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ABSTRACT

In order to assess student's perceptions of outcomes of various education media formats, an exploratory investigation was conducted in the context of three different classes. Participants were traditional-age undergraduate students in the following three classes with different combinations of educational media formats: (1) Visual Communication--half of class material online (lecture notes and Power Point presentations), traditional textbook, traditional lectures based on textbook material; (2) Computer Graphic Design--online supplementary materials (illustrated notes, Power Point presentations from class lectures, and Web links to additional material), traditional textbook, no traditional lecture, a coaching/hands-on style of face-to-face teaching; and (3) World Wide Web publishing--all class materials online (tutorials, lecture notes, Power Point presentations, multimedia presentation, use of the Web as a personal slide projector), no textbook. Questionnaires were designed to measure concept learning and reaction to medium of presentation. Results indicated that students perceived strong learning outcomes from online materials and mediated modes of education. Ease of access to online materials was also assessed. Online learning was perceived to be enjoyable, interesting, and productive of desirable pedagogical outcomes such as concept learning and application. Comments from the teaching effectiveness questionnaire and copies of the class surveys are appended. Contains 13 notes. (DLS)

Evaluation of Three Educational Online Delivery Approaches

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Abstract
Overall, students perceived strong learning outcomes from online materials and from mediated modes of education overall. For all classes, mediated forms of educational delivery were well above scale item midpoints. Online learning, furthermore, is perceived to be enjoyable, interesting, and productive of desirable pedagogical outcomes such as concept learning and application. From the comparison of theoretical and applied classes, one observes that online formats are likely to be helpful for both kinds of learning tasks.

Introduction
A discussion of the potential of alternative education delivery technologies usually ends with the question: "Is learning as effective when delivered via alternative media as opposed to that which happens in the face-to-face classroom environment?" This is a reasonable question, given the costs associated with production of much media-based learning materials and technologies. The operative word in that question is"effective," and more accurately refers to the effectiveness of "learning" rather than "teaching." As Illich opined in the 1960s, that with technological resources education could become learning rather than teaching. The "resources" Illich wrote of in the 1960s is very much like what the Internet has become and is becoming in higher education. The Internet, as Sangster (1996) has noted, is about learning not teaching. "Learning how to learn is all about being able to adapt...being able to take past experiences and use them in the future, both in and out of the original context, being able to take a skill and alter or adjust it to work in a different context, and being able to learn new things when required." In 1983, Richard Clark reviewed the research to that date on media-delivered education and disturbed many with his conclusion that "media are mere vehicles that deliver instruction, but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition" (Clark, 1983).

The fundamental questions regarding the learning "effect" seem little resolved after a decade. However, what is becoming more clear is the mediation process places greater responsibility on the "learner" side of the equation. On one side of the debate are those who contend that each medium has a unique set of characteristics that differentially support different types of learning activities, goals and outcomes. Supporters of this view argue that "understanding the ways in which students use the unique processing capabilities of the computer [or other media] is essential to understanding the influence the computer may have on learning and to building media theory" (Kozma, 1994). The students' perceptions about the

use of three styles of mediated delivery is a significant focus of this study.

Clark, on the other side of the debate, continues to argue that "media will never influence learning" (Clark, 1994) and that differences in instructional design and learning activities, applicable to almost any medium, are the causes of differential learning outcomes under different media treatments. At the root of the debate is the complexity of the learning process itself. Certainly, one facet of this view must include the students' self-evaluation of the learning process. In fact, if a student believes they have learned, that should be the starting point for all evaluative processes in measuring learning.

In some contexts, learning means acquiring a set of conceptual facts and ideas that can be quickly recalled during formal examinations. In others, learning includes the ability to integrate new knowledge critically or creatively into unique contexts. Some educators include affective responses such as "appreciation and enjoyment" in a full definition of learning.

Some argue that learning has not occurred at all unless it can be demonstrated behaviorally. O'Donnell suggests that in addition to the problem of definition, there's another facet to consider:
Every revolution in communication has both added to the power and range of what is communicated, and taken away some of the intimacy. Writing began the long, slow disestablishment of the face-to-face community of people who all knew each other, and every communication technique introduced since then has furthered that
process.(O'Donnell, 1995)

Despite the intricacies of the debate, research over the past 70 years has generally concluded that there are no significant differences between learning delivered face-to-face and that delivered by alternative media. This generalized result is used by media proponents to argue for the advantage of media delivery, since no direct human intervention is involved in the learning outcomes. Traditional delivery proponents have argued that since no learning improvements were noted, there is no compelling reason to change from time-proven (face-to-face) delivery methods.
In this study, thee distinct approaches have been taken which embody three levels of the traditional approach and three differing levels of the mediated delivery approach. These approaches were taken with given that research to date has not shown complete support for either approach alone. Therefore, a reasonable optimum must be somewhere in the "middle" or somewhere in combination of the new and the traditional approach. In fact, this initial research suggests that it's not a question of "either / or" with regard to the use of mediated materials versus traditional human intervention, rather the consideration is how much of which facilitates the best learning situation.
O'Donnell, an experienced user of teaching technologies, argues for the integration of technology even while educators strive to determine what "teaching" method or methods are better.

"My experience these last years has been that the new technologies of networked information are indeed liberating, to real teachers and real students. It's not as though we couldn't use some help. There are plenty of frustrations for teachers, plenty of obstacles yet to surmount, plenty of barriers separating us from the students we want to reach. The best way to view information technology is to let it address the problems we already know we have (O'Donnell, 1995)."

The technology of communication, however, is far from neutral, and as McLuhan points out, is loaded on the "learning" side of the equation: "When technology extends our senses a new translation of culture occurs as swiftly as the new technology is interiorized (McLuhan, 1962)." Addressing the specifics of the Internet, Teilhard de Chardin went further to predict that a web of communication technology would first grow up beside, then surround and finally would be organically assimilated into human consciousness (de Chardin, 1973). With the extraordinary development of the Internet in higher education, the futures predicted would seem upon the collective academy now, and, the question of

"how" best to implement the learning experience the most pressing.

Alternative delivery styles

Research to date suggests that quality learning can be delivered in many ways, by many media, including face-to-face delivery. Given this rough-equivalency of outcome, we can legitimately move to questions of cost-effectiveness and access. Face-to-face delivery is expensive and cannot scale itself up to meet ever increasing demand. Higher education in the United States has increased in cost over the past 25 years at rates 3-5 percent above those of inflation (Gillford, 1994). Universities are challenged by the demand fueled by larger percentages of high school graduates attending university, the need for life-long learning and retraining, and the increase in technological skill levels demanded by information-age employment.

The most compelling argument for the alternative delivery of university programming comes from the consumers themselves -- the new students of the 21st Century. Students, as consumers, are demanding and are willing to pay for education and learning experiences which can be delivered at the time and place where that learning is most relevant and convenient. It is easy to imagine this type of learning in content areas such as engineering where knowledge of emerging technologies can have direct job application. But there are also opportunities for philosophers, historians and others in the humanities and social services where events such as personal crisis, changing vocations, or personal interest create the need for a learned response.

The response to the challenge of alternative media delivery systems must be a willingness and desire to explore many new options. There is little to guide educators as to the better methods to employ to produce the greatest pedagogical support. In a 1966 study of 660 institutions, only 43% had a strategic plan in place to cope with the goals, objectives or implementation for the role of information technology in higher education (Green, 1996). Green also noted that the national survey of college campuses revealed that "More than a decade into what some have called the 'computer revolution' in higher education, it is very clear that most campuses are still operating without a strategic or financial plan to implement information technology (Green, 1996)." Without knowing how to implement the technology into the learning process, it is quite difficult to decide how to allocate or reallocate what resources.

Oxford's Alex Reid points out that we haven't progressed much in the delivery of good learning materials. "After 30 years of courseware development, we still have very few examples that we can point to as models for future development. ...Without ample examples of good practice in every discipline, we will not progress (Reid, 1994)." As this study suggests, it is more than the courseware materials, good models may intensely involve the delivery system access, styles and methods as a significant part of the mix for developing good examples to build upon.

Methodology

In order to assess students' perceptions of outcomes of various educational media formats, an exploratory investigation was conducted in the context of three different classes.

Participants

Traditional-age (e.g. 18-24) undergraduate students in three classes with different combinations of educational media formats were surveyed.

Visual Communication (8 respondents): Half of class materials online; traditional textbook; traditional lectures. Online materials were lecture notes and Power Point presentations. Traditional lectures were performed based on textbook material.

Computer Graphic Design (10 respondents): On-line supplementary materials, traditional textbook, no traditional lecture. Online material was supplementary and included illustrated notes, Power Point presentations duplicated from class lectures, and Web pages of linkages to relevant

additional material. A traditional textbook was used. Rather than traditional lecture, a coaching, hands-on style of face-to-face teaching was used.

World Wide Web Publishing (16 respondents): All class materials online; no textbook; traditional lecture. Tutorials, lecture notes, Power Point presentations, multimedia presentations, use of the WWW as a personal slide projector were the online materials. Traditional lecture was performed in addition to material presented online. There was no textbook.

Instrumentation

Questionnaires were designed to measure concept learning and reaction to medium of presentation in each of three classes. Questions were formatted with 7-point Likert scale response options bounded by 1=very little and 7=very much.

Respondents in the the visual communication class assessed presentations using on-line delivery and, separately, assessed the use of PowerPoint in terms of concept learning, concept clarity, concept comprehension, concept application, concept understanding, and student comfort.

For the graphic design class, different combinations of educational media were assessed: the combination of text and on-line delivery; presentations based solely on the text; and presentations using only on-line delivery. Questions were constructed to assess the quality of educational experience of each format: concept learning, concept clarity, concept comprehension, concept application, concept understanding, and student comfort. Finally, students were asked whether they could master the material without the text.

Respondents in the World Wide Web Publishing class, which used no textbook, were asked to assess the extent to which having a textbook would contribute concept learning, concept clarity, concept comprehension, concept application, concept understanding, and student comfort to their learning experience.

Additionally, students' overall impression of on-line delivery was assessed for its enjoyment, interest, helpfulness, stimulation of learning, and its ability to retain attention. Ease of access to on-line materials at home, school, and work was also assessed for this class. Students were asked to compare slide shows using Netscape to lecture alone; to lecture with overhead; to lecture with Power Point, and to lecture with videotape. Finally, students were asked to consider whether they could master the material without an instructor.

Students in all three classes were asked whether on-line material puts too much responsibility for learning on the student.

Results

The goal of this study was to explore students' perceptions of educational outcomes for various educational media delivery formats. Both descriptions of attributes for several formats and comparisons across formats were examined. Questions specific to a class were analyzed separately. Total N may be reduced in some cases due to missing data. Results are presented primarily in tabular form to facilitate comprehension.

Graphic Design and Visual Communication: Description and Comparison

Perceptions of on-line learning were assessed by combining the responses from Graphic Design and Visual Communication to get an overall estimate. Since learning goals (e.g. application vs. memorization) may differ in effectiveness in the on-line format, perceptions of the on-line class format were compared across these two types of classes: Visual communication is a theory-driven class;

Graphic Design focuses on application of principles and hands-on learning.

Extent to which on-line material provides the following aspects (learning variables) to educational experience:

Learning Variable (1)	Graphic Design (Mean)	Graphic Design (Std. Deviation)	Visual Comm. (Mean)	Visual Comm. (Std. Deviation)	Combined (Mean)	Combined (Std. Deviation)
Learning of Concepts*	4.50	.85	5.50	.76	4.94	.94
Clarity of concepts	4.40	.84	5.25	1.04	4.78	1.00
Comprehension of concepts	4.60	.84	5.25	89	4.89	.90
Application of concepts *	6.30	.68	5.00	.76	5.72	.96
Understanding of concepts	5.12	.97	5.13	.84	4.83	.92
Student comfort with class	5.00	1.05	5.50	1.20	5.22	1.11

1 Larger numbers = more of the attribute * Means for graphic design and visual communication are different at $p < .05$ (t-test).

Visual Communication Class: Power Point Perceptions (N=8)

Learning outcomes from using Power Point as a supplement in the classroom was assessed.

Extent to which Power Point examples given in class provide the following aspects (learning variables) to educational experience:

Learning variable (1)	Mean	Standard Deviation
Supplements learning material in textbook	6.25	1.17
Learning of concepts	6.00	.76
Clarity of concepts	5.63	.74
Comprehension of concepts	5.50	.54
Application of concepts	5.25	1.17
Understanding of concepts	6.25	.71
Student comfort with class	5.38	1.19

1 Larger numbers=more of the attribute

World Wide Web Publishing Class: Online supplant text (N=16)

One concern facing educators is the extent to which new media may supplant existing methods of instruction. To what extent may new media make textbooks redundant?

Extent to which a text would provide the following aspects (learning variables) to educational experience:

Learning variable (1)	Mean	Standard Deviation
Workload	4.88	1.67
Learning of concepts	2.88	1.93
Clarity of concepts	2.94	1.48
Comprehension of concepts	2.88	1.50
Application of concepts	1.75	1.24
Understanding of concepts	2.56	1.37
Student comfort with class	2.69	1.62

1 Larger numbers=more of the attribute

Overall impression of on-line delivery of classroom material:

Impression(1)	Mean	Standard Deviation
Enjoyment	6.25	.86
Interesting	6.19	1.17
Helpfulness	5.63	1.20
Keeps attention	5.88	.96

Personal slide shows using Netscape were compared with other class formats to assess the utility of various combinations of classroom presentation methods.

Frequencies for question asking for a comparison of personal slide shows using Netscape to other instructional formats:

Format	Netscape better	Netscape equal	Netscape worse
Lecture alone	12	4	0
Lecture with overhead	13	3	0
Lecture with Power Point	5	10	0
Lecture with videotape	5	9	2

Correlations of Impressions of On-line Delivery with Perceptions of Student Responsibility

Student impressions of online attributes should relate to their confidence in mastering material independently and the extent to which they feel overly responsible for their own learning. Therefore, impressions of online delivery were correlated with perceptions of mastery and responsibility.

Impression	Mastery without instructor	Too much responsibility on student
Enjoyment	.36	-.51
Interesting	.47	-.71**
Helpfulness	.45	-.70*
Keeps attention	.48	-.61*

*= significant at .01 level
** = significant at .001 level

Graphic Design and WWW: Correlation of Accessibility to Online Materials with Perceptions

of Independent Mastery and Student Responsibility

The extent to which students have access to on-line materials is likely to generate greater confidence in self-directed learning. Therefore, we correlated accessibility with perceptions of ability to master material without an instructor and with the belief that on-line learning places too much responsibility on students.

Responsibility	Mastery without instructor/text	Too much responsibility on student
Ease of access at home	.35	-.29
Ease of access at school	.21	-.50
Ease of access at work	.21	-.20

Discussion

Overall, students perceived strong learning outcomes from online materials and from mediated modes of education overall. For all classes, mediated forms of educational delivery were well above scale item midpoints. Online learning, furthermore, is perceived to be enjoyable, interesting, and productive of desirable pedagogical outcomes such as concept learning and application. From the comparison of theoretical and applied classes, one observes that online formats are likely to be helpful for both kinds of learning tasks

The effectiveness of online learning appears to be influenced by student access to material. The correlations between access and perceptions of independent learning and mastery were strong, though not always significant. A larger sample would undoubtedly increase the power of the statistical tests. Nonetheless, it seems clear that students who both enjoy and have access to online sources of information see these modes of delivery as pathways to learning independence.

Student perceptions reported here suggest that online and mediated forms of delivery may replace the traditional textbook format, at least for those students who accept and learn from online modes.

Differences in means for learning concepts and application of concepts is likely to be related to the content of the classes. Visual communication is a theory-intensive course taken prior to Graphic Design; Graphic Design implements in practice the principles from Visual Communication. Therefore, greater perceived learning of concepts for Visual Communication is not surprising, since concept earning is a large part of the class and likely to be salient to the students. Likewise, the application of concepts seems to be facilitated in the more applied class

Conclusions

It is clear, even in this small sample, beginning study, that the online delivery systems used generally helped students. Students liked and appreciated the material delivered in this manner. Students in the theoretical class found theory and concept more understandable. Students in the applied class found the application of theory to real world, hands-on situations more easily grasped and performed. It is clear, also, from the student feedback reflected in comments on evaluation forms used by the University that students were enthusiastic about the "process," without being daunted by the responsibility shift it demanded.

This is the beginning of a longitudinal study. It will gain statistical strength from the repetition of testing. The repetition of testing will also provide us with the more subtle discriminations that are needed to fully evaluate the different delivery procedures.

It would be ideal if two comparable sections of each class could be offered, one each with

media delivery online and one each with no additional media. In this case, that is not feasible. The only possible comparison that can be made is with previous classes taught in the traditional manner. That research is underway, looking at grades, graduation rates, comments from evaluation forms, etc... However, this approach presumes that the "classroom" experience would be the same, except for the media delivery of some or all of the information without begging the obvious question of "what is the classroom?". Farganis and Dunn raise other issues including:

... if on-line teaching re-defines the community of scholars in the classroom, is it more or less of a community? If being on-line changes the social life of the classroom how and to what effect does it change it? Is this a good medium for all institutions? Here it is suggested that in fact, only some schools will be able to afford the luxury of traditional education as we now know it, but that in the future other methods will become increasingly important. One of the interesting aspects of computer based education is that it lets education into the home and potentially this can alter the experience for both the teacher and the student. No matter where we teach from, it is naive to think that the classroom is private in the pure sense of the term, because we each bring our own personal experiences and biases to the forum. (Farganis & Dunn, 1996)

We also have discovered, as Windley noted, the class changes quickly as material delivered online is easy to change, update and expand when the delivery method is online:

The biggest problem this presents is that because of the dynamic nature of information on the web, I tend to update things frequently, correct mistakes, etc. Thus, the printed notes can quickly become out of date. This also means that you can't just print all off the notes at the beginning of the semester and make them available as a packet. Thus, as the semester progresses, I only make lectures notes available up through the current lecture (Windley, 1996).

The target of online delivery, as a method to augment, fully or partially replace other methods of teaching, is a moving target. However, summarizing 19 recent studies using online delivery systems, Witherspoon has reduced the problem to three general points.

I offer observations drawn primarily from the several project evaluations in which I've been involved, plus recent research visits to 19 U.S. institutions which are widely acknowledged to be doing good work in various aspects of online education. This experience is mostly, though not exclusively, related to higher education.

Three basic points will provide a framework:

The trite old saying is that the devil is in the details. In designing, installing, and operating systems of information technology, the devilish details, amplified by Murphy's Law, are always a factor. A great many programs are marked by wonderfully positive but wholly unanticipated surprises. For effective online education the technology is a necessary but insufficient component. (Witherspoon, 1995)

It is obvious this study will not provide any quick or easy answers. The variables under study are changing as the studies are done. The idea of "classroom" is an evolving concept with the introduction of new technologies. The very basic concepts of "learning" and what constitutes "teaching" are once thought known evolving as rapidly as the technology. It also is obvious, it is important to attempt to gain some understanding of this evolution. Philosophically, as Martin noted:

This, then, is the computer. It is the representation of our culture in digital code and the development of all the cultural possibilities that result. The computer makes cultural work easier to produce and reproduce, to preserve, to transmit, potentially accelerating intellectual attainment and opening cultural access in unprecedented ways. The computer greatly augments human powers of selection, memory, perception, and

calculation, potentially amplifying the intelligence that each and all can bring to bear upon the panoply of questions that life puts to them. Now we must turn to the implications of this computer to each activity in education (Martin, 1996).

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Appendix A
Note: The general class/professor evaluation instrument used for each class is both numeric and qualitative.
Students seldom fill in the open-ended portion of the "comment" section, however, the information below is taken
from the two questions concerning the use of the new media and the use of the textbook.

Appendix A

Teaching Effectiveness Questionnaire: Comment Sheet

Q 1: What aspects of this instructor's teaching were most effective?

"I like how Dr. Edwards brings his experiences and shares them. It is especially good when he shows these examples from the real world on the WWW."

"His use of materials was very beneficial. He provided us with his notes online to better assist us in class."

"Powerpoint presentations"

"It's nice to learn stuff and then have it explained and demonstrated on the WWW and in the PowerPoint. I really liked the real examples."

"PowerPoint with the handouts. Info. available on line."

"The use of the computer to help with the class lectures."

"The note sheets of his lectures, the handouts with the PowerPoints and the examples on line."

Q - 3: Please comment on the textbook, activities, assignments and media used in this course.

(Visual Communications 428/528)
"The textbook and the PowerPoint with the handouts were a great supplement to the lecture."

"The book followed along well with the class, computer online and in class computer presentations. It was all very beneficial and the online notes were really great."

"Book was interesting and easy to understand. Using the computer in class for presentations and the online notes were best and made the book more real as the online examples were from the real world."

(Computer Graphic Design 431/531)

"The textbook gathered dust because the online material and the Netscape presentations were great. The online helped review for exams especially. I hope there will be more things like this in this and other classes."

"Online media is excellent. Handouts are excellent. Netscape stuff was excellent. Textbook sucks."

"Textbook was ok. Other stuff was better, real and meaning was clearer."

"Using the online examples makes the ideas clear. Textbook got me confused and the examples are at least two years old. New stuff and real examples is better."

WWW Publishing Class Survey

This survey assesses your opinions about different ways of presenting educational material. For each question below, please circle the number that corresponds to your opinion.

To what extent would having a textbook for this class add to the following elements of the class?

Very little Very much
Workload ----------
1 2 3 4 5 6 7

Very little Very much
Learning of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Clarity of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Comprehension of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Application of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Student comfort with the class ----------
1 2 3 4 5 6 7

Very little Very much
Understanding of concepts ----------
1 2 3 4 5 6 7

What is your overall impression of on-line delivery of classroom material?

Enjoy very much Do not enjoy
Enjoyment ----------
1 2 3 4 5 6 7

Interesting Very interesting Very uninteresting
----
1 2 3 4 5 6 7

Not very helpful Very helpful
Helpfulness ----------
1 2 3 4 5 6 7

Stimulates learning Prevents learning
Stimulates learning ----------
1 2 3 4 5 6 7

Does not keep attention Keeps attention
Keeps attention ----------
1 2 3 4 5 6 7

How easily can you get access to the on-line materials via computer in the following ways?

Not at all Anytime
At home ----------
1 2 3 4 5 6 7

Not at all Anytime
At school ----------
1 2 3 4 5 6 7

Not at all Anytime
At work ----------
1 2 3 4 5 6 7

Please compare the personal slide shows using Netscape to other class formats, circling the answer (1, 2, or 3) that corresponds to your opinion:

Slide shows using Netscape were (1) better; (2) equal to; (3) less helpful than lecture alone.

Slide shows using Netscape were (1) better; (2) equal to; (3) less helpful than lecture with overhead.

Slide shows using Netscape were (1) better; (2) equal to; (3) less helpful than lecture with Power Point.

Slide shows using Netscape were (1) better; (2) equal to; (3) less helpful than lecture with videotape.

How confident are you that Not at all Absolutely
you could master this material ----------
without an instructor being 1 2 3 4 5 6 7
present?

Do you think that Not at all Absolutely
on-line material puts too much ----------
responsibility for learning
you?

Visual Communication Class Survey

This survey assesses your opinions about different ways of presenting educational material. For each question below, please circle the number that corresponds to your opinion.

To what extent does the online material provide each of the following aspects to your educational experience?

Very little Very much
Supplements learning material ----------
in the textbook 1 2 3 4 5 6 7

Very little Very much
Learning of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Clarity of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Comprehension of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Application of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Student comfort with the class ----------

1 2 3 4 5 6 7

Very little Very much
Understanding of concepts ----------
1 2 3 4 5 6 7

Do you think that Not at all Absolutely
on-line material puts too much ----------
responsibility for learning 1 2 3 4 5 6 7
you?

To what extent do the Power Point examples given in class provide each of the following
aspects to your educational ----------

experience?1234567

Very little Very much
Supplements learning material ----------
in the textbook 1 2 3 4 5 6 7

Very little Very much
Learning of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Clarity of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Comprehension of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Application of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Student comfort with the class ----------
1 2 3 4 5 6 7
Very little Very much
Increases understanding ----------
1 2 3 4 5 6 7

Graphic Design Class Survey

This survey assesses your opinions about different ways of presenting educational material. The following scales ask you to evaluate several combinations of classroom delivery methods with regard to several aspects of your educational experience. For each question below, please circle the number that corresponds to your opinion.

Consider presentations using both the textbook and online delivery. To what extent does

this combination provide the following aspects to your educational experience?

Very little Very much
Learning of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Clarity of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Comprehension of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Application of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Student comfort with the class ----------
1 2 3 4 5 6 7

Very little Very much
Understanding of concepts ----------
1 2 3 4 5 6 7

Consider presentations using only the textbook. To what extent does this method provide the following aspects to your educational experience?

Very little Very much
Learning of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Clarity of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Comprehension of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Application of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Student comfort with the class ----------
1 2 3 4 5 6 7

Very little Very much
Understanding of concepts ----------
1 2 3 4 5 6 7

Consider presentations using only online delivery. To what extent does this method provide the following aspects to your educational experience?

Very little Very much

Learning of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Clarity of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Comprehension of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Application of concepts ----------
1 2 3 4 5 6 7

Very little Very much
Student comfort with the class ----------
1 2 3 4 5 6 7

Very little Very much
Understanding of concepts ----------
1 2 3 4 5 6 7

How confident are you that Not at all Absolutely
you could master this material ----------
without the text? 1 2 3 4 5 6 7

Do you think that Not at all Absolutely
on-line material puts too much ----------
responsibility for learning 1 2 3 4 5 6 7
you?

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