

**From Chalkboard To Blackboard:
What it is like to evaluate computer information systems
courses online**

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Abstract:

Although critics of distance/online education question whether students could really be taught well from far away, online education seems to be a permanent form of education. Online education is becoming more diverse, constantly branching out and having an effect on most fields of education.

Recent studies indicate that online learning can be effective. Nevertheless, the efficacy of online education may depend on many factors. In this paper, the author reports his experience of assessing and evaluating two computer information systems courses that he targeted for teaching partially online during the fall of 2001. The author identifies some success factors as well as pitfalls and challenges that college educators may face in offering courses online or partially online in small colleges.

Introduction:

This paper is based on an experiment conducted in two computer information systems classes taught partially online by the author at Valley City State University (VCSU) in Valley City, North Dakota during fall semester of 2001. Systems Analysis and Design (CIS 380) and Database Design (CIS 385) classes were selected for the experiment. The classes met three times a week on Mondays, Wednesdays, and Fridays at 8:00-8:50 a.m and 9:00 – 9:50 a.m respectively. Blackboard CourseInfo class management software was used to monitor student participation and performance evaluation. The author in a separate paper entitled “*Promoting Analytical Thinking in a Changing Classroom*” provides a general description, purposes, and goals of the experiment.¹ This paper is devoted to the online instructional delivery and evaluation parts of the experiment.

Experiment Methods:

a) At the very beginning of the semester all students were informed about the online features of the two courses they enrolled in. They were informed about the necessity to read the online course in documents placed in Blackboard on a regular basis.

Detailed daily announcements and course documents regarding the main lecture topics and other class learning activities were placed in the Blackboard course on a regular basis. Also, Power Point presentations used in the classroom were made available to the class on a specified network drive.

b) Students in both classes selected for this experiment had the opportunity of accessing important summary instructional material and announcements online on a regular basis 7 days a week 24 hours a day. However, online instructions were considered strictly as an enhancement to the traditional seat-time requirement in the classroom. Students who were unable to attend the classes in person (considering that the classes met during the early hours in the morning) had the opportunity of “virtually” participating in the class(es) by reading Blackboard announcements and course documents that provided directions for self study of the content material covered in classes.

c) Mid-term and final examinations were conducted online using Blackboard assessment tools.

d) The author maintained daily records of attendance and student participation in classroom activities.

e) The author also maintained daily records regarding each student’s reading habits of textbook and Blackboard announcements. These records were based on responses given by students to key questions he posed at the beginning of a class regarding the daily textbook reading material and written responses given by students in “minute papers” relating to important concepts covered in the lecture.

f) Students were encouraged to provide anonymous feedback during the experiment.

Discussion:

Today, many colleges offer online courses for many reasons, including the possibility of increasing enrollment, developing new educational technology, and remaining competitive in the online race among contemporary institutions. According to one recent survey, more than 2 million people have taken online courses in 2001². This figure is predicted to increase within the next 5 years. The University of Phoenix, the largest private university in the United States, was reported to have 25,000 of its 90,000 students enrolled in 18 online degree-seeking courses in the year 2000.³

VCSU is a small undergraduate college with a high reputation for using technology to enhance education. In the fall of 1996, VCSU became a technology intensive “notebook campus,” providing each student to use an IBM laptop computer. Currently more than 50% of the regular courses taught at VCSU are partially taught using the Blackboard Course Info. Online software.⁴ The author has effectively used digital courseware for training and skill building of students in computer literacy courses in freshmen undergraduate computer science and computer information systems courses for several years. The goal of the current experiment was to examine the effectiveness of teaching higher-level computer courses involving abstract thinking with online courseware. The two courses selected – Systems Analysis and Design and Database Design were considered good candidates for the experiment. The students in the experiment consisted of:

Number of students & classification	Class
16 seniors and 2 juniors	Systems design & Analysis (CIS 380)
13 seniors and 5 juniors	Database Design (CIS 385)

9 students were in both classes.
14 students (3 were in both classes) attended* classes more than 90% of the time.
7 students (some of whom were in both classes) attended classes 50-70% of the time.
6 students (some of whom were in both classes) attended classes 10-40% of the time.

* “attended” is used in this context to indicate those who were physically present in class.

Some students in both classes commuted to VCSU campus traveling 30-40 miles oneway. Others had part-time work responsibilities and/or family responsibilities that prevented them from attending classes in person on regular basis. These students liked the idea of taking courses online. However, the students who were unable to attend classes on a regular basis missed various activities involving brainstorming, group projects, teamwork, conducting interviews related to course requirements, analysis related to systems development projects, and group discussions on communication, leadership, constructive criticism, etc. Unfortunately, these experiences involve actual/active participation of the learner which cannot be effectively replicated digitally.

Appendix A and B show the percentage of online participation of each student in the class.

The mid-term and final examinations of both the classes were conducted using Blackboard online testing utilities. True/False, Multiple Choice and Essay type questions

were formulated using Blackboard Assessment Manager. Due to technical difficulties, multiple attempts were allowed in online test taking. Although some exams were limited to a duration of one or two hours, students reported difficulties taking tests over modem connections.

Since the tests were open-book, the author decided to adopt creative knowledge testing techniques. The final examination given online was based on such a method that the author thought would make cheating a non-issue. Accordingly the online final examination required students to critique randomly selected answers from homework assignments that the students had submitted previously. The students also had the opportunity to discuss the very same answers in class previously.

Overall, the answers given by the students clearly showed that the students who took responsibility for their own learning were capable of applying theoretical knowledge to practical situations. Obviously they had not only read the textbook material but also understood the material and were able to apply their knowledge to solving a given problem. A summary of student performance in the online final examination together with attendance is given below. Detailed data showing the correlation between attendance and performance in final examination is given in Appendix A and B.

Student	Attendance	Final Exam Performance CIS 380	Final Exam Performance CIS 385
Student B	10%		Excellent
Student M	10%	poor	
Student OO*	10%	above average	above average
Student X	10%		Poor
Student KK*	40%	excellent	Excellent
Student P	40%	excellent	
Student CC*	50%	average	Average
Student DD*	50%	average	Excellent
Student EE*	50%	average	Excellent
Student T	50%		Average
Student J	70%	average	
Student R	70%		Average
Student S	70%		Average
Student A	90%	average	
Student FF*	90%	poor	Poor
Student GG*	90%	above average	above average
Student H	90%	poor	
Student II*	90%	excellent	Excellent
Student L	90%	above average	
Student NN*	90%	average	above average
Student Q	90%		Average

Student U	90%	Excellent
Student V	90%	Average
Student W	90%	Average

***Attended
both classes**

It is interesting to note that 6 students who attended the classes about 40-50% of the time could perform in the final examination as well or even better than some students who attended the class 90% of the time.

The comments given anonymously by students who attended the classes more than 50% indicated the following: 1) Most students did not like the idea of taking these two classes fully online. 10 out of 12 students answered no to the question “Do you think that this course (CIS 385) should be taught fully online?”

Some comments written by students were: “Those that come to class should do better than those that don’t. Those that don’t shouldn’t get special treatment.” “Having a course online and stressing the group work in class is a tough compromise.”

Conclusions:

As evident from their comments, some students expected traditional teacher-centered instructions. Nevertheless, most students’ attention was divided between the lecture and the computer in front of them. Although the students were expected to read online instructions before they came to class, most students clearly showed signs of not having read the Blackboard instructions before they came to the classroom. As indicated by the number of hits shown in the appendices, the highest number of hits are peaked during the classtime – at the time lectures were delivered. In this regard one recent author has pointed out “in attempting to harness the capabilities of digital interfaces, the mistake is often made of recreating a classroom-teaching model within the online environment. Online technology designed to mimic the classroom becomes a restriction and a barrier to the teacher’s ability to impart knowledge.”⁵

The author was constantly attempting to find the “middle ground” in a classroom that is neither fully online nor fully face-to-face. It is the author’s opinion that students who meet face-to-face in a classroom pay less attention to the lecture when summary lecture notes are digitally accessible 24 hours a day seven days a week.

Since the mid-term and final examinations were held online, most students paid minimum or no attention to reading the textbook material. To achieve valid performance ratings, online exams need to be conducted in a controlled environment. Exams have to be timed allowing no multiple attempts. The author’s finding is that some mature students who attended the class less than 40% of the time did the online exams extremely well.

A few students who attended the class more than 90% of the time gave very poor answers indicating that they did not even understand the question asked.

An instructor will have to spend more time communicating with individual students by engaging in online discussion forums to find out if students really understand the concepts involved in the material covered in the lectures.

Colleges engaged in online education may need to conduct classroom research on an ongoing basis before making online classes an alternative method of learning for certain courses involving higher order analytical thinking skills.

1. Jay Hettiarachchy, *Promoting Analytical Thinking with Technology in a Changing Classroom*, MICS, 2002.
2. Learning Online, A special U.S. News Guide to Distance Education, U.S. News, Oct. 15, 2001
3. *ibid.*, pp. 48-9

4.
Blackboard Statistics

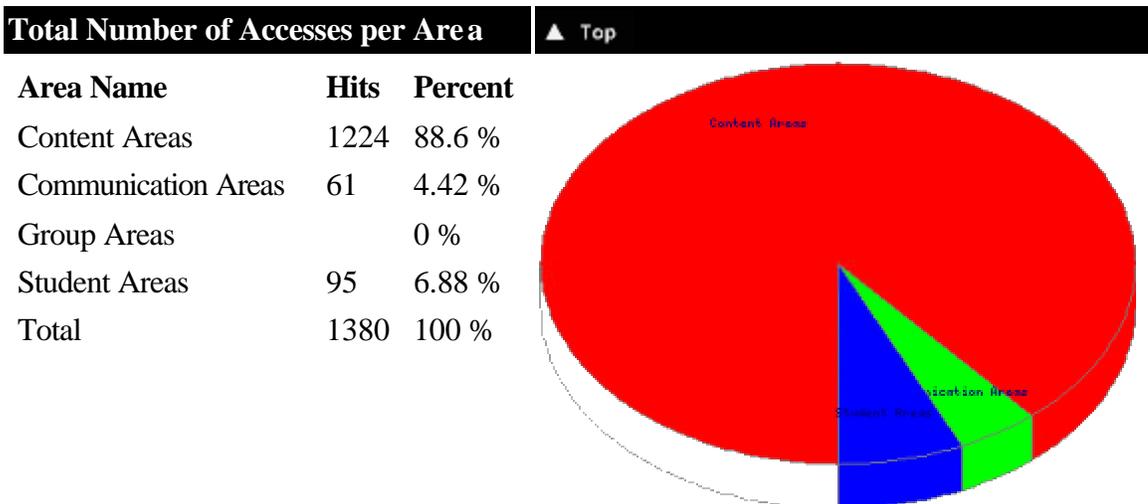
	Fall 2000	Fall 2001	Spring 2001	Spring 2002
% full-time faculty using Bb	16			51
% part-time faculty using Bb	9			22
Number of courses on Bb	22			87
Number of students on Bb		697	468	674

Source: Online Course Director VCSU

5. Syllabus, New Dimensions in Education, *Changing the Interface of Education*, Nov. 2001, Vol., 15, No. 4.

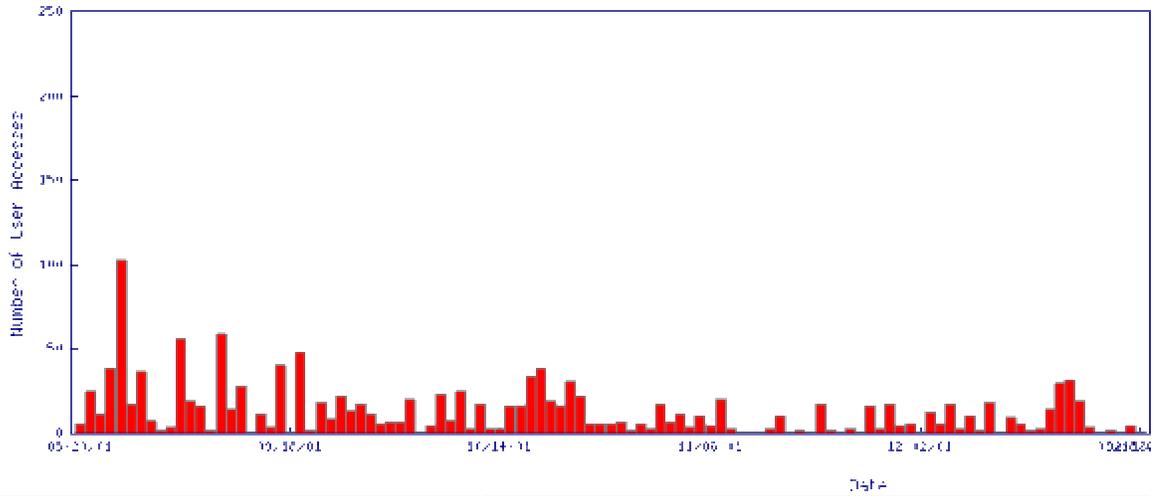
Appendix A

CIS 380: Systems Analysis and Design Class



Number of Accesses over Time

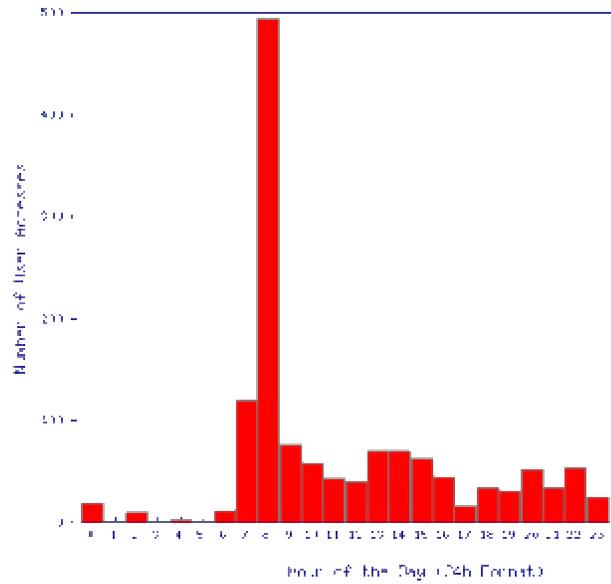
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User Accesses by Hour of the Day

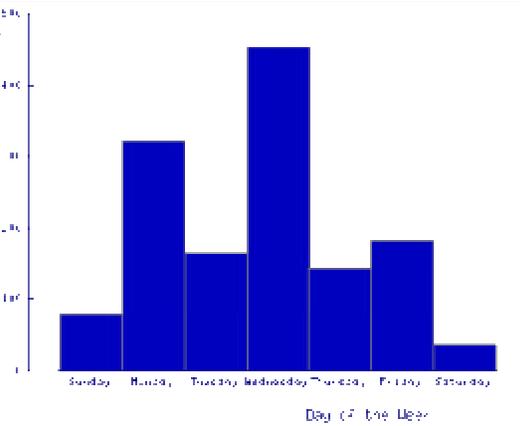
▲ Top

Hour of The Day	Hits	Percent
0	19	1.37 %
1	1	0.07 %
2	10	0.72 %
3	2	0.14 %
4	3	0.21 %
5	2	0.14 %
6	12	0.86 %
7	120	8.69 %
8	494	35.7 %
9	77	5.57 %
10	58	4.20 %
11	43	3.11 %
12	41	2.97 %
13	71	5.14 %
14	70	5.07 %
15	63	4.56 %
16	45	3.26 %
17	16	1.15 %
18	34	2.46 %
19	32	2.31 %
20	53	3.84 %
21	34	2.46 %
22	54	3.91 %
23	26	1.88 %
Total	1380	100 %



User Accesses by Day of the Week ▲ Top

Day of The Week	Hits	Percent
Sunday	79	5.72 %
Monday	322	23.3 %
Tuesday	164	11.8 %
Wednesday	453	32.8 %
Thursday	144	10.4 %
Friday	182	13.1 %
Saturday	36	2.60 %
Total	1380	100 %



Total Accesses by User ▲ Top

User	Attendance	Final exam performance	Hits	Percent
Student A			63	4.56 %
XXXXXXXXXX	dropped class		5	0.36 %
Student C	90%	average	41	2.97 %
Student D	50%	average	35	2.53 %
XXXXXXXXXX	did not attend class		6	0.43 %
XXXXXXXXXX	dropped class (after 1 week)		50	3.62 %
Student E	70%	average	25	1.81 %
Instructor			220	15.9 %
Student F	90%	poor	107	7.75 %
XXXXXXXXXX	did not attend class		3	0.21 %
Student G	90%	above average	59	4.27 %
Student H	90%	poor	80	5.79 %
Student I	90%	excellent	225	16.3 %
Student J	70%	average	12	0.86 %
Student K	40%	excellent	46	3.33 %
Student L	90%	above average	63	4.56 %
Student M	>40%	poor	53	3.84 %
Student N	90%	average	135	9.78 %
Student O	>10%	above average	41	2.97 %
Student P	40%	excellent	110	7.97 %
XXXXXXXXXX	did not attend class		1	0.07 %
Total			1380	100 %

Appendix B

CIS 385 Database Design Class

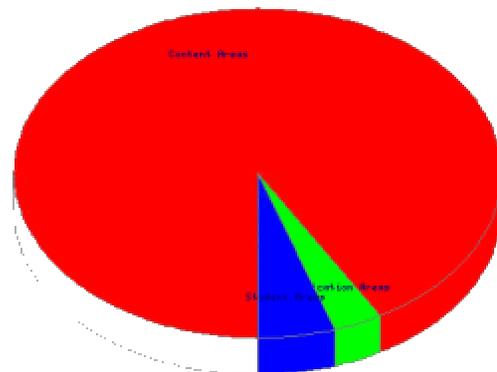
Course Statistics

Blackboard CourseInfo

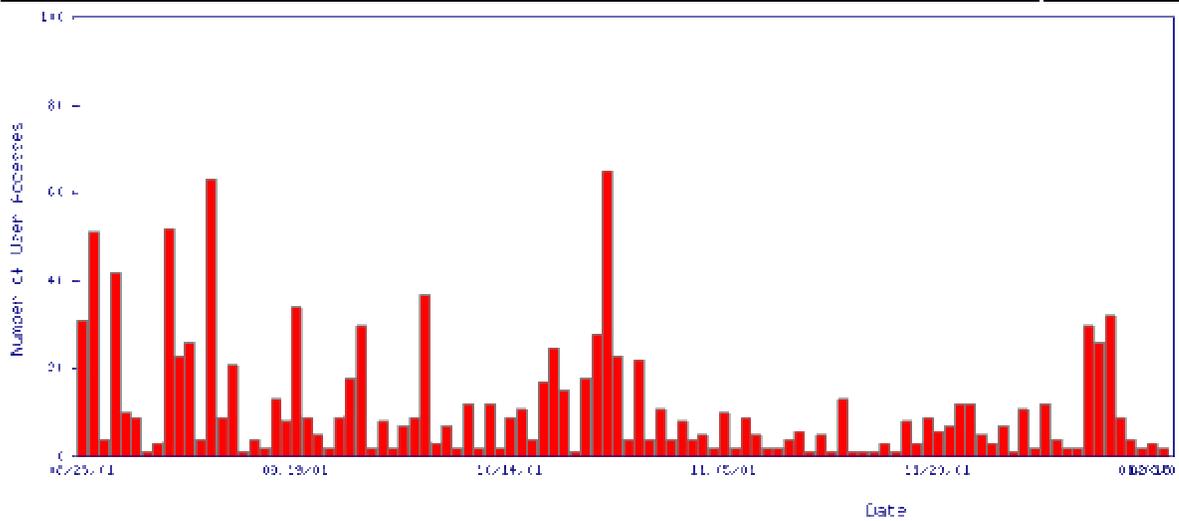
Return to Control Panel Return to Course

Total Number of Accesses per Area ▲ Top

Area Name	Hits	Percent
Content Areas	1054	91.6 %
Communication Areas	37	3.21 %
Group Areas		0 %
Student Areas	59	5.13 %
Total	1150	100 %



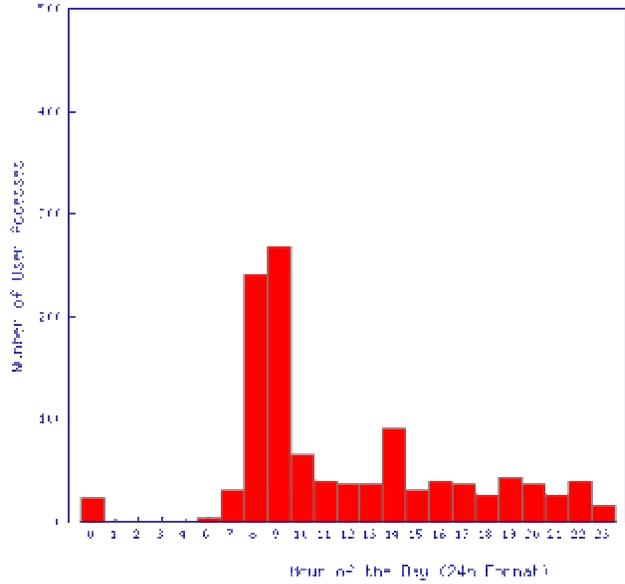
Number of Accesses over Time ▲ Top



User Accesses by Hour of the Day

▲ Top

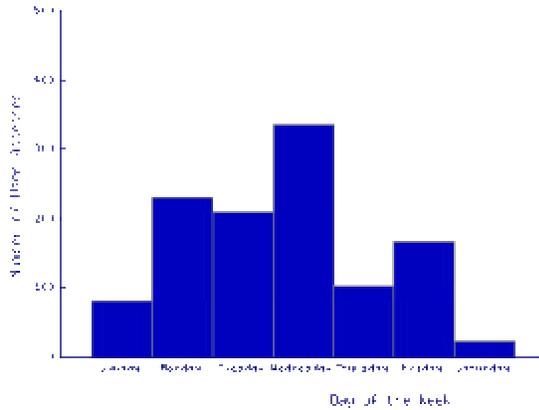
Hour of The Day	Hits	Percent
0	24	2.08 %
1	1	0.08 %
2	2	0.17 %
3	2	0.17 %
4	2	0.17 %
6	4	0.34 %
7	32	2.78 %
8	241	20.9 %
9	269	23.3 %
10	66	5.73 %
11	40	3.47 %
12	37	3.21 %
13	37	3.21 %
14	91	7.91 %
15	31	2.69 %
16	41	3.56 %
17	38	3.30 %
18	27	2.34 %
19	43	3.73 %
20	38	3.30 %
21	27	2.34 %
22	41	3.56 %
23	16	1.39 %
Total	1150	100 %



User Accesses by Day of the Week

▲ Top

Day of The Week	Hits	Percent
Sunday	82	7.13 %
Monday	230	20 %
Tuesday	209	18.1 %
Wednesday	336	29.2 %
Thursday	103	8.95 %
Friday	167	14.5 %
Saturday	23	2 %
Total	1150	100 %



Total Accesses by User[▲ Top](#)

User	Attendance	Performance in Final Exam	Hits	Percent
Administrator, CourseInfo			1	0.08 %
Student B	>10%	excellent	36	3.13 %
Student CC	90%	average	33	2.86 %
XXXXXXXXXX	Dropped Class(never attended)		3	0.26 %
XXXXXXXXXX	Dropped Class(never attended)		1	0.08 %
Student Q	90%	average	25	2.17 %
Student DD	50%	excellent	21	1.82 %
Student EE	50%	excellent	38	3.30 %
Student R	70%	average	26	2.26 %
XXXXXXXXXX	Dropped Class(never attended)		35	3.04 %
Instructor			136	11.8 %
Student FF	90%	poor	72	6.26 %
Student S	70%	average	64	5.56 %
Student G	90%	above average	57	4.95 %
Student T	50%	average	63	5.47 %
Student II	By arrangement	excellent	209	18.1 %
Student KK	40%	excellent	27	2.34 %
Student NN	90%	above average	104	9.04 %
Student OO	>10%	above average	39	3.39 %
Student U	90%	excellent	78	6.78 %
Student V	90%	average	25	2.17 %
Student W	90%	average	43	3.73 %
Student X	10%	poor	14	1.21 %
Total			1150	100 %