

**Benchmarks of Web-Based Instruction:
A Comparative Study of Student and Instructor Expectations**

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Abstract

Developed by the Institute for Higher Education Policy (IHEP), "Quality on the Line: Benchmarks for Success in Internet-Based Distance Education" is a comprehensive report that identifies 45 quality benchmarks of effectiveness for distance learning in higher education. The document reports ratings for each benchmark based on a survey of instructors, administrators and students at several institutions .

In this study, a 44-item instrument based on a subgroup of 22 benchmarks from the "Quality on the Line" report was administered to the students and instructor of an introductory graduate-level, web-based education research methods class at three points in time: prior to the course, during the course, and upon the completion of the course. Student and instructor attitudes and their ratings of the importance of these measures are presented for comparison along with the norms published in the IHEP report.

Introduction

Distance learning has provided an alternative method of instruction delivery for over one hundred years. Older technologies such as correspondence courses, radio, telephone and other audio and video methods have allowed learners to receive education through means other than a traditional classroom (Williams, Paprock, & Covington, 1999).

The advent of computer technology, including the Internet, has allowed traditional and nontraditional students to pursue education at their own convenience. This technology can bring instruction to those people who may not otherwise be able to

pursue higher education. The Internet, and specifically the World Wide Web (Web), provides a medium for delivering instruction through various formats including text, audio, and video. Online community tools, such as discussion groups and online chat sessions, enhance the learning process on the Web. Educational institutions have used the Internet to supplement their course offerings and to enhance traditional, classroom-based courses (DeBard & Guidera, 2000).

Literature Review

Many research studies have been conducted that measure the effectiveness of web-based learning in academic and business environments (Comunale, Sexton, & Voss, 2002; King & Hildreth, 2001; Lewis, Snow, Farris, & Westat, 1999). In 1999 a study by the Institute for Higher Education Policy (IHEP) examined the existing research base to determine the effectiveness of distance learning and to identify shortcomings and omissions in the research. The study's report, titled "What's the Difference?" (Phipps & Merisotis, 1999), noted that most of the existing research focused on distance learning effectiveness in terms of student outcomes, attitudes and satisfaction but that the quality of the research varied tremendously.

Following this work the IHEP was then commissioned in 2000 to identify compile a comprehensive set of existing standards for Internet-based distance education performed by higher education institutions. The National Education Association (NEA) and BlackBoard, maker of a web-based course management system used in many of these institutions, commissioned the study to identify the critical success factors of implementing a distance learning curriculum. In the report of the findings, titled "Quality

on the Line: Benchmarks for Success in Internet-Based Distance Education" (Phipps & Merisotis, 2000), a set of 45 benchmarks of distance learning effectiveness were identified from existing programs.

Methodology

Using the research from the "Quality on the Line" report this pilot study measures the attitudes of graduate students and the instructor before, during and after a web-based course. The measurements are based on 22 of the benchmarks identified in the IHEP report. This study looks to answer the following questions:

- How do attitudes of students in a web-based course change throughout the course ?
- How do attitudes of students in a web-based course compare to the IHEP benchmarks?
- How do attitudes of students in a web-based course compare to the perceptions of their instructor?

To collect student data printed questionnaires were mailed at three times during a web-based, introductory graduate-level education research methods course of 21 students at a Midwestern university:

- two weeks before the beginning of the semester
- half-way through the semester
- at the conclusion of the semester.

The instructor of the course was also administered the survey at the same times.

The survey's questions were derived from the IHEP report. Specifically, 44 survey questions were developed and adapted from 22 of the paper's 45 benchmarks.

(For each of the benchmarks one question was asked to measure the respondent's agreement level with the benchmark. A second question was asked to measure the respondent's perceived importance of the benchmark.)

While the IHEP report includes seven categories, benchmarks from only three of the categories (Teaching/Learning, Course Structure, and Student Support) were chosen for the study. This allowed the questionnaire to be kept to a reasonable length and focused the survey's content on the most important learner-centered topics as identified by the researchers. (The other benchmark categories in the IHEP study are: Institutional Support, Course Development, Faculty Support, and Evaluation / Assessment.)

The same 44 questions were asked in each of the three questionnaires. To use the proper tense for each implementation, the benchmarks were re-worded to reflect the appropriate time: before, during, and after the course. For example, one of the benchmarks used in the study was "student interaction with faculty is facilitated through a variety of ways." The benchmarks were adapted in the study to reflect the appropriate tense in each of the three implementations of the questionnaire:

- (Before) My interaction with the instructor *will be* facilitated in a variety of ways.
- (During) My interaction with the instructor *is* facilitated in a variety of ways.
- (After) My interaction with the instructor *was* facilitated in a variety of ways.

For the first 22 questions respondents were asked to indicate their agreement with the corresponding benchmark using a 7-point Likert scale. The scale ranged from "1 - Strongly Disagree" to "7 - Strongly Agree". Respondents were then asked to rate

the same 22 questions using a 5-point scale to indicate the importance of the attribute identified in the benchmark with a scale ranging from "1 - Not Important" to "5 - Very Important". (These scales were chosen for comparative purposes with the IHEP standards which used identical scales.) In addition to the 44 questions on each of the three questionnaires, additional background and demographic questions were asked.

Questionnaires were mailed approximately one week before the expected completion time. Each questionnaire was coded such that the instructor would not be able to determine the identity of individual students. The table below details the questionnaires that were completed and submitted by each of the students:

Table 1

Student Survey Submissions

<i>Student</i>	<i>Survey 1</i>	<i>Survey 2</i>	<i>Survey 3</i>	<i>Total</i>
1	x	x	x	3
2				0
3	x	x		2
4	x		x	2
5	x			1
6		x	x	2
7		x		1
8	x		x	2
9				0
10	x		x	2
11	x	x	x	3
12	x		x	2
13	x			1
14	x	x	x	3
15				0
16	x	x	x	3
17	x	x	x	3
18		x		2
19				0
20	x	x	x	3
21	x	x	x	3
Total	14	11	13^a	

^a Due to an administrative error one of the third student surveys was not properly coded to identify the respondent.

Results

The table below lists each benchmark that was used (Q1-Q22), the instructor (T) and mean student ratings(S) for each of the three points in time (1 - prior to the course, 2 - at the midpoint of the course, and 3 - at the completion of the course), the standard deviations for the student ratings (SD), and the mean rating (STD) for the corresponding IHEP benchmark. Ratings for Q1-Q22 indicate the mean "agreement" rating using a 7-point Likert scale (ranging from "1- Strongly Disagree" to "7 - Strongly Agree) while I1 - I22 indicate the mean "importance" rating using a 5-point Likert scale (ranging from "1 - Not Important" to "5 - Very Important") for the same benchmark.

Table 2

Survey Results

	<i>T1</i>	<i>S1</i>	<i>SD1</i>	<i>T2</i>	<i>S2</i>	<i>SD2</i>	<i>T3</i>	<i>S3</i>	<i>SD3</i>	<i>STD</i>
Q1 - My interaction with the instructor is facilitated through a variety of ways.	4	4.5	1.2	2	5.3	1.6	5	5.8	1.4	5.7
I1	4	4.1	0.9	3	4.4	0.7	4	4.4	1.0	4.6
Q2 - My interaction with other students is facilitated through a variety of ways.	4	3.4	0.7	2	5.3	1.4	3	5.5	1.3	5.4
I2	4	3.6	1.0	3	3.9	0.5	4	3.8	1.0	4.3
Q3 - Feedback about my assignments and questions is provided in a timely manner.	6	6.1	0.8	6	5.0	1.7	6	6.5	0.8	5.6
I3	5	4.6	0.5	5	4.7	0.5	5	4.6	0.7	4.8
Q4 - Feedback is provided to me in a manner that is constructive and non-threatening.	7	6.0	0.8	6	5.8	1.6	5	6.6	0.7	5.9
I4	5	4.6	0.5	5	4.5	0.5	5	4.5	0.7	4.6
Q5 - The course is separated into self-contained modules that can be used to assess my mastery before moving forward in the course.	7	4.7	1.3	6	5.4	1.4	7	6.4	0.7	5.4
I5	5	3.8	1.1	5	4.3	0.6	3	4.2	0.9	4.1
Q6 - The modules are of varying lengths determined by the complexity of learning outcomes.	7	4.9	0.9	6	5.7	1.3	7	6.4	0.8	5.1
I6	5	3.9	0.7	5	4.1	0.5	3	4.1	0.9	4.0

	<i>T1</i>	<i>S1</i>	<i>SD1</i>	<i>T2</i>	<i>S2</i>	<i>SD2</i>	<i>T3</i>	<i>S3</i>	<i>SD3</i>	<i>STD</i>
Q7 - Each module requires me to engage in analysis, synthesis, and evaluation as part of the course assignments.	7	5.1	1.1	6	5.5	1.6	7	6.3	0.8	5.7
I7	5	3.8	0.7	5	4.3	0.5	5	4.3	0.8	4.4
Q8 - E-mail addresses and a course message board are provided to encourage students to work with each other and the instructor.	7	6.1	0.7	5	5.8	1.6	7	6.9	0.3	5.9
I8	4	4.1	0.9	5	3.9	0.8	5	4.2	1.1	4.5
Q9 - The course is designed to require students to work in groups utilizing problem-solving activities in order to develop topic understanding.	5	4.1	1.3	3	4.9	1.3	5	5.0	1.6	4.9
I9	4	3.3	0.7	5	3.6	0.8	4	3.5	1.1	3.7
Q10 - Course materials promote collaboration among students.	4	4.4	1.4	2	5.4	1.1	5	5.6	1.2	5.0
I10	4	3.4	0.8	4	3.5	0.7	4	3.7	1.0	3.9
Q11 - I am provided with supplemental course information that outlines course objectives, concepts, and ideas.	2	6.1	0.9	7	5.6	1.3	5	6.5	0.7	6.1
I11	4	4.6	0.5	4	4.3	0.6	4	4.3	0.6	4.7
Q12 - Specific expectations are set for me with respect to a minimum amount of time per week for study and homework assignments.	4	6.1	0.8	5	5.7	1.6	5	6.1	0.9	4.9
I12	4	4.2	0.7	5	4.0	0.6	4	4.2	0.7	4.2
Q13 - The instructor grades and returns all assignments within a certain time period.	6	6.2	0.7	7	5.1	2.0	6	6.1	1.7	4.7
I13	5	4.6	0.6	5	4.4	0.8	4	4.7	0.5	4.4
Q14 - Sufficient online resources are available to me.	5	6.4	0.7	7	5.5	1.8	6	6.5	0.8	5.8
I14	5	4.4	0.8	5	4.4	0.7	4	4.5	0.7	4.7
Q15 - I have been instructed in the proper methods of effective research, including assessment of resource validity.	6	6.2	0.7	5	5.4	1.5	7	6.2	1.1	5.1
I15	5	4.6	0.5	5	4.3	0.6	5	4.5	0.5	4.4
Q16 - Before starting the course, I was advised about the course to determine if I have the self-motivation and commitment to learn at a distance.	7	6.0	0.9	5	5.8	1.7	6	6.5	0.8	5.2
I16	4	4.0	1.1	5	3.8	0.8	5	4.3	0.6	4.5
Q17 - Learning outcomes for the course are summarized in a clearly written, straightforward statement.	7	6.2	0.9	5	5.8	1.6	6	6.2	1.0	5.4
I17	5	4.6	0.5	5	4.2	0.6	5	4.5	0.5	4.5

	<i>T1</i>	<i>S1</i>	<i>SD1</i>	<i>T2</i>	<i>S2</i>	<i>SD2</i>	<i>T3</i>	<i>S3</i>	<i>SD3</i>	<i>STD</i>
Q18 - I am able to obtain assistance to help me use electronically accessed data successfully.	6	6.1	0.7	5	5.3	1.4	6	6.0	1.2	5.2
I18	5	4.4	0.9	5	4.3	0.6	5	4.6	0.7	4.6
Q19 - I have been provided with hands-on training and information to aid me in securing material through online databases.	7	5.7	1.5	4	5.5	1.5	6	6.1	1.2	5.1
I19	5	4.4	1.2	5	3.9	0.9	4	4.2	1.1	4.4
Q20 - Written information is supplied to me about the course.	6	6.1	1.1	3	5.5	1.7	5	5.5	1.2	6.2
I20	5	4.6	0.5	5	4.1	0.9	5	4.3	0.8	4.7
Q21 - Easily accessible technical assistance is available to me throughout the duration of the course.	4	5.6	1.0	4	5.3	1.4	5	5.8	1.4	5.4
I21	5	4.6	0.8	5	4.4	0.7	5	4.5	0.7	4.6
Q22 - A structured system is in place to address my questions.	5	6.1	0.8	5	5.2	1.7	7	5.8	1.2	5.3
I22	5	4.7	0.5	5	4.5	0.5	5	4.5	0.7	4.6

As noted in Table 1, the questionnaire response rates were below 70% for each questionnaire and only one-third of the students in the class completed and returned all three questionnaires. Because of potential non-response bias (Berdie, 1990) the student ratings could not be analyzed using comparisons over time or comparisons to either the instructor's responses or the IHEP benchmarks. With a higher response rate t-tests could be used to determine whether any of the student ratings from the individual surveys were significantly different from the IHEP benchmarks. Similarly, with a higher response rate analysis of variance (ANOVA) could be performed to compare student ratings over time.

Summary / Conclusion

The methodology used in this study (incorporating the individual IHEP benchmarks into a survey) could be used as a feedback tool for online educators. An

instructor in a web-based environment using this approach (with the same or other benchmarks) would then be able to identify the attitudes of their students during a course, compare those ratings to their own perceptions or to the ratings for the IHEP benchmarks. Results from those analyses could provide information to determine whether adjustments in support or instruction should be made to the course.

It should be noted that the set of benchmarks used in the IHEP report are not considered to be a complete instrument with corresponding validity and reliability measures. Instead the benchmarks should be used individually to address specific issues. Because of the small sample size and its source (a single graduate research methods course), no generalizability of this tool was implied in this study.

Future Research

While this study focused on only three categories of questions because of the questionnaire's length, instructors and administrators may want to choose benchmarks from other categories to customize the survey to meet their individual needs and focus on their areas of interest. For example, an administrator who wants to evaluate a school's distance learning program might choose to use a questionnaire based on the benchmarks in the Institutional Support, Course Development, and Evaluation and Assessment categories.

To be able to analyze the results appropriately it will be necessary to reduce the potential for non-response bias. While this study was implemented using printed questionnaires, an online version of the same tool would automate the data collection process and could result in an increased response rate by making the process more

convenient for students. Similarly, offering incentives and performing follow-up are two additional ways of increasing the student response rate so that the collected data will have sufficient reliability properties.

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