

Art, Science and the Importance of Aesthetics in Instructional Design

Kristin Parker

Dr. White

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Introduction

...it is still more likely to seem that even if fine art in general is a proper object of philosophical reflection, it is yet no appropriate topic for strictly scientific treatment. For the beauty of art presents itself to sense, feeling, intuition, imagination; it has a different sphere from thought, and the apprehension of its activity and its product demands an organ other than scientific thinking (Hegel, 1975, p.5).

Although Hegel's commentaries on aesthetics are focused on the fine arts, the point he makes is central to any act of creativity—it is not something that can be fully explained in scientific terms. There will always be elements of "sense, feeling, intuition and imagination" that take creativity out of the realm of empirical knowledge and scientific fact. It is for this reason, when evaluating a design to determine if it is aesthetically appealing, visually successful, or even "beautiful," one would have to leave behind any discussion of scientific evidence and analyze it through a critical lens. Not only are the methods of creating an aesthetically pleasing design sometimes unscientific, the interpretive process that makes an artistic determination also comes from that "different sphere of thought."

The highly visual nature of instructional web sites, CD-ROMs and other programs requires attention to the "artistic" and critical issues of form, aesthetics, graphic design, visual communication, interpretation, and creativity. Quality visuals are becoming increasingly more important as technology becomes a major vehicle for communication and instruction. Learning no longer comes strictly from traditional lectures or books with a few pictures; it is coming from interactive environments, live videos from around the world, television programs, simulations, and many other primarily visual, and increasingly realistic, formats. Because of the centrality of the visual image in these environments, visuals no longer simply reiterate or illustrate; they

communicate. They can set a tone, evoke or express an emotion, be interpreted, and even persuade.

Instructional design theory and methods, however, are founded on scientific principles and the search for empirical knowledge and fact. In Ted Nunan's (1983) book, *Countering Educational Design*, he writes:

Curriculum design is...conceived as a 'scientific undertaking' which applies an amalgam of discipline studies to its service...The commonly identified steps for the design process were: diagnosing needs, formulating specific objectives, selecting content, organizing content, selecting and organizing learning experiences, evaluating and checking for balance and sequence. (Nunan, 1983, p. 71)

The divide between art and science is effecting the quality of design in computer based instruction. The ability to structure content, communicate knowledge effectively, and set learning goals often requires a strong foundation on the scientific and quasi-scientific methods that inform various learning and instructional design theories. In order to better balance the scale of quality computer based instruction, there needs to be an incorporation of the "art" of graphic design with the "science" of instructional design in its application and underlying theories.

The pervading method of this paper is a critical examination of the foundational differences between the methods of graphic and instructional design. In approaching the topic in this manner, it is the goal of this paper to shed some light on the basic assumptions of both types of design and how these assumptions can adversely effect the quality of design in its totality. To do so will require an examination of the relationship between form and function and how the vehicle of instruction plays as important a role in communication as the message itself. To be better instructional and graphic designers requires the understanding that communication occurs in multiple modes; it is the text that is written, the images that are seen, the sounds that are heard, the medium itself, and the experiences of the viewer that help him/her interpret what they see and hear.

A Validating Critique of Critical Theory

To set the framework for this paper, it is necessary to give a brief definition of critical

theory and how it relates to research in instructional technology. In their book, *Becoming Critical: Education, Knowledge, and Action Research*, Carr and Kemmis (1986) describe the impetus that made critical theory a necessary alternative to scientific research. To the early critical theorists:

Science had become an ideology, a culturally produced and socially supported, unexamined way of seeing the world which shapes and guides social action. As such, science's role had become one of legitimating social action by providing "objective fact" to justify courses of action. Questions of values underlying these courses of action were believed to be beyond the scope of science and were thus left unexamined. Scientific results merely distinguish more effective ones and explained how outcomes occurred—not whether or not they should be allowed to occur...The intellectual project of critical theory thus required recovering from early philosophy the element of social thought, which uniquely concerned the values judgements and interests of humankind, and integrating them into a framework of thought which could provide a new and justifiable approach to social science. (Carr & Kemmis, 1986, p. 132)

The main method of critical theory is "immanent critique, which proceeds through forcing existing views to their systematic conclusions, bringing them face to face with their incompleteness and contradictions, and ultimately, with the social conditions of their existence." (Young, 1990, p. 18) This "immanent critique" is common to the research methods found in art, history, sociology, and philosophy, and will be beneficial to discussion of the role of art and aesthetics in instructional design.

In order to follow this critical method as it is described above, this paper will examine the theories that have made education, instructional design and instructional technology a science and then force them to their systematic conclusions. Critique of this nature is intended to bring these theories face to face with each other and their incomplete and contradictory ability to incorporate the inclusion of such ideas as aesthetics, creativity, visual communication and interpretation within their discourse and methods. In the *Handbook of Research for Educational Communications and Technology*, Nichols and Allen-Brown outline six basic categories of research issues most common to critical theory within the subject matter of educational technology. These issues are: Foundational issues,

societal relations, communication and media education, ethics, action research and ecology (Nichols and Allen-Brown, 1996, p. 236). For the purposes of this work, foundational issues, communication and media education will be the most useful.

Paying attention to critical theory allows researchers within educational technology to evaluate the assumptions upon which their area of study are based, to evaluate questions of self and community, the character of technology and how that character effects learning, and freedom. The placing of educational technology solely within the realm of science does not give it a social and human element. This lack allows no place for discussion of aesthetics, graphic design, visual communication and interpretation within its discourse. Critical theory allows the inclusion of these topics to be made possible within instructional design and technology.

Art: The Aesthetics of Graphic Design

Although schools of thought in graphic design shift as often as they do in other curricula, it is generally conceived of as "a form of aesthetic expression, communication, persuasion, information management, problem solving or as a vehicle for social responsibility and/or political activism." (Smith, 1994, p. 300). In what would be typical of most beginning graphic design texts, Paul Zelanski and Mary Pat Fisher define design in the following way, "To design is to endow optical sensations-or images-with meaning. It (the mind) refuses to perceive the world as a chaotic jumble of meaningless sensations. Instead, it quickly registers all incoming stimuli and assigns them some orderly meaning." (Zelanski and Fisher, 1996, p. 2) From the beginning, an artist or graphic designer is made aware that he or she is going to learn how to "endow optical sensations...with meaning." Students of graphic design take a multitude of classes designed to teach how to manipulate image and meaning. However, to be creative and have a successful design, intuition eventually takes over and the guidelines remain part of the visual vocabulary but secondary to creative intuition.

...art is not just the mechanical manipulation of materials and design principles; it is a creative process. Beyond a certain point, a masterpiece simply defies analysis, for its whole is much more than the sum of its parts. This effect is sometimes called synergy—two or more elements interact to create an effect of which they are individually incapable. The whole therefore cannot be fully understood by analyzing its parts. Yet it is possible to recognize aspects of the creative process that make this synergy possible. (Zelanski and Fisher, 1996, p. 29)

Merton E. Thompson in *his essay "Design Consideration of Visuals"* writes:

...visuals are divided into two areas: design elements and design principles. Design elements may be thought of as the building blocks or basic units of construction of the visual. All visuals are composed of one or more of these elements. Design Principles are guidelines for using the elements and the resulting components of a visual to communicate the intended message. The principles are not inalterable rules, but are guidelines of effective ways visual materials may be put together. Creative and successful designers select appropriate design principles to apply to their designs. (Thompson, 1994, p. 166)

Thompson's essay is geared towards educators and is very thorough in defining elements such as line, and shape along with principles such as, balance and point of view. These are, inarguably, very important concepts that graphic designers must learn. He points out how important it is to consider the audience and determine the objectives and purpose of the graphics. Again, these are crucial considerations in creating high quality graphics. However, in his conclusion he writes that once the audience is defined and the objectives established, it is then time for the "...selection of design elements and principles to make the visuals as effective as possible..." (Thompson, 1994, p. 81). As he wrote earlier, this is the creative part of the process. What is not mentioned here is that, it is at this point that a talented graphic designer lets creativity and intuition take over in the manipulation of the design principles. It is not a "mechanical" process.

Creativity is the key component in creating high quality visuals that successfully communicate the desired message. Creativity can be defined as proficiency in four distinct areas: fluency, flexibility, originality, and elaboration. Fluency is defined as the ability to use stored information when it is needed. Flexibility is an aptitude for being able to restructure materials in ways

which are free from conventions. Originality is the ability to deviate from the norm. Finally, elaboration refers to the ability to produce additional detailed information to basic material. (Couch, Caropreso, and Miller, 1994, p. 281-283) These types of skills are what is developed when graphic designers are encouraged to use these skills to their fullest potential in the act of creating. They are also developed when graphic designers are required to have their work formally critiqued. It is a common practice in schools of art and design to have to defend your work; to explain why a certain color, font, layout was used, to defend a visual message and explain how these elements accomplish that goal. Generally, artists and graphic designers are taught to be critical of what they create in addition to learning the basic rules of aesthetics and design.

Aesthetics refers to the study of beauty or good taste. In essence, the graphic designer begins by learning some basic rules of composition and form, and then advances to learn how to successfully bend and break those rules so that creativity, concept and interpretation create the meaning as well as solidly designed composition and form. Students of art and graphic design learn, if they do not already know, that the idea of beauty exists, but they also learn that interpretation can change the definition of beauty, and the manipulation of visual elements can alter that beauty as well. Instructional design curricula and research seems to remain in the first stage of looking for hard, fast rules to ensure a successful design instead of pairing that foundation with the development of creative thought, conceptualization and critique.

Art: A Graphic Designer's Need of Structure

In looking toward the future of graphic design education, graphic designers and instructional designers alike, are realizing that the technology is requiring them not to simply rely on their own specialized modes of communication. Large, complex projects, like high-end multimedia instructional programs, require a variety of communication modes such as auditory, visual, and textual. These differing modes require a structure that is designed by both "artistic" and "scientific" methods.

Insofar as graphic designers are communications generalists par excellence, they are supposed to be capable of managing any formal aspect of communication presented. But they should become more conscious of the fact that they're not the only ones who communicate. Designers have to rethink their role in multimedia communication. The traditional role of designer as a rather autonomous professional who gives form to work that other professionals have finished earlier has become unproductive—or even counterproductive—in a lot of communication processes. In the new electronic media, any formal decision has a direct effect on the contents that are being communicated. Thus the author has, in effect, become coauthor and coeditor of the message. (Bruinsma, 1998, p. 60)

In addition to graphic designers needing to become aware of the complexity of communication in a multimedia environment, they are also finding an increasing need for designers that can see the "Big Picture"; people that can envision and manage the entire concept of a project. There will always be a need for specialists such as production artists, programmers, photographers and the like. However, there is a growing need for those who can conceptualize a project in its entirety and be able to systematically analyze how solidly a project's structure is designed, as well as, manage the more critical issues of aesthetics, creativity and communication/interpretation. Max Bruinsma in his essay, "Design Interactive Education" stated:

But maybe there's an even greater need for designers who are capable of seeing the whole picture before it's made. People who know enough of each specialism to direct the totality of the ever-more-complex design process. These are not necessarily the same people who execute the visual end product. In multimedia communication, the role of the designer is shifting from visualizing to conceptualizing. (Bruinsma, 1998, p. 61)

Art: Becoming a Creative Visual Consumer

On one side of the creative coin is the creator. A graphic designer is creating the visual message with a specific objective. The viewer is on the other side of the creative coin and the recipient of the message. There is a responsibility on the part of the viewer to be creative as well. He/she should be flexible in interpreting multiple messages from an image, fluent in using experiential resources to interpret an image, original in being able to interpret more than just the norm,

and be able to elaborate on the interpretation that has occurred. This type of creativity is becoming increasingly important as today's technology is used to inform the public through increasingly visual means. "Creative thinkers analyze what they see in the various media, distinguish between fact and fiction, make informed judgements and express thoughtful evaluations of their perceptions." (Couch, Caropreso, and Miller, 1994, p. 289)

Graphic designers create with a purpose and an intended message. However, the viewer may not always be aware of this purpose. Many scholars in educational technology who are interested in the meaning of images, generally base their research on critical methods. They tend to look at the social impact of images and technology and how they might communicate biases, particularly in issues of race, gender, class, etc. In her article, "*Educational Films Against Critical Pedagogy*," Elizabeth Ellsworth critically analyzes how educational films use conventions that convey meaning opposite to the goals of the instructor. She writes:

Products of the "social imagination" underlying education can only be represented in language, images, and narratives. This points to the necessity for educators to understand how representations of the future figure consciously and unconsciously in the language, images and in narratives of curriculum and everyday life in schools. Through representation and narratives, educational media play a central role in education's project of imaging the future and offering students a place to stand in it.

However...not all visions of the future are benign. (Ellsworth, 1990, p. 11)

Many scholars like Elizabeth Ellsworth, Denis Hlynka, and Henry Giroux that fall into the category of critical or postmodern theorists ask the same basic questions by studying the messages within the message. Ellsworth writes in another article on educational media and popular culture:

Dramatization functions not only as a knowledge form that recounts curriculum material in the service of interests embedded within the form, but also as a mode of address that attempts a specific type of manipulation of the audience and solicits a particular type of learning experience. The effect of this is to privilege some knowledge over others, thereby constructing a hidden curriculum. (Ellsworth, 1989, p. 57)

To be a creative visual consumer one has to see beyond the obvious and find other, often hidden messages. As instructional designers creating for primarily visual media, to audiences that receive increasing amounts of instruction through popular modes of visual communication (i.e., the Internet, CD-ROM, Video, etc.) visual creativity, conceptualization and interpretation are crucial to the design. If these things are not considered, then one is not recognizing the fact that there is a message within the visual language. Secondly, one is not able to see the product as a whole in which the medium, form and content all play a role in the instruction. Finally, one is not realizing that the viewer brings his/her experiences as resources for interpreting the material. Ignorance of these things could produce adverse results and the creation of the wrong message. To incorporate the art of creativity and critical thinking to instructional design curriculum would enhance the creation of technology based instructional materials, as well as, enhance the critical evaluation of those materials.

Science: Instructional Design as a Model Science

As stated in the introduction, the methods of science are the most prominent methods in educational research. This is particularly true of educational technology and instructional design. "Educational technology...has its theoretical base within the framework of a scientific, behaviorally based model of rationality" (Koetting, 1983, p. 8). The physical manifestation of this trend is found in the research journals themselves. In his article, *Questioning the Questions of Instructional Technology Research*, Thomas Reeves writes that:

The complete absence of any articles in these journals (ETR&D and JCBI) that are postmodern in intent or that employ critical theory as a methodology is disappointing, but not too surprising. First, Hlynka and Belland's (1991) volume on the application of postmodern criticism to instructional technology may not be widely known. Second, the gatekeepers of ETR&D and JCBI appear to have strong preferences for empirical research employing quantitative methods. They may be unwilling or unable to entertain such radical departures from standard research methods as have been proposed by Yeaman (1994) and other critical theorists. As a result, instructional design is based on an empirical, scientific model that relies on controlled environments for its outcomes.

Currently, the instructional design models used to create the content of instructional media rarely include the overall graphic look and concept as part of the design phase and ignore the way in which visuals communicate. This is due to the fact that the issues of aesthetics, visual communication, and interpretation do not easily fit into that scientific model. Streibel (1991) states that:

an instructional designer cannot rely on a technical approach to design. Rather, an instructional designer has to be guided by a practical, human interest and support the instructional and learning processes that actually take place. Five implications follow for the designer: (1) Find ways to construct meaning in context. (2) Find ways to create resources that support meaning making. (3) Give up designing teacher user-proof instruction. (4) Give up seeing everything in terms of skills; instead, see learning in terms of judgments, collective deliberation, and collective meaning making. (5) Participate directly in learning. (Streibel, 1991, p. 8)

To go outside of this current model and include critical analysis as a theoretical method of inquiry may be difficult to instructional designers trained in the scientific traditions of its discourse. However, its incorporation will allow a more enriched and critical examination of the language of media, aesthetics and interpretation. This would lead to the development of individuals that are better able to conceptualize a project in its fullness and entirety.

Science: Where is the Art in This Picture?

The practical manifestation of science as applied to instruction design is in the instructional design model itself. Instructional designers are taught a variety of design models that provide step-by-step procedures for structuring a program's content, developing that content, and evaluating the final product. These models are based on the scientific foundations common to educational and learning theory. Within these models, graphic design issues generally fall within the development stage of instructional design; the stage after the program's structure and content design is created. Where do the aesthetic and communicative issues of graphic design fit into the phases of instructional

design models? The following is a typical example of how graphic issues are incorporated into these models:

In the Design phase, your role becomes more supervisory. You've put all the content together, now you'll meet with the people doing the graphics, audio, video, and programming. You may be responsible for producing certain media elements, but your main role will be to meet with and give feedback to the media production specialists. You'll want to make sure that they are taking the product in the direction you want. There's a lot of experimentation and testing in this phase as the team works together to design samples of each media type, identify production tasks and build more advanced prototypes. ...

We'll take the sketches and storyboards from the Architecture phase and give them some personality. Usually, this means having a graphic artist create a mood for the project. A lot has to do with the content. For example, if your content has to do with 18th century poetry, the project will probably look different than if it were about modern biology. Bring any ideas that you may have. If you've seen other products that you like, bring them (or at least some screenshots) with you when you meet with the artist. The artist will develop samples based on the prototype content identified in the previous step. (<http://www-rohan.sdsu.edu/dept/its/cycle/design.html>)

While traditional instructional design models such as the Dick and Carey Design Model, the Hannafin and Peck Design Model, and the Jerrold Kemp Design Model all have their differences, there are similarities. Primarily, as an instructional designer, one is to go through a series of steps to design effective instruction. These models generally place these steps in the following order: the analysis phase, the design phase, the development phase, the implementation phase and the evaluation phase. Barbara Seels and Zita Glasgow in their recent edition of *Making Instructional Design Decisions*, place graphic design considerations in the development phase of their model. When defining the different stages, Seels and Glasgow compare the design and development in the following way:

Design Phase-Information on the analysis phase forms the foundation for the design phase. During analysis, the designer made decisions about what will be taught. Now, decisions are made about how it is taught. The design phase is driven by a search for the answers to the following questions: What are the objectives? How will we know if they are met? What teaching strategies will

achieve the objectives? What delivery systems are most cost effective?

Development stage-In the development phase, the materials are authored, reviewed, produced, and validated. The activities carried out during development will depend on the instructional media to be produced. The driving question during production is, "How will the materials look and sound?" The physical features of the material are produced during this phase, and it the designer's job is to ensure that the principles of learning are incorporated into the materials as specified during the design phase. Depending on the media requirements, the instructional designer may work closely with writers, film or video producers, directors, actors, editors, artists, photographers, and computer programmers. (Seels and Glasgow, 1998, p. 11-12)

By placing graphic design considerations only in the development stage, the design models are denying the fact that how something looks or sounds has a direct relationship to meeting the instructional objectives. Although these models are applied to various modes of teaching, when they are applied to the design of computer based instruction, particularly multi-media instruction, this separation can greatly hinder the effectiveness of a design. The potential of the technology has made it so.

Seels and Glasgow write about how an instructional designer is to work with the production team during the development phase. "The more complicated the delivery system, the more competencies are needed on the team and the more costly the production process will be. It is the instructional designer's responsibility to ensure that the presentation's look and sound support rather than interfere with the achievement of the instructional objectives." This is good advice, however there might be less problems with issues of a design's look and sound interfering with instructional objectives, were the visual qualities thought about in the initial stages of the design process, when the content is being structured. (Seels and Glasgow, 1998, p. 246) Earlier in their book, they provide this scenario on "Ensuring the integrity of the design":

Suppose you have approved a storyboard for a slide-tape presentation on "What Are Non-Print Materials?" The storyboard shows a character looking at pictures on a screen. In an attempt to add interest, the artist pictures voluptuous women on the screen, the design has been compromised; the materials need to be exemplars without stereotypes. (Seels and Glasgow, 1998, p. 135)

This would not have happened if, first, the instructional designer had taken the graphic qualities of each screen to the extent that all elements of the screen were decided upon during the design phase. Or second, if the instructional designer worked closely with an art director on making all these decisions during the initial design phase. To leave all these types of graphic design issues to the development phase runs the risk of a production artist making up his or her mind on a graphic with very little knowledge of what the graphic is going to be used for or what the scope of the project is. The creation of quality visuals is more than just knowing how to physically create them.

Science: The Form and Function of Instructional Design Education

Graphic designers learn that the form of the visuals they create is as important to effective communication as the individual content elements themselves. Artistic and interpretive issues of creative concept, aesthetics, and a designer's intuition have a strong influence in the critical evaluation of a graphic designer's work. Often in instructional design, there is not as close a relationship between form and content. The "artistic" methods of graphic design that help to create the form of a project are not easily incorporated into the "science" that informs the methods of instructional design. This separation affects how graphic design issues are taught in instructional design programs.

In traditional instructional systems design (ISD), instructional designers typically conceive of a distinction between content and form. Content is seen as something that is instantiated within form. The subject matter expert provides the content and the instructional designer is charged with shaping that content into cohesive instruction...Here, form is a kind of tool. Debates on postmodernism have brought new outlooks to the discussion. One of the earmarks of postmodernist perspectives is the inability to see form as something separate from content...The discourse—the form—shapes and informs the content itself...Form is no longer a tool, but inextricably linked with the content. (Saito, Rathburn, et. al., 1999, p. 2)

In instructional design curricula, discussion of graphics usually takes on two forms. Often times, students are taught about different types of graphics and the tools used to create them, plus some general rules about color, contrast, type, etc. On the practical side, most students take classes which highlight various applications used to create graphics and multimedia applications.

The emphasis in these classes is placed on using the tools and learning which types of graphics work best for certain educational and technical situations. Emphasis is rarely placed on pushing the creative boundaries of these tools or stressing the importance of concept over the task of production.

Course descriptions provide insight into how graphics design issues are taught in instructional design curriculum. In terms of the use and production of graphics, the following course description provides a typical example of what a student might learn:

The course will provide you with intensive hands-on experience in production of multimedia products. . . . Emphasis is placed on the design process involved in multimedia development . . . ranging from content expert to quality assurance engineer. At the completion of this course you will be able to produce a complete, information-based multimedia product using a web-authoring tool. . . . To reach this goal, you will learn to: . . . design attractive and effective screens, design navigation schemes for moving within your multimedia program, and incorporate appropriate interactivity into your program. . . . (<http://coe.sdsu.edu/courses/et541/>)

The course description indicates that the student will learn some basics about graphic design and creating interfaces that are attractive and effective. The final assignment is to build a multimedia web page on a topic of the students own choosing, where the student is required to start from the analysis phase, go through the design phase, onto flowcharting and storyboarding and finally production. This type of assignment is not uncommon in instructional design classes. The following questions are asked when evaluating the interface design:

Interface Design: Do I know what to click? Will something unexpected happen when I click it? Are there obstacles preventing me from clicking something? Can I easily get the information I am seeking?

Screen Design & Layout: Is each element on the page in a place that is easy to access? What happens to the layout if I change the size of the window? What happens to the layout if I change the default font, size, etc.? How much scrolling do I have to do? Does each implementation of a media element serve a proper purpose? (http://coe.sdsu.edu/courses/et541/assignments/assign_finalproj.htm)

This particular evaluation of screen and interface design mentions nothing about the aesthetic and creative visual qualities of the project. The questions to ask might be: Are the graphics going to make the viewer want to read and learn the content? Is there a solid concept or metaphor behind the program's look and content? Or, are there any underlying messages that may be contrary to the educational goals? Analyzing goals, structuring content, planning storyboards and flowcharts, and usability issues are all very important concerns when designing multimedia programs. However, if the above questions are not asked, then the effectiveness of that software could be compromised.

Art and Science: Form and Function Come Together

While instructional designers are learning how many lines of text you are allowed to have or that pictures can grab attention, a graphic designer is learning what font best conveys the desired meaning or which picture and in what style best coincides with a desired response. They are learning such visual principles as: repetition, variety, rhythm, balance, emphasis, economy and the elements of design that can manipulate these principles: line, shape and form, space, texture, value, color, and perspective. If a good instructional designer must know the basic processes, terms and have had some experience with programming in order to make sure that a program functions well, would it not also be in the best interest of the instructional designer to have a strong understanding of graphic design terms and the creative process? This is particularly important because the mode of communication in developing multimedia educational programs is primarily visual.

Instructional designers now have technology available that allows students to interactively learn about time periods, places, cultures, even scientific concepts by being visually and virtually placed into those worlds. An example of this could be to teach a student about human arteries by simulating how a red blood cell travels through the arteries. This could be done by designing a simple animation or a fully developed 3-D environment where the student feels like he or she is actually a red blood cell traveling through the heart, arteries and veins. Both of these forms are visual. To leave all

graphic design decisions until the instructions are handed down from the design phase, places no emphasis on the relationship between the form the instruction takes on and the instruction itself.

The Study: A Manifestation of Form and Function

Nichols and Allen-Brown conclude their chapter in *The Handbook of Research for Educational Communications and Technology*, with some suggestions on how educational technologists might use critical theory to enhance the research done in the educational technology field. They suggest that:

- Educational technologists should become more engaged with research about many foundational, essential, provocative, and morally pertinent issues that are largely unconscionably ignored. The issues include aspects of the philosophies and the epistemologies of instructional design and educational media generally....
- Educational technologists should be developing greater amounts of nonprint forms of critical scholarship. Very few materials in forms other than print were found in researching scholarship for this chapter. Yet, multimedia critical approaches to understanding educational technologies would lead to understandings that are far more humanly accessible, widespread and, so, potentially freeing. (Nichols and Allen-Brown, 1998, p. 246)

The first of these two suggestions is manifested in the object of this paper itself. As stated earlier, it is the method of this paper to critically examine the foundational differences between the methods of graphic and instructional design. The goal, therefore is to shed some light on the basic assumptions of both types of design and how these assumptions can adversely effect the quality of design in its totality.

The second suggestion will be manifested in the object of a website. The accompanying website will be a primarily visual and conceptual look at the topics discussed in this paper. It will not simply be an online version of this paper with the occasional links to other websites, definitions, or footnotes. It may contain some of these things, but its primary function is to describe the issues in this paper in other multimedia modes which focus on the conceptual and interpretive forms of communication.

An example of this type of treatment might occur when talking about the nature of graphic design education and its emphasis on visual communication. The website could have links to images that show how mood and balance can be altered by simple changes in color or composition. Or, the conceptual design of the entire site can revolve around the split between art and science, with a calling to bring these two worlds together as a conclusion. The content structure can reflect that split as well as the visual metaphors that make up the website itself. It seems logical that instructional designers in the technology field should not only push the envelope in developing high-tech instruction, or aim to increase the number of studies they can create and the publications they can write. The medium that they are being trained to use to its fullest potential should also become a major mode of communication about the field that they are in. It is the goal of this website to become a physical, visual, real-world application of traditional scholarly research in the field of Instructional Technology.

Conclusion

The current state of the relationship between instructional and graphic design is separate and unequal. The graphic designer has developed a strong knowledge of visual communication, interpretation, and a keen, intuitive sense of aesthetics, concept, and visual quality. The instructional designer has a strong background in communicating knowledge, structuring ideas and content so that they are easily and effectively learned, and various methods of instruction. Currently both groups are producing vast quantities of multimedia products while knowing very little of the substance of each others' backgrounds and goals. In reference to the product itself, a truly successful instructional multimedia program, without a doubt, requires a persuasive, informative, motivating, effective and aesthetically pleasing design in totality. How does this change the graphic/instructional design dynamic?

Both groups need to understand more about the importance of well balanced form and content. Students in graphic design should be able to take a concept and design, and analyze it in terms of content and goal achievement, as well as looks. Instructional designers need to put away

the methods and step by step models at some point in their education and develop skills in creativity, conceptualization, interpretation, and critique. The melding of these two worlds would produce designers of either camp that can more readily see the whole scope of a project instead of only seeing separate worlds of form and content.

Bibliography

Graphic Design Issues for Educational Web Sites. <<http://www.coe.uh.edu/projects/SITE/graphicdesign.html>> (1997, October 17, 1999).

Alessi, Stephen M. and Stanley R. Trollip. (1991). *Computer Based Instruction: Methods and Development*, Second Edition. Englewood Cliffs, New Jersey: Prentice Hall.

Briggs, Leslie J., Kent L. Gustafson, Murray H. Tillman. (1991). *Instructional Design: Principles and Applications*, Second Edition. Englewood Cliffs, New Jersey: Educational Technology Publications.

Bruinsma, Max. (1998). Design Interactive Education. In Heller, Steven. *The Education of a Graphic Designer* (pp. 57-62). New York: Allworth Press.

Carr, W. and S. Kemmis. (1986). *Becoming Critical: Education, Knowledge and Action Research*. Philadelphia, PA: Falmer.

Cohen, Louis and Lawrence Manion. (1994). *Research Methods in Education*, Fourth Edition. London and New York: Routledge.

Couch, Richard A., Edward J. Caropreso with Helen B. Miller. (1994) Making Meaning from Visuals: Creative Thinking and Interpretation of Visual Information. In D. M. Moore and F. Dwyer. *Visual Literacy: A Spectrum of Visual Learning*, 277-292. Englewood Cliffs, New Jersey: Educational Technology Publications.

De Vaney, Ann. (1994). *Watching Channel One: The Convergence of Students, Technology, and Private Business*. Albany: The State University of New York.

Dick, Walter and Lou Carey. (1990). *The Systematic Design of Instruction: Third Edition*. Harper Collins.

Eisner, Elliot W. (1998). *The Enlightened Eye: Qualitative Inquiry and the Enhancement of Educational Practice*. Upper Saddle River, New Jersey: Merrill, an Imprint of Prentice-Hall.

Ellsworth, Elizabeth and Mariamne H. Whatley, eds. (1990). *The Ideology of Images in Educational Media: Hidden Curriculums in the Classroom*. New York and London: Teachers College Press.

Ellsworth, Elizabeth. Educational Films Against Critical Pedagogy. (1990). In *The Ideology of Images in Educational Media: Hidden Curriculums in the Classroom*, 10-26. New York and London: Teachers College Press.

Ellsworth, Elizabeth. (1989). Educational Media, Ideology, and the Presentation of Knowledge Through Popular Culture Forms. In Henry A. Giroux, Roger I. Simon and Contributors. *Popular Culture: Schooling and Everyday Life*, 47-66. Massachusetts: Bergin and Garvey Publishers, Inc.

Fleming, Malcolm and W. Howard Levie. (1993). *Instructional Message Design: Principles from the Behavioral and Cognitive Sciences*, Second Edition. Englewood Cliffs, New Jersey: Educational Technology Publications.

Cagné, Robert M. and Leslie J. Briggs. (1979). *Principles of Instructional Design: Second Edition*. New York: Holt Rinehart and Winston.

Giroux, Henry A. (1991). *Postmodernism, Feminism and Cultural Politics: Redrawing Educational Boundaries*. Albany: State University of New York Press.

Giroux, Henry A., Roger I. Simon and Contributors. (1989). *Popular Culture: Schooling and Everyday Life*. Massachusetts: Bergin and Garvey Publishers, Inc.

Giroux, Henry A., Anthony N. Penna, and William F. Pinar. (1981). *Curriculum and Instruction: Alternatives in Education*. Berkeley, California: McCutchan Publishing Corporation.

Hegel, G.W.F. (1975). *Aesthetics: Lectures on Fine Art*. Oxford: Clarendon Press.

Heller, Steven. (1998). *The Education of a Graphic Designer*. New York: Allworth Press.

Heller, Steven. (1998) Interview with Krzysztof Lenk. In *The Education of a Graphic Designer* (pp. 203-207) New York: Allworth Press.

Hlynka, Denis and John C. Belland. (1991). *Paradigms Regained: The Uses of Illuminative, Semiotic and Post -Modern Criticism as Modes of Inquiry in Educational Technology*. Englewood Cliffs, New Jersey.

Jonassen, David H., Ed. (1996). *Handbook of Research for Educational Communications and Technology*. New York: Macmillan Library Reference USA, Simon & Schuster Macmillan.

Kellner, D. (1991). Reading Images Critically: Toward a Postmodern Pedagogy. In H. A. Giroux, ed. *Postmodernism, Feminism and Cultural Politics: Redrawing Educational Boundaries*, 60-82. Albany, NY: SUNY Press.

Kemp, Jerrold E., Gary R. Morrison, Steven M. Ross. (1998). *Designing Effective Instruction*. Upper Saddle River, New Jersey: Merrill.

Koetting, J. R. (1983). *Philosophical Foundations of Instructional Technology*. Paper Presented at the annual meeting of the Association for Educational Communications and Technology, New Orleans, LA.

Moore, David M. and Francis Dwyer. (1994). *Visual Literacy: A Spectrum of Visual Learning*. Englewood Cliffs, New Jersey: Educational Technology Publications.

Nichols, Randall G. And Vanessa Allen-Brown. (1996). *Critical Theory and Educational Technology*. In David H. Jonassen, Ed. *Handbook of Research for Educational Communications and Technology*. New York: Macmillan Library Reference USA, Simon & Schuster Macmillan.

Nunan, Ted. (1983). *Countering Educational Design*. London and Canberra: Croom Helm.

Record, Dan. *Functional Role of Graphics*. <<http://coe.sdsu.edu/eet/articles/roleofgraphics/start.htm>> (1995, October 17, 1999).

Reeves, Thomas C. *Questioning the Questions of Instructional Technology Research*. <<http://www.gsu.edu/~wwitr/docs/dean/index.html>> (April 17, 2000).

Reigeluth, Charles M. (1996). A New Paradigm of ISD? *Educational Technology*, 36, 3, 13-20.

Reigeluth, Charles M. (1983). *Instructional-Design Theories and Models: A New Paradigm of Instructional Theory*, Volume 2. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Ross, Steven M., Howard Sullivan, and Robert D. Tennyson. (1992). *Educational Theory: Four Decades of Research and Theory*. *Educational Technology Research and Development*, 40, 2, 5-8.

Saito, Ron S., Gail A. Rathbun and David A. Goodrum. *Creating the Enriched Case: Using Aesthetics as an Alternative Approach to Designing a Multimedia Case*. <<http://www-csc195.indiana.edu/csc195/saito.html>> (October, 1999).

San Diego State University. *Course Schedule: EDTEC 541, Multimedia Development*. <<http://coe.sdsu.edu/courses/et541/>> (October 22, 1999).

San Diego State University. *Course Schedule: EDTEC 561, Advanced Multimedia Development*. <<http://coe.sdsu.edu/courses/et5611/syllabus/info.htm>> (October 22, 1999).

San Diego State University. *The Design Cycle: What to Expect when Expecting Multimedia*. <<http://www-rohan.sdsu.edu/dept/its/cycle/design.html>> (October 22, 1999).

Scott, David and Robin Usher, Eds. (1996) *Understanding Educational Research*. London and New York: Routledge.

Seels Barbara and Zita Glasgow. (1998). *Making Instructional Design Decisions*, Second Edition. Upper Saddle River, New Jersey: Merrill.

Seels, Barbara B. (1995). *Design Fundamentals: A Reconsideration*. Englewood Cliffs, New Jersey: Educational Technology Publications.

Smith, Marilyn Crafton. (Autumn 1994). Culture is the Limit: Pushing the Boundaries of Graphic Design Criticism and Practice. *Visible Language*, 28.4, 298-316.

Streibel, M. J. (1991). Instructional Design and Human Practice: What can we learn from Habermas's theory of technical and practical human interests? In R. Muffoletto and N. N. Knupfer, eds. *Computers in Education, Social, Political, and Historical Perspectives*, 141-162. Cresskill, NJ: Hampton

Thompson, Merton E. (1994). Design Considerations of Visuals. In D. M. Moore and F. Dwyer. *Visual Literacy: A Spectrum of Visual Learning*, 165-182. Englewood Cliffs, New Jersey: Educational Technology Publications.

Utah State University, Instructional Technology, Course Informations. <<http://www.coe.usu.edu/it/course/descriptions.html>> (October 22, 1999).

Wiersma, William. (1991). *Research Methods in Education*, Fifth Edition. Boston: Allyn and Bacon.

Wilson, Brent G. The Postmodern Paradigm. <<http://www.cudenver.edu/~bwilson/postmodern.html>> (March 1997, October 15, 1999).

Yeaman, Andrew R. J., Denis Hlynka, Jane H. Anderson, Suzanne K. Damarin, and Robert Muffoletto. (1996). Postmodern and Poststructural Theory. In David H. Jonassen, Ed. *Handbook of Research for Educational Communications and Technology*. New York: Macmillan Library Reference USA, Simon & Schuster Macmillan.

Young, R. (1990). *A Critical Theory of Education: Habermas and Our Children's Future*. New York: Teacher's College Press.

Zelanski, Paul and Mary Pat Fisher. (1996). *Design Principles and Problems*. Fort Worth: Harcourt Brace College Publishers, 1996.