From Paint To Bytes:
A Web-Enhanced Approach To Teaching Color Theory

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Abstract

Color theory courses in art programs have been taught mostly with paint and colored papers. This paper describes an experimental, computer-based color theory course designed around the web. The primary tools used in the course were: a custom-designed color software, Blackboard, and a course web site. The activities focused on computer-based hands-on experimentation with the RGB color model, color properties, color coordination (harmony and contrast), color interaction effects, and color communication.

Introduction

From a visual communication standpoint, color is a set of perceptual, psychological and cultural codes that has the power to add to the impact of visual messages. Color training is a fundamental component to the professional development of artists and designers. Despite that, very few art schools have courses devoted exclusively to color theory. In most cases, color is integrated in studio courses both in fine arts and design programs.

The approaches to teaching color in art programs are varied. However, according to Linda Holtzschue (2001, p. 7), *"most color courses today have their foundations in the teachings of Albert Munsell (1858-1918) and Josef Albers (1888-1976)."* Munsell's methods are based on his color system, which provides a logical way to look at color properties and their relationships. Albers was interested in looking at color in various contexts, rather than in isolation within a system. While Munsell provided a logical way to look at color, Albers provided an intuitive and exploratory way to deal with it.

The Munsell Color System is one of the most known and used color models today (Stromer, 1999). His three-dimensional system, also known as the "color tree," visually organizes the color properties (hue, value, and chroma) and their relationships. Munsell also developed theories of color harmonies based on his color model.

Albers' book *Interaction of Color* (1963) provides a wealth of examples of his methodology. As seen in his work, he did not use established color systems as a way to foster the understanding of color relationships. Instead, his work is based on hands-on, *"perceptual experiments leading to an understanding of color in changing contexts"* (Hope & Walch, 1999, p.11).

Josef Albers' breakthrough teaching methodology in the late 1920s and early '30s greatly influenced how color education is practiced today (Holtzschue, 2001; Hope & Walch, 1989). However, it is important to realize that although Albers' and Munsell's methods are different, they are not incompatible (Holtzschue, 2001). A balance between Munsell's systematic understanding of color and Albers' experimental and intuitive approach may lead to a broader understanding of color and their relationships. Some color educators implement this approach in their teachings.

Atoms and Bites: Methodologies

Because color is a visual phenomenon, for study purposes, it makes no difference if color is seen as pure light on a monitor screen or as light reflected from an object (Holtzschue, 2001). In both mediums, color carries its fundamental properties (hue, value, and chroma) and the characteristics that account for principles of color harmony and color contrast, and is subject to the same laws of color perceptual changes based on color interaction. Moreover, the psychological and cultural interpretation of color is also independent from the medium in which it is experienced.

Color education has long being taught using traditional mediums such as paint and colored paper. For study purposes, while the medium in use may determine some directions of the curriculum, the principles that hold the foundation of color theory are relatively independent of the medium in use. However, it is not surprising that painting students may find it more relevant to use paint in the classroom, where as web designers may find it more relevant to use the computer.

Josef Albers preferred paper to paint when teaching color because it seemed a more effective way to quickly experiment, demonstrate, observe, and reproduce color phenomenon in varied contexts. Besides practical reasons–such as low cost, consistent appearance, ease if color selection– the use of colored papers in the activities eliminated the required long hours of training to master specific techniques such as paint-based color mixing. His teaching method favored visual perception over technique.

Computer technology allows the manipulation of visual data in ways not possible before. Consequently, computer-based prototyping has found its popularity among artists and designers. On the computer, projects can be manipulated in various ways before a final solution is achieved.

At the Technical University of Sofia (Bulgaria) a computer program entitled "Color-Test" was developed to teach color harmony and coordination to industrial design students (Nikov, 1992). Supported by the Albers Foundation, Albers' book *Interaction of Color* published in 1963 has also been made available in interactive digital format (Whiteley & Roberts, 1990). More recently we have seen an increasing availability of software that deal

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with color properties and color design issues.

Computer technology is shaping the way color education is practiced today. One of the major advantages of the use of computers in color education is that experiments dealing with color approaches and theories can be prototyped and observed instantly. On the computer, color exercises can be done easily. Color studies can be repeated several times, allowing students to observe a specific approach from various perspectives.

Web-Enhanced Education

New technologies have always promoted the development of new teaching methods. It can be argued that Albers' teaching method was also a consequence of the materials and technologies available in his time. Computer-based simulation, prototyping, and web-based instruction pose new pedagogical opportunities and challenges for color educators.

Traditionally, in a face-to-face studio art course the instructor provides background information for each assignment by means of lecture, demonstrations, and slide-shows. The instructor's presentations may be a combination of demonstrations of technical skills and discussion of new concepts and visual problems. Students have the opportunity to propose solutions through hands-on activities.

Feedback is usually provided through individual and group critiques. In some cases, preliminary and supplemental activities are also part of the students' practice. They may include assigned readings, sketches, field trip and research. Figure 1 shows the information delivery process and the "practice component" in a traditional face-to-face studio course.

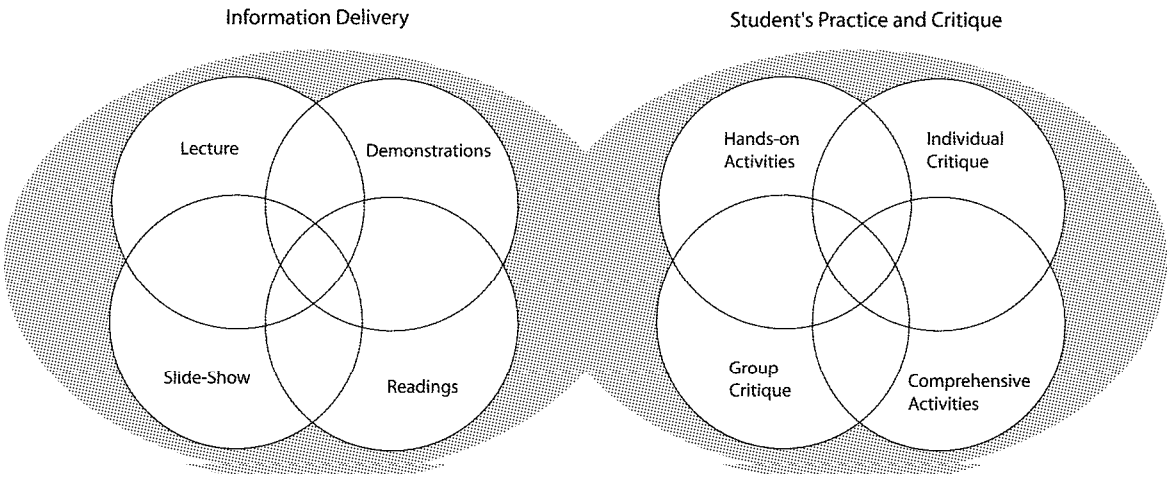
Table 1 shows how traditional activities may be delivered or experienced via the web. Although the underlying rationale and course objectives remain the same when teaching via the web, the development of new computer-mediated pedagogical strategies must take place, and be constantly evaluated. Such tools as animation, video, e-mail, threaded discussion, and online galleries must be seen only as mediator tools functioning according to an instructional plan. This parallel between traditional face-to-face and web-enhanced teaching strategy does not aim to suggest that, for example, animation or video will replace a lecture. An educator engaged in using the web as a teaching and learning tool needs to think of new pedagogical strategies. These new strategies are not parallel or equivalent to former methods; they are essentially a pedagogical transmutation. These transmutations create new classroom dynamics and learning patterns, which consequently may led to non-traditional results.

Preliminary Experimentation

My research on the potential of the perceptual structure of the RGB Color Cube as a cognitive tool led me to think of ways to incorporate digital color activities in the color classes I taught at Northern Illinois University. In 1999, I developed a series of exercises entitled "RGB Color Cube Visualization Activities" (Bendito, 2000) which I have being using to teach about the RGB Color System. Formative and summative evaluations showed that students welcomed those computer-based hands-on color activities and learning was effective and stimulating.

In following years, I designed several computer-based

Figure 1
Instructional Model: Traditional Studio Art Class



activities to be incorporated in color courses that I taught. The activities used Adobe PhotoShop software instead of paint or ColorAid papers. In the summer of 2000, I designed the B@uhaus SoftCanvas, a color software with pedagogical purposes, which influenced the design and development of the web-enhanced course presented in this paper.

Color Online: Web-Enhanced Experimental Course

Margaret Driscoll (1998) in the book *Web-Based Training* discusses various types of learning that can be facilitated via the web. She stresses that cognitive skills are well suited for web-based education. Problem-solving and the application of systematic knowledge are some of the skills addressed in her work. Her advocacy is carried on in this case study.

The web-enhanced color course presented here was designed based on the notion that color design strategies are essentially cognitive abilities coupled with the development of visual perception. Furthermore, the course is aimed to empower students with the necessary tools to actively appreciate and discuss the works produced by the masters. Students were also encouraged to research topics related to their interests beyond the proposed curriculum.

The web is a medium with great visual and interactive capabilities. Given the appropriate instructional methods and software, teaching color theory via the web is a suitable approach. This project (course) was such an attempt.

The course was taught in the summer of 2001 in the School of Art at Northern Illinois University. Eleven art students of different art majors, ages, and backgrounds enrolled in the class. Classes met from 11:00 am to 01:45 pm, Monday through Thursday. Students met as a group with the instructor two days a week (Monday and Tuesday). The remaining days (Wednesday and Thursday) were devoted to self-paced learning and one-on-one meetings made by appointment. Students could also contact the instructor during normal business hours by phone or at any time by e-mail.

Aided by web-enhanced tools, students studied color theories that impacted the fields of art and design. The course was composed of five modules and twenty hands-on activities that explored a variety of color topics.

The first module was devoted to the understanding of color models (Long & Turner, 1994; Birren 1987) with emphasis on Munsell and the RGB Color Cube. This module culminated with students being asked to propose new perceptual color organizations based on their experience with the RGB Color Cube (Bendito, 2000).

The second module focused on color properties and interaction. Students learned about hue, value, chroma, and the way the perception of a color can be affected by its interaction with other colors around it (Long & Turner, 1994; Wong, 1996; Albers, 1963).

The third module introduced students to color coordination principles. The activities ranged from nature observation, Itten's color wheel, and Birren's color harmony theories to standard color schemes as proposed by Chevreul (Birren 1987; Itten & Birren, 1970).

The fourth module was an investigation of Kobayashi's color image theory, which investigates how color can be used to convey specific images, moods, and

Table 1

Art Studio Class: Face-To-Face/Web-Enhanced Parallel

Face-to-face	**Web-enhanced**
Lecture	• Assigned readings, instructor's notes, video, animation, etc.
Demonstrations	• Informational graphics, readings, animation, video, etc.
Slide-show	• Online slide shows–with audio or instructor's notes. • Graphics, photos, video, animation– they may be embedded in the readings, online handouts, and/or notes.
Readings	• Online text, traditional textbook, hyper-links with comments, etc.
Hands-on	• Graphical Software, educational software, digital templates, scanned images, and/or traditional materials.
Individual Critique	• Private chat-room during office hours, e-mail, phone calls.
Group Critique	• Virtual gallery, threaded discussion, listserve, e-mails.

styles (Kobayashi, 1987). In addition, students were given an image generation model in the form of a "job aid" to help in the color selection process when creating color schemes for predetermined color images.

The fifth and final module of this course asked students to research a color topic of their interest and to present that information to the class. This activity gave the students the opportunity to explore topics not previously covered in the classroom. The students' chosen projects ranged from the impact of color in a human's appetite to the physiological effect of color on children.

Course Tools

As noted in Table 1, web-enhanced studio courses can provide a wealth of learning tools and opportunities that can be used both in and outside the classroom. The primary tools used in the course were a course web site, Blackboard, and an educational color software.

The course web site (Figure 2) functioned as a portal to the activities, animations, informational graphics, the online color software, and Blackboard. Blackboard was used as a communication tool to facilitate asynchronous discussion and project submissions as well as served as a message board. The software was custom-designed for this course and could be accessed via the web.

The course was designed to be platform independent. The course content was accessible through standard browsers (Netscape and Explorer) for both Macintosh and IBM users. The color palette used for the computer-based activities took advantage of the cross-platform Web Browser Color Look-up Table (CLUT) which is based on the RGB Color Cube.

Blackboard

Blackboard was used to facilitate asynchronous discussion, project submissions, and as a "virtual gallery." Students shared their designs with other students and posted their writing assignments in the discussion board. Each student had a home page with general personal information and his/her own art work.

The Software

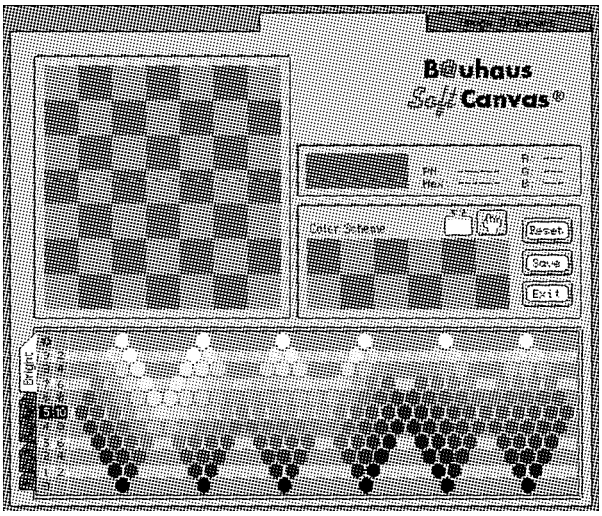
The software named B@uhaus SoftCanvas (Figure 3), still in alpha version, was custom-designed for this course and could be accessed via the web as a Macromedia Shockwave file (Figure 4). It functioned as a simulation tool easily allowing students to recreate, observe and study various color principles and issues discussed in class.

The software is divided into two main areas: a squared grid structure based on the Bauhaus teacher Johannes Itten's teaching methods and an original color selection interface. The squared grid structure is where students experiment and simulate various color theories.

In order to facilitate color selection based on perceived relationships, the B@uhaus SoftCanvas' color

Figure 2
Course Web Portal

Figure 3
B@uhaus SoftCanvas



palette is composed of 216 colors that are organized based on the following structures:

Colors are presented in three main groups–Bright, Dull, and Subdued–in which:

1. Color families (hues) are displayed sequentially (RGB analogous sequence).
2. Blending structures of analogous colors are easily identified.
3. Tints and shades of colors are easily found.

Colors are organized on individual hue palettes:

1. Colors are organized by individual families (i.e. red, yellow).
2. Tints and shades of individual hues are easily found.

In addition, a perceptual notation system of RGB colors was created to facilitate communication in the classroom.

The software allowed students to recreate various

Figure 4
Student working on activity via the Web

color concepts presented and discussed in class easily. Students submitted "screen captures" of their work to the instructor for assessment. Projects were handed in either online via Blackboard or on a disk.

Students' Background and Impressions

Throughout the semester, the instructor conducted formative evaluations to determine the overall reaction of the class to the course methodology and areas that needed to be improved. Two surveys were given to eleven students on the last day of class. Both surveys were anonymous.

A survey with nine essay questions was posted and completed by students online via Blackboard. Due to technical problems, three students typed or hand-wrote their answers. The other survey consisted of twenty multiple-choices and two essay questions. Some of the questions in the surveys are being analyzed for another paper.

The surveys helped to answer a set of inquiries, which are summarized below. Appendix 1 shows detailed results of the multiple-choice portion of the survey. Selected quotations from students' answers to the essay questions are included in the "Lessons Learned and Reflections" portion of this paper.

Student Background

91% of the students reported that they feel comfortable using computers. While most of them use computers for word processing, e-mail, and to surf the Internet, 18% reported to play computer games. One student (09%) did not have prior experience with the Internet. Five to ten hours and ten to forty hours seem to be the amount of time most students spend on the computer each week.

As I expected, the majority of the class (73%) had never been exposed to a web-enhanced class or online course. Two students (18%) mentioned they had been exposed to web-enhanced or online class. Five out of eleven students (45%) had experience with online news group. When outside the lab, the online content of the courses was accessed mostly via modem (60%).

Six students (55%) reported to access the course material at various times of the day. Three students (27%) reported to access the course material during late night and two (18%) during work hours only. Students worked on the class assignments from home most of the time (46%) or a combination of home and lab (18%). Therefore, 64% of the students worked on their activities at home at some time.

Overall Course Experience

The students (91%) agreed that the course web site was easy to read and understand and they felt comfortable with the navigation structure of the site. Download time was not a major concern among students (100%).

Ten students (91%) agreed that the structure of the topics and the course sequence were well organized and logical. Students felt that the level of information presented on the web pages was not difficult: nine out of eleven (82%) reported that the level of information was "just right." While most of the students felt comfortable with the number of assignments (73%), three of them (27%) thought it was too much.

Ten out of eleven students (91%) agreed that the course accomplished its stated objectives and that the increase of their knowledge of the fundamentals of color theory resulting from the course was from good to very good (very good being the highest possible score).

Lessons Learned and Reflections

The answers to the essay portion of the surveys are summarized and interpreted in this section.

Because the course was delivered in the summer, and the number of students involved in the study (eleven) is small, it is not possible to make significant generalizations from the data collected. This study is a "picture" of this group experience only. I hope that it will provide a point of comparison or a springboard for future research and case studies on web-enhanced or web delivered studio art classes.

This study revealed potentially helpful information about the students' impressions, motivations, needs and concerns regarding the use of web-enhanced tools in a studio art class, and the overall teaching effectiveness of this new approach.

Location and Time Management Flexibility

One of the main threads in the answers provided by the students were the fact that the online component allowed greater flexibility in terms of time and location. Location and schedule flexibility are especially important for students who struggle between work and school activities. When asked about positive aspects of the online

component of the course, students answered:

"Being able to work from home;" "Can go to class from anywhere;" "Easy to access anywhere;" "Info available from any computer;" "Could access it anytime of day;" "Being able to work from anywhere, at any time, and not having to come to class two days a week;" "If I missed class, I could still get material from the web;" "Didn't have to be in lecture to get the assignments;" "The flexibility was great."

Despite location and time flexibility inherent in this course structure, some students still struggled with time management. When asked about the pace of the course some answered:

"I took two classes and had two jobs. I basically had time to sleep. Sometimes not even that. But as far as this course (…), I think it was fine and went smoothly."

"Because of my personal schedule, it was hard for me to get a lot done. Time is my issue. If I had no jobs and only one class, I would have probably enjoyed the course more."

Figure 5
Location Where Activities Took Place

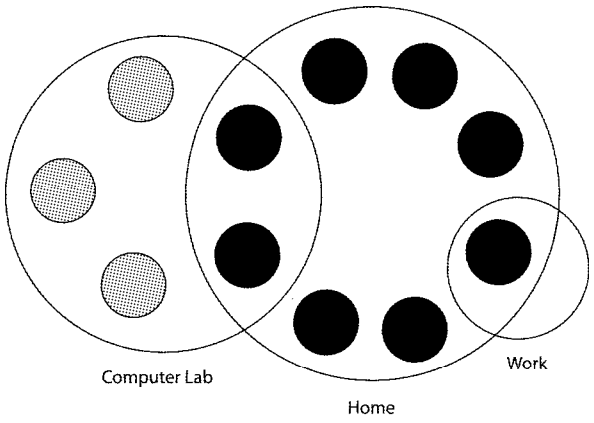
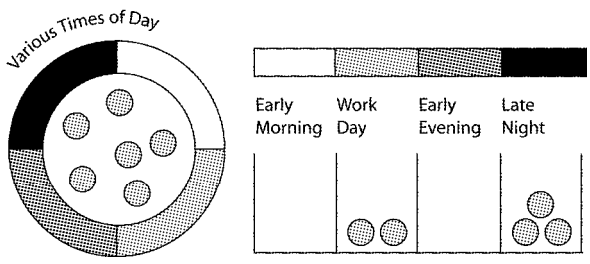


Figure 6
Time Students Worked On The Projects



"I think the due dates should have been Tuesdays instead of Mondays. My reasoning for that is that some people have to work on Sundays, and may not have enough time to complete the assignments."

Figure 5 shows that home or combinations of home and computer lab are the places were students mostly did their homework. Figure 6 illustrates how the majority of the class took advantage of the course flexibility to work on projects at various time of the day.

Course Accessibility and Collaborative Learning

According to students' comments, other positive aspects of the web component of the course include: *"Having it all in one place," "Learn[ing] from each other. See what everybody is doing."*

The web site worked as a learning portal, from which students could access various course resources and activities of the course:

- Course materials such as syllabus, assignment descriptions, multimedia files, web links, and instructor notes.
- Participation in online discussion and view students' work online–in this case their participation becomes documented material that can be accessed and peer reviewed at any time. Students learned from each other.
- Easy access to students' and instructors' contact information (i.e. e-mail, phone number), and even general personal information made available voluntarily on individual home pages.

Online Help

Access to various media elements on the web such as text, graphics, animations and videos accommodated students' diverse learning needs and styles. The quotation below illustrates how students may see the web as a supplemental resource to accommodate their learning needs:

" (…) If I was confused about an assignment, I could read more about it online. It was time consuming, but what college art class isn't?"

Online Discussions

The online discussion board was a strong component of the course. When asked to list positive aspects of the class, students named: *"Discussion board–interaction of ideas between the students and professor"* and *" Teach[ing] with discussion board and e-mail"*

There are clear evidences of the positive impact of asynchronous online discussion. It allows students to elaborate on their answers prior to posting them online, while functioning as a mechanism that allows students who do not feel comfortable speaking in public to participate in class discussions: *"I like the discussion board. It forces you to think and talk,"* said a student in one of our class informal formative evaluations.

Although not addressed in the surveys, I observed that another valuable aspect of the discussion board is that it allowed art students to exercise the ability to express their ideas in writing, expanding the role of studio art classes.

Self-Teaching/Learning

I argue that one of the most important aspects of web-enhanced teaching is that at some point, students are left on their own to explore the content and to learn by themselves–pretty much like in the real world. Students are encouraged to learn how to learn. The instructor is consulted mainly to guide students in this new learning approach and to provide feedback on the assignments.

Not all students are avid self-learners. However, students seemed to take advantages of self-learning opportunities built in the course. Two statements addressing positive aspects of the course illustrate some students' feeling towards self-learning in this course: *"I liked learning on my own,"* and *"[I Liked the] amount of independence."*

Cost

Art supplies are expensive when compared to other school supplies. In this course, because the B@uhaus SoftCanvas software played a major role in the activities, no costly art supplies were required. Their evaluations reflected on that: *"I also liked the fact that we did not have to buy expensive materials for class," "Save time, money [positive aspect of course]," "Good job! Keep this up and save students from ColorAid paper."*

Customized Color Design Software

The surveys reflected a broader range of opinions in relation to the software used (B@uhaus SoftCanvas). The software replaced paint and ColorAid paper in the activities. For the most part, students acknowledged the software positive capabilities as a tool that allows hands-on simulation of theories and concepts:

> *"The software is very helpful in understanding theories and playing with the images [i.e. color/word association]."*
>
> *"I think that the software fits its purpose (…). I definitely think it is a great tool for building design images and I would like to have continued access to it for my personal use."*
>
> *"I think that now I am beginning to understand some of the accepted theories about color. (…) but the software made it a lot easier then having to mix paint all day."*
>
> *"Activities with Chevreul and Birren on the B@uhaus"* were this student's favorite assignments.

One major concern was raised in relation to doing the activities in the B@uhaus SoftCanvas. Students seemed to want a more flexible work environment. The grid structure of the software seemed limiting as far as its capability as a design tool. However, this inherent constraint is part of the concept behind the software. One of the software's strengths lies in its capability to isolate aspects of color perception and relationships for study purposes:

> *"I thought the computer [B@uhaus SoftCanvas] was limited as to learning, but taught what you wanted us to know and nothing unnecessary."*
>
> *"Would like to see Bauhaus expanded. (…) as an artist, it was sometimes frustrating for me to have such a limited canvas."*

Major/Media Relationship

Not surprisingly, there were students who looked at computer-based color activities as directly related to their professional careers. Students who saw themselves as prospective designers for screen-based media (i.e. web) found the use of computer based color studies to be advantageous.

The following statement shows that a student interested in web design favored working on the computer: *"[I enjoyed] computer-based activities since I am a graphic designer."* PhotoShop and Adobe Illustrator were proposed as alternative software, possibly by a graphic design student: *"Loved it. But I wish we used more of PhotoShop and/or Illustrator."*

Amount of Assignments

When appropriate, color activities usually taught in traditional color courses take less time done on the computer. This aspect of computer based design allowed me to expand the course curriculum by integrating new exercises and assignments to the class. Moreover, I felt more comfortable assigning additional readings to the class and requiring from each student a more consistent and thoughtful participation in class discussions via the discussion board.

Problems and Concerns

In response to the survey, 45% of the class, five students, wrote "none" or other statements that indicated they saw no drawbacks to the web component of the course (Maybe these students did not think hard enough!). Of the 55% who did report drawbacks, technical difficulties were the most commonly cited issues. Suggestions to improve instruction were also provided.

Below are the problems and concerns raised by the students.

Cross-Platform Issues

Although the course was designed to be platform independent, two students reported having platform-related problems. One student felt frustrated *"using home and lab computers for all [B@uhaus-based] assignments."* This student reported not being able to use "screen capture." Another student reported: *"I couldn't do the assignments on my PC."*

A checklist noting the minimal software and hardware

requirements in the course web site may have avoided these problems. Students were not given a guide to determine if their workstations met minimum requirements.

General Technical Problems

"It took time to overcome technical aspects… now it feels ok," said a student. Mostly, students reported problems with unwanted dithering of images, conversion of files from Mac to PC, and even web discussion script errors and inaccessibility.

Web Server and Download Speed

Unfortunately, one of the major issues of web-based instruction is to guarantee that the server will work 100% of the time: *"Sometimes server was down,"* said one student when reporting on the negative aspects of the course. Similarly, another inevitable problem is server low transferring rates at certain times or circumstances. No matter how optimized the media elements are in a web site, sometimes it will get slow: *"Loading was slow on some graphics."*

Lack of Access

Not all students are "wired" from home. It is important to make online assignments flexible enough for those who do not have web access from locations beyond school labs. One student felt at a disadvantage: *"I didn't have internet at home. Lab closed at four everyday and weekends."*

More Instruction and More Time

Some students seemed to want to see more information or assignment descriptions posted on the web: *"Some assignments could use more information."* Lack of time to complete the assignments was also another issue raised by the students. When asked for suggestions to improve the course, one student replied–with regards to the final research project: *"More time… I bet if you do this the next time people will really impress you with their findings."*

The "Art Mess" Issue

Most of the students showed their sympathy to the use of computer-based activities in the class. A student said *"Bauhaus is great learning program. I feel that I got to learn more with less mess."* But there are tradeoffs in this approach and changes, especially when they are recent, may be accompanied by a feeling of uncertainty. This pedagogical transmutation has a price. When asked about the pros and cons of the course, one student replied:

"Pro: No big dirty art mess"

"Con: 'No big dirty [art] mess"

Post Impressions

The product of good teaching is good learning. Good use of technology in education means effective teaching and learning through technology. The survey showed, among other things, how students felt about the use of web-based tools in the classroom. Once the technical barriers and limitations were overcome, everybody had something to gain. New technologies allowed new ways to interact with the content, classmates and instructor. *"I feel very lucky that I got to learn color this way,"* said a student about the use of computer-based activities in the course. One thing I was interested to find out was students' impression of the subject "color" before and after the course:

"My impression of color theory prior to this class was limited but for the most part, I considered it to be 'scientific' and out of my reach. My impression now is that it's very interesting and it has offered me some extremely valuable tools in regard to design and art in general. (…) But it goes beyond that. There were things that I knew based upon intuition and those things have become more powerful because I [now] have real knowledge to back them up."

"… I didn't know anything about it [color]. (…) After taking the course, I find that I know a whole lot more about the subject. I am comfortable learning about it, and talking the "color lingo." Actually I found it [the course] very interesting and I am going to do some of my own research on color theory"

"I was very scared of color! (…) Now I feel more confident because I have a lot more knowledge about (…) color theory and that gives me a greater background to work with – I feel more comfortable working with color in the future."

As educators, we can only hope that students continue to learn and apply their knowledge beyond the classroom. I hoped to help them understand, appreciate, challenge and apply some basic concepts, and hopefully, once they feel empowered by knowledge and a certain practice, set them free!

Acknowledgements

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The Faculty Development and Instructional Design Center at Northern Illinois University has been instrumental in creating mechanisms to recognize and promote excellence in online education for the NIU community. This project's course web site received the following web awards in 2001: "Best of Show, Best Educational Web Site, and Best Use of Graphics and Multimedia in an Educational Web Site. "

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Appendix 1
Survey Summary

ART 302: Color
Course Survey–Summer 2001

Student Background

1. I feel comfortable using computers.

64%	Strongly agree
27%	Agree
-----	Neutral
-----	Disagree
09%	Strongly disagree

2. I use computer mainly for (Check all that apply):

55%	Word processing
55%	E-mail
18%	Games
36%	Internet
36%	Other

3. The amount of time I spend on the computer each week is:

-----	0 hours
09%	1-5 hours
46%	5-10 hours
36%	10-40 hours
09%	40+ hours

4. Prior to this, I have had experience using the Internet.

91%	Yes
09%	No

5. This is my first experience in a web-enhance or online class.

73%	Yes
18%	No
09%	No answer

6. Prior to class, I have participated in an online discussion such as news group.

45%	Yes
55%	No

7. In order to access the course web content, I was connected to the Internet through:

60%	Modem
20%	T1
-----	Cable
-----	DSL
10%	Modem + DSL
-----	I don't know
10%	No answer

8. I accessed the course materials

-----	Early morning
18%	During the workday
-----	Early evening
27%	Late night
55%	Various times of day

9. Place where you mostly did your homeworks

27%	Computer lab
18%	Comp. lab + home
46%	Home
9%	Home + work
-----	Work

Course Assessment

10. The web pages were presented in a way that was easy to read/understand

36%	Strongly agree
55%	Agree
9%	Neutral
-----	Disagree
-----	Strongly disagree

11. I was able to navigate the web pages with ease

64%	Strongly agree
36%	Agree
-----	Neutral
-----	Disagree
-----	Strongly disagree

12. The web pages displayed accurately and quickly

45%	Strongly agree
55%	Agree
-----	Neutral
-----	Disagree
-----	Strongly disagree

Course Content

13. Topics were well-organized and developed in a logical sequence

55%	Strongly agree
36%	Agree
09%	Neutral
-----	Disagree
-----	Strongly disagree

14. The level of information presented in the web pages were:

-----	Much to difficult
09%	A little difficult
82%	Just right
09%	A little easy
-----	Much too easy

15. The amount of assignments for this course was

-----	Excessive.
27%	Too much
73%	Just right
-----	Not quite enough
-----	Insufficient

16. My knowledge of the fundamentals of color theory resulting from taking this course compared to before taking the course is:

45%	Very good
45%	Good
-----	Average
10%	Below average
-----	Poor

17. The course accomplished its stated objectives.

55%	Strongly agree
36%	Agree
09%	Neutral
-----	Disagree
-----	Strongly disagree

18. The amount of time it took me to finish this course was:

-----	Much too long
09%	A little too long
55%	Just right
36%	A little too short
-----	Much too short

19. The amount of hours I spent on each activity that required the B@auhaus softcanvas was:

09%	Less than 30 min
37%	30min – 1hr
18%	1hr-1:30
27%	1:30-2:00
09%	2:00-3:00

General

20. The overall organization of the course was:

45%	Very good
45%	Good
10%	Average
-----	Below average
-----	Poor

21. Three things I really liked about the online component of the course.

22. Three things I did not like about the online component of the course.

Note: 09% represents one student in the class.