

# **INTEGRATED LEARNING: DESIGN THEORY VERSUS TECHNOLOGY IN GRAPHIC DESIGN**

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## **Abstract**

Do we want to create designers or technologists who think they are designers? Desktop publishing programmes give the operator permission to call themselves graphic designers. Our paper outlines an investigation into the need to integrate design theory and the learning of new graphic design software programmes. This paper looks at how students currently engage in design and technological learning in graphic design.

Since the 1980s we have seen a change in design theory, design practice and design training. This may have been influenced by: design education within the university context, a dramatic increase in student numbers, the growth of design as a preferred profession and new technologies.

Visual concepts are the starting point for all design; they are a way of visually describing an idea. Is there a need to increase observational skills in art and design curricula? Is the incorrect use of technology producing poor design?

## **Introduction:**

Our teaching is based on the visual language principles and rules of design developed by design educationists, Moholy-Nagy, Gyorgy Kepes, Joseph Albers, and Herbert Read over fifty years ago, educators who began the development of a professional design pedagogy connecting education through practice. Today the practice has changed, due to many societal and technical factors the world is different, computers and software programmes seem to be taking over much of the design process.

Kimbell, Saxton and Miller suggest that changes in educational design based programs have been influenced by:

The changing view of design and its influence on the definition of society.

Design training in the new university context.

Mass higher education and the growth of student numbers.

Changing professional needs and changes in the employment patterns of graduates.

An emerging design culture with its own integrity and identity.

Changed recruitment patterns into higher education.

New technologies (Kimbell, Saxton and Miller: p.43)

These changes have affected curriculum planning, teaching staffing levels, teaching time, and increased generalisation of teaching across subject areas. Due to monetary cutbacks in universities, we have staff shortages, and increases in class sizes. Art and design courses find it difficult to continually provide students with up to date technology and the curriculum does not allow sufficient time to teach the new technology. New technologies have brought about changes in the methodology of teaching and the need for specialist teachers in technology. Frequently these teachers have no design background, or often pressure is put on staff to learn and teach technology and or lose their tenure.

Due to new teaching methodology, students are now taught in tutorials, whereas "previously design had been taught in a studio environment." (Juster, 1999: p.25) The social environment of the studio no longer exists as students now work at home only coming to University for lectures and tutorials. Usually students buy their own computer by the end of their first year. Working in isolation creates problems, they are not seeing and being influenced by the work of their peers nor are they receiving feedback on the work in progress. Feedback is important as students often feel they cannot rely on their own judgment.

Philippa Ashton claims that the idea that learning can take place in isolation must be challenged. Ashton talks of the importance of social interaction in the design process within a design school studio and between peers and tutors. Her research findings have found that "what appears to be important is the resources which are at the disposal of students and their access to and use of these...the research suggests that the social context for learning is important as a support mechanism to share information and ideas and to negotiate learning outcomes" (Ashton: 1996)

In this paper we will be talking about our practice and perception in teaching Graphic Design and Graphic Design Technology. Much of our knowledge about teaching and learning is based on experiences gained over the years. Teachers have the ability to adapt ideas to suit particular situations, but time and effort to implement new approaches is rare. We have seen from our students' behaviour that learning is achieved in many ways and sometimes is totally unpredictable. The question remains; are they learning what we want them to learn?

Graphic Designers these days have taken on some processes previous tackled by printers and photographers (and vice versa). They are expected to assume responsibilities of production as editors, pre-press experts, printers, multi-media designers, web designers etc. They are expected to be both specialists and generalists and able to master the ever expanding number of software programmes. Lorraine Wild states, "the problems of mastering digital technology for print production tend to crowd out what little time was given over to the conceptual development of design in most curricula... Teachers have always managed to insert conceptual development into the process of skills acquisition, that is what has prevented the teaching of design from being completely subsumed into this technological shift" (Bierut, Denttel and Heller: 2002, p.143)

We have found that students often treat design and technology as separate entities. In Graphic Design we must use design and technology together, design is the conceptual side and computer technology is the tool used to produce the design solution. Desktop publishing has had a profound affect on graphic design and is accessible to all. How are we to respond to non-designers who have easy access to Desktop publishing software? Jessica Helfand in her essay "De Stijl, New Media, and the Lessons of Geometry", feels that "the very value of design is in question... with sophisticated electronic options, one might argue that the function of design is marginalized - if not rendered entirely obsolete - or that the role of the designer itself is imperiled. We have unwittingly ceded control: to our computers..." (Bierut, Denttel and Heller: 2002, p.166)

## **Supporting Survey**

The American Society of Landscape Architects in 1994, 1998 and 2000 conducted surveys on computer use. Previous surveys looked at the use of the computer to aid office administration, the use of CAD as a drafting tool and efficiencies in the design process. The 2000 survey looked at our area of interest, "examining the effect of computer use on creativity". The survey found that 75% of respondents believed the computer improved their design work, 25.5% believed that the use of computers helped creativity, 45.5% indicated it did not affect their creativity, and 29.4% said it hindered their creativity" (Tai and Thompson: 2001, p.105, p.112)

As can be seen from these statistics, nearly half of the respondents believed they were spending excessive time perfecting and revising their drawings, precisely because of the ease of making changes on CAD, while only 18% of the respondents indicated that CAD played a large part in conceptual design. Many believed that the computer hindered creativity because of its non-intuitive nature. One person stated that, "we need to get off the computer at times to think more creatively. Then transfer ideas from paper to computer." (Tai and Thompson: 2001, p.116)

## **Background**

Henry Lieberman a computer developer in America, collaborated in the 1970s with graphic designer Muriel Cooper at the MIT Media Lab. " Muriel Cooper was one of those rare pioneers, one who had a vision of computer-based tools that could actively participate in the process of dynamic visual expression...In Muriel's view, the computer is a new design medium, a new kind of brush, a new kind of canvas, a new kind of palette. There is no more reason for a designer to fear computers than for an artist to fear their tools. You learn to use them and to work creatively within their strengths and limitations...to remove the burden of tedious, precise or repetitive operations, to become personalised to its users' needs and styles of working." (Lieberman; 1996, p.39)

However the reality of the computer's influence on design was very different to Cooper's ideals.

During the 1970s and 1980s computer developers paid little attention to using the computer as a tool for conceiving new conceptual designs. With the introduction of the computer into educational situations, "Many teachers lacked expertise in the new information technology and suddenly found themselves virtually incompetent, ...to date young teachers who do have command of the required expertise often miss the reflexive distance required, for example, to set quality criteria and to formulate an aesthetic". (Gruson and Staal: 2000, p.8)

At the University of Canberra as in many other institutions at this period, digital design was taught as a very much skills based model where individual creativity was left out of the equation, this led to a culture of poor design in the technology areas. Our aim was to integrate design and technology using sound design principles.

## **Reasons for integrating**

We found that students working on the computer often tend to forget the elementary stages of design, i.e. conceptual roughs showing layout/composition, balance, tone, shape, colour etc. Suddenly students are overcome by new knowledge gained by learning new computer programmes. The impact of being able to use colour gradations, drop shadows, layers, and filters, overpower the students' aesthetic sense. Design theories disappear when they experience this surge of amazement and power they perceive they have – 'wow I can do anything, I can grade tone and place huge textured lettering on top of my multicoloured scanned-in layered background'. All their design theory knowledge flies out the computer room window.

Over the past three years we have successfully combined projects in the first year of our Graphic Design Degree. Students in Semester 1 are introduced to Photoshop and Photography. They produce a black and white portrait in Photography, and in Photoshop, a scanning exercise, "Organic Illusion". These two image-making projects are incorporated into a book cover and promotional poster project in Graphic Design. In Semester 2, design concepts are produced in Graphic Design and then are integrated into Graphic Design Technology. Students design a logo and a series of sequential drawings to show how an object works; the final piece is produced using Illustrator. The second project is a twelve-page booklet, conceptual ideas are completed in Graphic Design and the finished booklet is produced using InDesign.

When we first started to integrate projects our aim was to develop a new paradigm where computers and design elements and principles are brought together, to show students that:

- a) design and technology were not unconnected,
- b) the computer was a tool to be used only to produce a finished piece
- c) design knowledge must be used, the designer must design, the computer is not the designer.
- d) concepts need to be well developed before producing them on the computer in finished form.

Because of the complexity of the programmes it is difficult, if not impossible, to teach in a short course all that is required to learn the full depth of the programme capabilities.

In design teaching we use the process of 'action learning and reflection'. (Schon: 1988) This process does not happen on the computer unless the student has been taught to save all their changes. When students begin to design on the computer, they often forget to save their changes.

Another factor was the amount of time spent on the computer; this impacts on and influences design decisions. After spending many hours on the computer, and after receiving feedback, students do not feel like making changes to their design, they are ready to accept a poorly designed final solution. Is poor use of technology creating poor design?

To help with time management skills students must first create their design concepts on paper. Juster agrees with this theory, "it helps to put your ideas onto paper so that you can actually see what it looks like. In your head it definitely looks a lot different from what it does on paper.... It sometime doesn't come out as you expect it to." (Juster: 1999, p.115) Drawings are made to facilitate and express ideas, these drawings help students to remember their conceptual ideas and to build on them, to change them as they reflect on new ways of looking. Active observation differs from passive seeing in that the observer is more involved. "Good observation skills will

enable your mind to make more and unusual connections which are helpful in remembering and in creative thinking" (Lumsdaine: 1995)

### **Case Study:**

Feedback from students involved in these integrated studies reported a greater sense of understanding and control over the design process.

"Just because you can" Emily D. (GD 1.1 student 2004)

Emily loved the computer as she could use all these wonderful new effects. She found that her first experience of designing a poster in Photoshop was a disaster. Reflecting on her work now, she describes it as being very cluttered, packed with lots of visuals each being of a different image. She could not decide which images to use, as she loved them all, so she included them all. She used different opacities, but found it was very hard to read the text information, as the text and image were competing for attention. She used a number of different 'hideous' fonts and very bright colours in an attempt to include all the techniques she had learnt. After completing our projects she states that she now considers the computer more as a tool. She feels more confident using the programmes and knows more about their capabilities. She felt that some people have a natural aesthetic eye, but most of us need to be taught how to use the design elements and principles.

"My relationship is suffering" Mary L. (GD 2.1 student 2004)

Mary spent hours on the computer reworking her designs and yet the design was still not right. She was sick of sitting in a darkened room, by herself, staring at a screen, while her partner was sitting by himself in the living room. Her personal and social life was suffering. She said "I am feeling overwhelmed by the amount of time I have to spend on the computer, should I give up the course as I feel I am not succeeding". Mary learnt to conceptualise and refine her design on paper before using the computer. She now feels as if she is in control and spends less time on the computer. She has decided to continue with her studies

### **Conclusion**

In summary we have observed that there are two groups of computer users and they support our conclusions about creativity and the computer

- A) Those who are comfortable on the computer find it easier to be creative on the computer. Technically competent students use the computer as a tool. This group grasps the opportunity of what is in front of them, to manipulate what the computer gives them, to assemble their designs on screen.
- B) Others find that they have to think about what to tell the computer to do. Technically unskilled students find the technology overwhelming and need to conceptualise off the computer, often spending more time than necessary on the computer trying to design rather than just implementing their concept. This group feels negative and hesitant toward the computer and need constant teaching and reassurance.

Theory needs to inform practice. As educationists we have to observe and assess our students needs and adapt our teaching to suit. These questions still remain and are open to debate:

Do we need to re-look at our visual terminology in relation to new technology?  
Should we be encouraging our students to gain competencies in technology before looking at theories of visual communication?

Are our teaching methodologies relevant for today?

Do we continue the old way of visualizing on paper?

Is there a need to increase observational skills in the teaching of computer technology in art and design curricula?

Due to the high cost of equipment and software, can we continue trying to teach both conceptual and technological skills at university?

Do we make knowledge and technology skills an entry pre-requisite for university?

Do students learn technology skills at another institution or do we integrate the learning of design and computing technology??

Are we in danger of weakening professional design education by trying to teach both theory and technology?

Will a programmer in the future develop a conceptual design programme?

## References

Ashton, Philippa. 'Independent Learning in Design. A New Culture in the Design School Studio?' in *European Academy of Design*, Conference.1996

Boekraad and Hugues. 'Graphic Design as Visual Rhetoric: Principles for Design Education.' In Gruson and Staal. (Ed). *Copy Proof: A New Method for Design Education*. Rotterdam: 010 Pub, 2000

Helfand, Jessica. 'De Stijl, New Media, and the Lessons of Geometry'' in Bierut, Drenttel, and Heller. (Ed), *Looking Closer 4*. NY: Allworth Press, 2002. p.166

King Alfred's College for Higher Education. 'Probing intentions of Design and technology students', in Juster, N. (Ed) *The Continuum of Design Education*. UK. p. 25, p.115

Kimbell, Saxton and Miller, *Hidden Talents- Design in Transition in Higher Education*, University of London, Dept Design Studies, Goldsmiths (no date) p.43

Lieberman, Henry. 'Intelligent Graphics', in *Communications of the ACM*. Vol 39, No. 8 August 1996. p.39

Lumsdaine and Lumsdaine. *Creative Problem Solving -Thinking Skills for a changing World*. NY: McGraw-Hill, 1995

Medina, Fernando. 'Design a global Vision', in *Essays on Design 1:AGI's Designers of Influence*. London: Craftsman House, 1997, p.147

Schon, Donald. *Educating the Reflective Practitioner*, London: Jossey-Bass, 1988

Tai, Lolly and Thompson, Catherine Ward. 'Assessing the impact of computer use on Landscape Architecture Professional Practice: Efficiency, Effectiveness, and Design Creativity,' in *Meeting at the Edge: Curriculum and Learning Council of Educators in Landscape Architecture Conference*, Cal Poly State University, 2002. pp.112-116

Wild, Lorraine. 'That was Then, and This is Now: But What is Next?' in Bierut, Drenttel, and Heller. (Ed), *Looking Closer 4*. NY: Allworth Press, 2002. p.143

These 50 excellent graphic design theory lessons will help you understand the process a bit better. Short on Time? It's no surprise designers usually work on tight deadlines. If you are looking for a solid resource with professional and high-quality items, be sure to check out Envato Elements. There are thousands of items, with new ones added every day. Typography. Throughout design history, there have been multiple styles that adopted the grid as their own. One of them is the International Typographic Style. Learn more about the Swiss Style, which used the grid to organize content. Visit Lesson. 5. How to Create a Professional Magazine Layout. This quick introductory tutorial is perfect if you are wondering how to use grids in a magazine layout. In previous methodology articles I have outlined the theory behind Content and Language Integrated Learning (CLIL) and provided a framework for CLIL-type lessons, particularly suited to learners studying content-based subjects in English or as part of a bilingual education programme. Here I provide a specific example of a topic covered in a CLIL style. There is no set format for CLIL lessons, the underlying principles being that language is used to learn as well as to communicate and that it is the subject matter which determines the language that students need to learn. However, this lesson a