropley, 1992).

As the artist learns the technical aspects of the program, he or she identifies the features and possibilities of the medium [see figure 5]. While the tools embedded in software are capable of developing and inspiring new applications in its users, those without much computer knowledge may find technology a piece of intimidating tool. Based on this observation, the intricacies of the machine can stand in the way of expression, particularly when the users are not familiar with the program. In a general sense, technology has also created a knowledge-based class of how much one knows technologically and those equipped with computer skills are able to compete far better with those who are without. Because of these contexts, it may seem that creativity may be compromised or overshadowed by technology.

For creativity to flourish there must be encouragement and stimulation of imaginative and unconventional environment. This is particularly true in problem-solving activities where one explores uninhibited ideas and concepts, exercises capability to reconsider and explore ideas in direct contradiction to accepted

facts. Without a favorable and advantageous circumstance, it is difficult to be creatively productive. In order to assist this, learning activities must be supported in an environment free of outcome-based thinking. By not putting the end first, students can freely reflect and explore in a playful environment of ideas and object manipulations. Creative ideas can possibly emerge when we bring our own interpretation into the design process by connecting with our personal experience. One way of encouraging creativity is to assert that every idea is a possible solution, no matter how silly or impossible they may seem especially during the process of ideation. Besides intellectual skills in solving problems, creative thinking requires diligent hard work, motivation, courage, a sense of recognition, and other similar factors (Cropley, 1992).

Creating such an environment is by no means easy. Students being students are too preoccupied in trying to score high grades and some are too quick to resort to tried-and-true methods. They are not willing to take the extra steps to take the risk. Even if they are willing to take the risk but are not adept in visualizing their ideas, the fear of making mistakes is palpable in the classroom, especially for those who find it hard to cope with minimal instructions given. Guidelines may be necessary but not instructions, as I find the latter counterproductive in a creative environment. The importance of risk-taking is highlighted and I reward my students for making discoveries through mistakes in projects that explore creative, conceptual elements as well as principles of the design process. More importantly, Brand (2001) added that creativity needs an audience to appreciate and validate its usefulness. Ideas that are far too ahead of their time are often ignored or even criticized. To balance, "simulated" marketplace realities such as deadlines, material and production limitations are stressed in class. Students learn to appreciate the iterative process of design where the eventual solution, however elusive, will eventually surface if they constantly verify it against the problem [see figure 3]. The iterative nature, characterized by repetitiousness, is in and of itself to be found in the two aspects of generative and interpretive. The generative aspect comprises of choosing a paradigm for application to an existing design problem and developing design concepts. The interpretive nature calls for combining situational and factorial situations to closely provide explanatory information.

Hoping to create a learning environment that allows my students to explore their creativity, I introduce the concept of student-centered principles of teaching where I relinquish control of the classroom and become a facilitator to share teaching methods, instructional materials or activities with my students. In this mode of learning, students have a stake in their learning as they are given choices in which they are encouraged to explore, experiment, and discover on their own. Everyone is involved in the decision-making process where topics are relevant to the students' lives, needs and interests. However, many students felt burdened with the sense of responsibility and lamented about having to take responsibilities. The convenience of finger-pointing has been shifted to the students themselves. I purposely cherish ambiguity and looseness in my design briefs. After all, if things are too well-defined and structured, there will not be a lot of room left for exploration! [see figures 11 and 12]. This is not to clear the professor from any form of teaching responsibilities. Student-centered learning must also be balanced with student-centered teaching. Hence, clear communication is important in ensuring that the students and the educator clearly understand the purposes, goals, and objectives of the course.

Originality is important as it is associated with freshness of aspect, design, or style and the generation of independent thought or constructive imagination. Creative people are generally said to display the following personal characteristics: intelligent, capable of sustaining hard work, seek changes and adventure, impulsive, non-conformity, and sometimes undisciplined, although they are perfectly capable of highly disciplined behavior when they pursue a goal. These traits may show rebelliousness, arrogance, and self-centeredness and creative students may be considered difficult to handle in the classroom. When they mistook creativity as non-conformity and rebelliousness, I stressed that in order to break the rules; they have to first know the rules. In 2-D, compositional rules are all about the placement of visual elements to create either unity or variety. Understand the principles (unity, contrast, emphasis, focal point; scale and proportion, rhythm, repetition and movement) and elements (point, line, shape, volume, texture, space, motion, value and color) of design combine to provide the understanding for how visual attributes are used in the creation of two-dimensional forms [see figure 6].

The ability to sell an idea or to communicate a message requires skill in understanding, analyzing, and interpreting forms. If these forms are imperfect, what are the chances for creative expressions to take place? For some students, not likely, as they find it difficult to break out of reliance on symmetry, perfection, and control. Most felt the need to run to the computer lab but I temporarily suspended any accessibility to technology, at least during the initial stage. Finding an effective solution is not easy. Ideation takes time but for some, the A-ha moment strikes them at an unpredictable time. Realizing that creativity does not happen in the studio alone, I encourage my students to establish a balance of presenting

visual and technical information by using manual, hands-on technology to develop their vision. Following an exercise that allows them to straddle between manual and computer skills, combined with various informal, ornamental and exploratory hand-crafted skills, many students manage to introduce meaning and "life" into his or her design solution [see figure 7]. In the initial stages of explorations, techniques are not limited to dripping, scratching, scrawling, script lettering, stitching, embroidering, sewing, scratching, scribbling, doodling, and even graffiti [see figure 8].

In a separate project, the similar groups of students are required to identify 26 letters of the alphabet (either in majuscule and miniscule forms) as basic geometrical shapes and lines through photographs. The idea behind the project is that by developing sensitivity to see shapes in our crowded landscape, they learn to develop a pair of discerning designer eyes [see figure 9]. What is surprisingly refreshing in these projects is that by fusing photography in a culture dominated by visuals, the prospects of learning are further enhanced. Technology becomes the facilitator in supporting creativity and as a catalyst for discovery [see figure 10].

Unfortunately, I also noticed that in the name of expediency and productivity, some students find it hard to "divorce" themselves from the computers in the initial stages of idea development. The ability of the computer to neatly visualize has seemingly created an end product or result, rendering the needs to further explore an unnecessary task. Due to the simplifying and all encompassing environment of the computer, students do not spend enough time exploring in the initial stage. The freedom to play diminishes as they trade results over the process. An early application of computer in any design stage presents a dangerous aspect: much needed explorations are abandoned. From what I gathered, it is all about expediency. Many areas of ideation such as assessment, refinement, elimination, selection, and production are being conveniently consolidated into one environment where students play the interchangeable roles of author, designer, and producer. When that happens, the computer is no longer a tool but a medium. The computer has become an extension of our brain!

Throughout the ages, humans have *extended* themselves through a variety of inventions that seem to provide for our shortcomings. The microscope is an extension of the eye and the telephone is an extension of the ear. The designer of "I love NY" campaign, Milton Glaser (1995) and design strategist and educator Moira Cullen (1998) agreed when they echoed Canadian theorist Marshall McLuhan's famous "the medium is the message." McLuhan suggested that electronic medium itself impacts us as much as the information it conveys. If the computer is seen as a medium rather than as a tool, then this has a direct impact on how design is conceived in the classroom. Computers as the media can alter the environment, raising unique implications. Apart from being the medium of message, computers are also the medium that facilitate the transmission of numerous messages to other forms of media, especially when boundaries have blurred. The viable thing to do is to keep our sights on technology's possibilities because in comparison to the industry, pedagogical trends are slow catching up with the latest technology in the competitive market-driven arena.

The Influences of Market-Driven Framework

Technology has changed how design is taught and practiced. From the market-driven lens, rapid computerization of the design industry has increased pressure on designers to turn work around more quickly at lower cost. Within the realm of society and culture, interactions between the viewers, readers, audiences, consumers and designers are reciprocal. One designs it while the other validates it by authorizing or repudiating it. In the product-driven arena, businesses create an artificial demand through advertising, marketing, and packaging in the hope of creating a new, long need for the product. A well-targeted communication design can successfully convey and enhance the value, differentiating, for example, a 80¢ product to a $80 product.

Whether it is market- or product-driven, companies forge a collaborative relationship between design and business as it provides an avenue for competitive advantage (Peters, 1996). This competitive edge afforded by technology, according to Milton Glaser (1995), contributes to "overpopulation" of graphic designers (p. 256). This is not surprising at all. The motives of businesses are to make money and in the world of business and commerce, clients who commission professional graphic design services are compelled to solve problems quickly and inexpensively. In the world of business and commerce, clients who commission professional graphic design services are often guided by many immediate concerns and problems. They are compelled to solve problems quickly, painlessly, and inexpensively. By the time the service of a graphic designer or a design firm is needed, they may already have a set of unwritten laws and unreal expectations. They may try to "play designer" by deciding on format, graphics, and paper before the beginning of a design process.

Technology is to be blamed. Andrew Blauvelt (1998) stated that every personal computer owner can become a desktop publisher. Because the field of graphic design does not require certification, un-

like their architectural counterparts, everyone with accessibility to computer software and hardware can essentially become a designer. With increasing influence of technology, design is democratized and the design process no longer is in the bailiwick of the graphic designer. Because of technological advancements, graphic designers have lost ground as technology enables clients to figure out how to exercise control over digital documents, eliminating the needs for graphic designers (Glaser, 1995). To make matters worse, market-driven employers are demanding and expecting every graduate to be creative, innovative, analytical, organized, and disciplined in making their ideas visible by using new technology. The design business is always responsive to change and with increased competition for work, designers have to be more aggressive and inventive than ever before. If the discipline and practice of graphic design are to survive and expand, we must improve our advocacy efforts and make connections to the greater community we serve.

In producing the first batch of Visual Communication students at ADM, NTU, it is important for our students to realize that as a form-giver, design authorship is all about making the information accessible and understandable to the public. Sometimes, these forms are not easy to be realized as many students find it difficult to balance between aesthetical, functional, and logistical concerns. Understandably, graphic design is willy-nilly chained to communicative interests whether they function within economic, apolitical, propagandistic, or selfless agendas. However, I have observed that by demanding businesses to do certain things effectively and efficiently, customers are unwittingly defining the business. Because of ecological awareness, informed, sophisticated, cautious, moral- and value-conscious consumers expect manufacturers or resellers to assist in the recycling and disposal of wastes. As a result, manifestations of designs must now reflect the additional costs of responsible product manufacturing, usage, and disposal.

Recommendations for Educators

Within the arts, Graphic design is one of the first few to include computer technology in its repertoire and it is accepted with mixed blessings. In the United States, the American Institute of Graphic Arts (AIGA) and the National Association of Schools of Art and Design (NASAD) advise academic institutions to be financially committed and instructionally-prepared to arm graduates with technological expertise (n.d.). Technology is an expensive endeavor that requires constant upgrading and re-learning. Other administrative considerations such as infrastructure, networking capabilities, qualified technical support staff, software management, course scheduling and so forth are factors in determining a strong academic curriculum which directly relates to computer technology. They also reported that nationally many schools with graphic design courses or programs either underestimate this obligation or they simply fail to respond in a timely manner. As a result, graduates become unprepared and unqualified for the jobs that they are trained to work in.

This is an advice to heed especially in setting up a brand new art and design school. State-of-the-art building, fancy equipment, and bungling bureaucracies aside, teaching is about inspiring curious minds, recognizing raw talents, and challenging students to think beyond their perceived capabilities especially in the field of graphic design where the methods and products are interactive and constantly changing. We are now confronting a new kind of student audience, one that has lived continually with mass media and has been desensitized by technologies. The goal is therefore, to use the computer as both a tool and medium where synergy between the limits of the mind and the extreme potential of technology is combined [see figure 14]. To facilitate this goal, educators need to define what roles graphic designers should be aware of in their human-computer interactivity and what skills need to be nurtured. Design methodologies that stress the importance of thinking skills, technical abilities, positive attitudes, and relevant prescriptive values are important. Creativity-facilitating educators should promote them in the classrooms by using visuals and language that conjure up compelling imagery and imagination. Preparing oneself to take an active, participatory role and learning how to plan marketplace strategies and management realities will reward one to function more effectively.

Design pedagogy is drawn into a tug-of-war between communicating messages that are bound by moral, legal, ethical, social, political and, metaphysical concerns as well as satisfying values put forth by the vulgarities of the marketplace. In the real world, delays are likely to occur and adjustments have to be made. Working with the constraints of time and money in mind, compromises are sometimes necessary and if the claim of any professional first degree is about preparing students for the field, it behooves us to narrow the gap between what is being preached and what is being practiced. This is not new because the tendency toward promoting a professional approach rather than general education at colleges and universities has been steadily increasing for the past two decades (Swanson, 1998). While we can teach students what to expect and how to deal or react with the marketplace, the optimum learning experience for educators must come from dealing with the "real thing" from the "real world."

Head of the Design Studio at the Walker Art Center in Minneapolis, Andrew Blauvelt wrote that as we become more and more technologically advanced, the need to link graphic design to theories becomes important. Contrary to popular belief that theory is an immaterial abstraction, it is something that is "fashioned, refashioned, and self-fashioned—not merely fashionable, preordained, or predestined" (Blauvelt, 1998, p. 72). Theory can allow graphic designers to actively redefine their practice from within, unlike social scientists who often observe from the outside. Graphic designers should proactively reconstruct their roles to cope with the change rather than submitting passively to it. By bridging a theoretical framework that integrally engages in the process of making graphic design and a practical framework that understands the definitions, and limitations of graphic design, we can cope with changes. The viable thing to do is to keep our sights on technology's possibilities and if the discipline and practice of graphic design are to survive and expand, all of us must improve our advocacy efforts and make connections to the greater community we serve.

We must be actively involved design-related research projects and we must participate in collaborative projects with companies because when the problem is real, we are forced to engage in creative activities of problem solving in effective, functional, and creative ways. Only then, educators are able to be sure about the potential and effectiveness of the design curriculum. Promotion of conceptual and technical competence requires an evolving, adaptive and versatile educator who is a designer, communicator, and thinker. This is where idealism meets functionalism.

Recommendations for Students

Upon leaving design schools, many young students may soon realize that their successes often rely on overcoming real clients with personal and institutional prejudices and biases. University graduates with multiple degrees are not immune to the impact of technology in our society. They, too have to acquire new knowledge on many occasions during their working lives. One thing for sure: using the computers as a tool of design is forcing us to self-evaluate and self-modify. Therefore, students must find an acceptable and practical outlet for their digital creative expressions to come through.

Students are now producers, rather than mere consumers of design. Since design has become increasingly accepted, democratic, and secular, it is worth repeating that technology depends on its users to unleash its power. Hence, graphic designers should manipulate technology to serve us, not the other way around. Perhaps, in a holistic attempt to equip undergraduates with the latest skills and knowledge in entering the profession, technology can be seen as a commodity with a market value in a market-driven economy.

Technology and society are constantly interacting. The technological hardware and software used by graphic designers change rapidly. As we face a world of accelerating change, due in large part to the advent of computer science and technology, change in job skills, interpersonal relations, social standards and norms, learning in close interaction and adjustment with day to day life is now more important than ever before because of the rapid changes that occur in contemporary society. Since design is not about self-fulfilling prophecies, students need to acquire not just technical skills but also interpersonal skills. This seems to displace the importance of technology even though they are an important factor throughout the creative development and final production phases. By understanding how to work effectively with people, knowing how and when to employ a well-conceived strategy and analytical skills, coupled with a high level of professionalism, students can form a successful strategic partnership with a client.

In a media-saturated society with its student populace living in a technologically advanced environment, they may not necessarily equate pencil and paper as advanced technology. We are apt to apply technocracy into solving problems or performing tasks. One thing is valued over another, one sense or skill is amplified over the other especially in a competitive, capitalistic, and fast-paced economy. Every tool has its potentiality but embedded within it are ideological and technical biases. Technology has its advantages and disadvantages depending upon whose hands it happens to fall into. Technology is not the problem but rather how it is being used [see figure 14].

When schools embrace technology, the educational system is imposing a whole lot of expectations on students to learn, master, and apply technological skills. On the other hand, there is capacity for art and design creations because with every technical skill learned, students can create something new. In our increasingly globalized world, creative thinkers are valued, not apathetic doers. If a student is technically proficient, he or she should shift to a universally creative approach that will still be relevant and continue to be one long after the limits of the technology have been surpassed.

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Figure 1: During the ideation and brainstorming process, ideas are created, destroyed, and recreated with interventions between students' peers and the professor

Figure 2: There is always more than one solution to a problem and exploration is the key. In sketching, students quickly capture their thoughts in pure and raw forms. Because it can be perceived in different ways, sketching can be reinterpreted and this creates many opportunities for explorations (Artwork by Er Kia Hui)

Figure 3: The iterative design process calls for a back and forth approach of questioning, testing and analysis until a result is achieved (Artwork by Er Kia Hui)

Figure 4: Although the computer is known for expediency, precision and rendering abilities, it falls short in imitating the quirky and raw qualities of hand crafted letterforms (Artwork by Jeffrey Xu)

Figure 5: To overcome this, student Jeffrey Xu explores many options including the use of pig's skin (lower right hand corner) to simulate human skin as well as scanning and editing in Adobe Photoshop to interject the idea of disillusionment of memories from his past

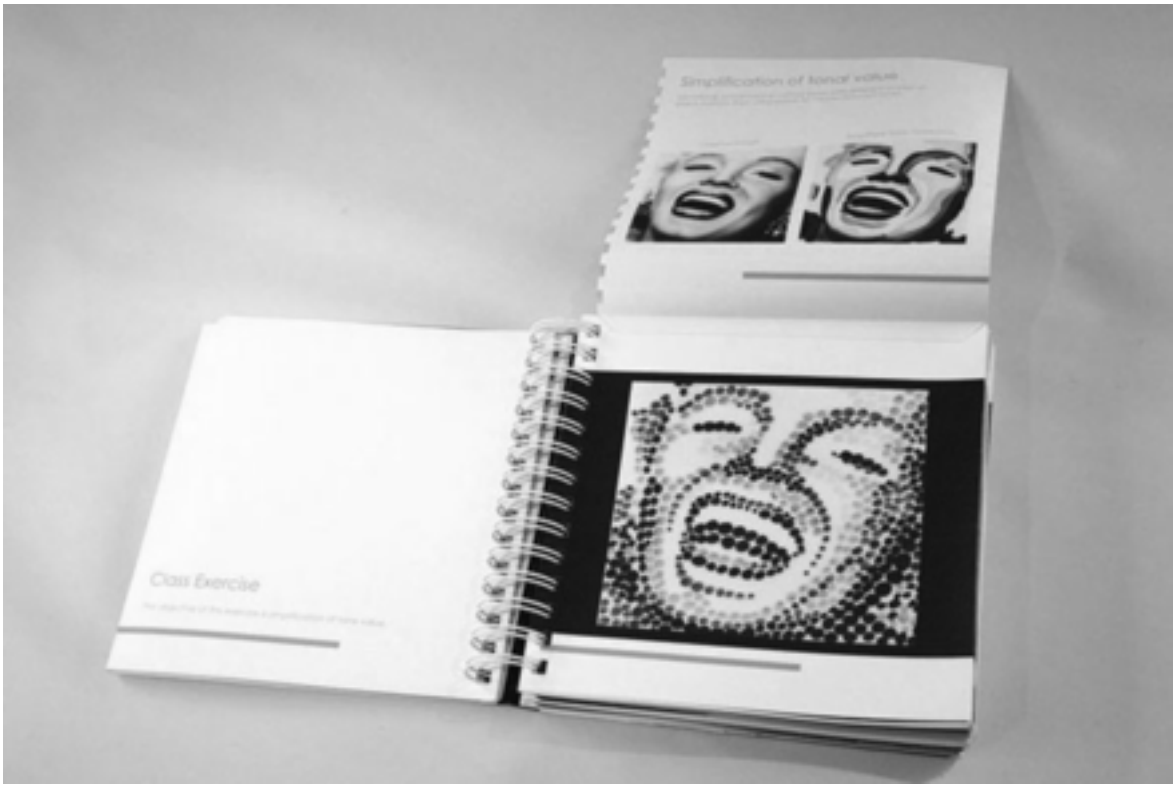

Figure 6: By simplifying Marilyn Monroe's face to points, student Jesslin Zhou discovers that point repetitively positioned can create various patterns. Movement and direction are created by varying the size and location of the points. She also dabbles with shades of gray to create tone and illusion of depth and dimension

Figure 7: For student Samuel Woo, technology is not just a means of productivity as it is also a means for addressing and responding to change in the creative process and communication environments

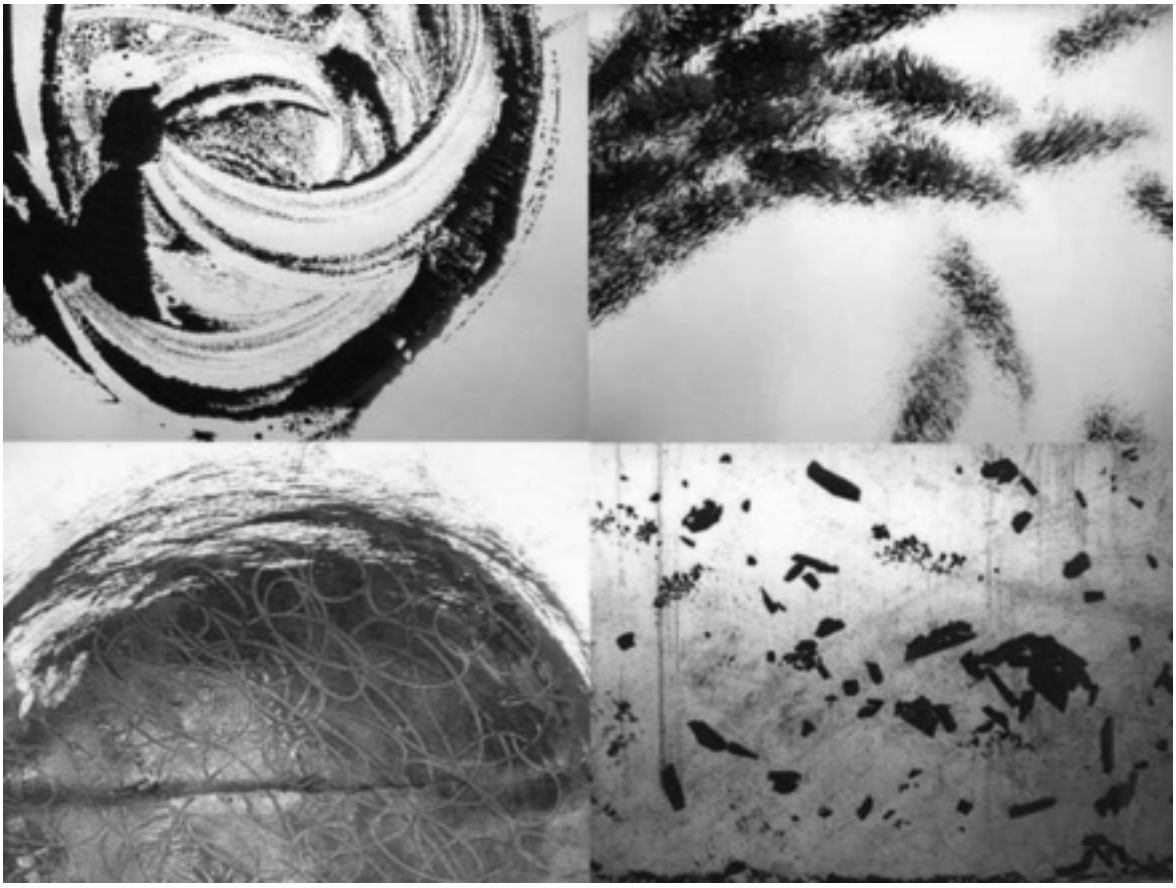

Figure 8: Regardless of technological sophistication, certain drawing details such as strokes and the intricacies of the effects cannot be replicated (Artwork from group 1)

Figure 9: There are many shapes around us if we care to look carefully

Figure 10: Developing designer eyes are necessary to cultivate a strong sense of design sensibility. (Artwork by Lim Cai Ling)

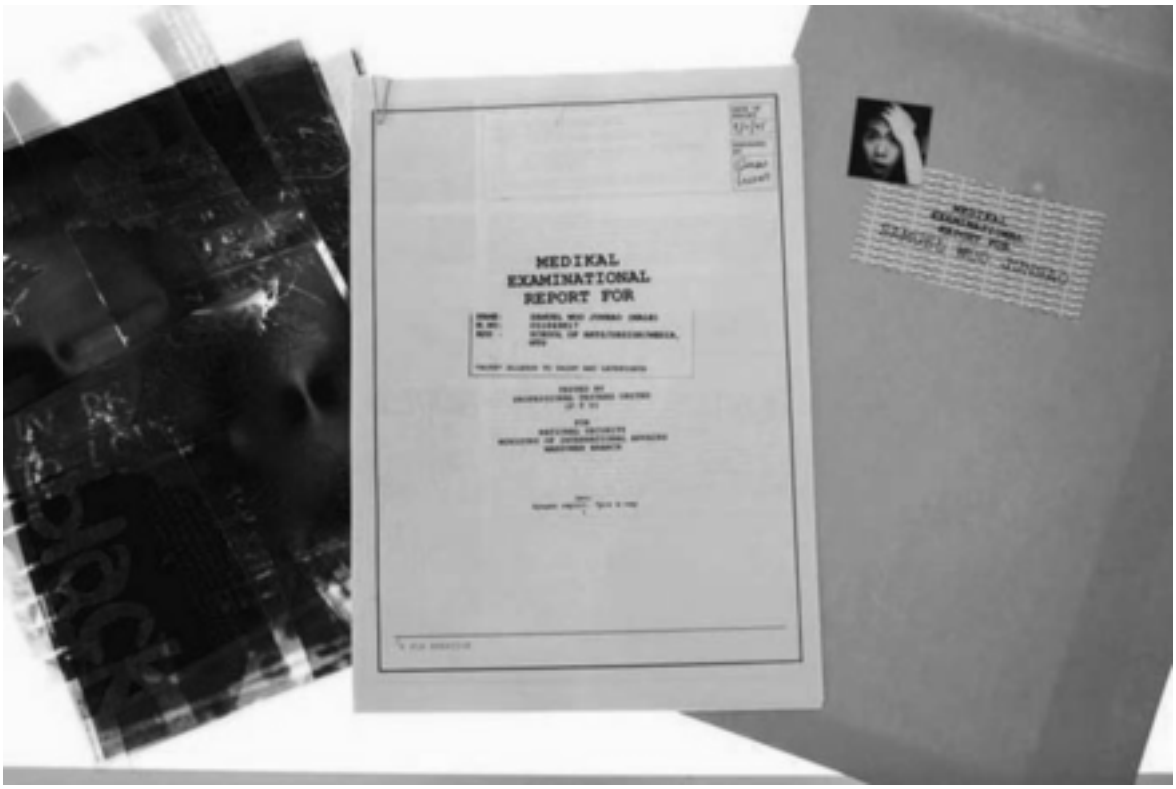

Figure 11: The element of play is apparent in student Samuel Woo's final project, repackaged as a medical report with cleverly written "medical examination report" to describe each project completed in the semester

Figure 12: Each project is portrayed to simulate X-ray, a concept consistent with his submission of a medical examination report (Artwork by Samuel Woo)

Figure 13: The aerial view of a cityscape was completely rendered in Maya to simulate the shape of a sole (Artwork by Jeffrey Xu)

Figure 14: The computer allows student Tan Wen Chuan to further improve the sketches of his face constructed out of alphabets into a much more refined piece of typographical exploration

About the Author

Dr K C Yeoh

California, Arkansas, Texas, and Georgia are the states that Kok Cheow Yeoh has taught at before relocating to Singapore to help set up the Visual Communication department at the newly established School of Art, Design and Media at Nanyang Technological University. His areas of research include design pedagogy, the influence of computer technology in education and the impact of computer technology on creativity. Dr Yeoh's formal education includes BFA in Graphic Design from the Academy of Art University in San Francisco, MAIA from San Francisco State University and PhD from Texas Tech University in Lubbock. His professional projects include, but are not limited to brand consulting, development of visual identity systems, package designs, advertising campaigns, store interior layout design and planning, and a wide range of promotional, printed and multimedia designs.

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