Memo

To: Technical Communication M.S. Faculty

From: Caroline Brooks

Date: January 11, 2005

Re: A pictorial semiotic analysis of information design in online science and math courses at NC State University

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Overview

I propose creating a website for submission to the ACM SIGGRAPH Web Resources: Learning on the Web (http://www.siggraph.org/cgresources/displaycategory.php3?category_id=1). The website will include original research focusing on the application of semiotics theory to visual graphics as they appear within online NC State University science courses. This proposal is a requirement of English 675, the final projects course of the M.S. program in Technical Communication at NC State University.

Problem or Opportunity

Forms of communication vary based on their accompanying strengths and weaknesses. Verbal communication alone cannot reveal complex categories and concepts found in science. Distinctions such as quantity, co-variation and topological relationships are more accessible through the application of pictorial images and mathematical equations.

From a historical prospective, the focus of information design has been on user interfaces. Visual semiotics in turn has been applied historically to photography and advertisements. There does not appear to be an existing source of study that combines information design and visual semiotics (http://www.arthist.lu.se/kultsem/sonesson/pict_sem_1.html).

I will argue that through the application of semiotic theories to visual images, online science courses will communicate their content more effectively and successfully to students.

The primary audience for this project is ACM SIGGRAPH online instructional designers. The website will include comprehensive definitions of applied semiotic theories, as well as usability testing results supporting the website's information design recommendations.

While resources and time constraints limit the size of this study, the expectation is that test results will support the direct application of semiotics for the successful communication of visual scientific concepts.

Objectives / Criteria

The online science course graphics will be analyzed, so as to determine which semiotics theory and its application to visual graphics is most successful in communicating information.

A needs analysis will be necessary once courses are selected, and answers will be identified to the following questions:

- Does the website's visual imagery add to the subject matter, or simply duplicate the ideas listed in the written text?

- Are the visuals appropriately placed throughout the lesson? Are there too little or too many visuals present for effective learning?

- Is the correct visual applied to the subject matter (for instance, a mathematical equation versus a graph)?

Product or Deliverable

The final planned product is a website to be listed among the ACM SIGGRAPH Web Resources. A total of three online science courses will be assessed, and feedback from students taking part in the study will be accumulated so that consistent themes, theories and applications are identified. Final information design recommendations will be made based on the online course's usability testing results and semiotic analysis of the visual imagery incorporated into the websites.

Work Plan

Resources to be used:
1. Theories – Ferdinand de Saussure and his definition of semiology and language versus Charles Sanders Peirce and his three kinds of signs – icons, indices and symbols
2. Concepts - pictorial semiotics, linguistic structuralism, Peircean semiotics, Saussurean concepts
3. Guidelines – to be established
4. Standards – to be established
5. Technology – Usability testing will occur at the usability testing lab at NC State University
6. Information gathering strategies – completion of online lessons by student participants, student questionnaires, video of usability testing sessions

Schedule:

August 26, 2002 – Project Proposal due (to include Heading, Overview, Problem, Objectives, Deliverable and Work Plan)

September 9, 2002 – Project Proposal Revision due

September 23, 2002 – Project Progress Report due (to include needs analysis results, course participation listing, online lesson identification, student questions identification, mock-up of website)

October 9, 2002 – Draft I to consultants due (to include electronic and hardcopy materials required for defense)

November 4, 2002 – Draft II to consultants due

November 13, 2002 – Practice Defense

November 25, 2002 – Final Drafts to consultants due

December 4, 2002 – Project Defense