

# MAXIMIZING THE EDUCATIONAL BENEFITS BY USING A BUFFET STYLE OF TEACHING

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## ABSTRACT

Learning objects, learning communities, and standards are the hot buzzwords today. What new teaching methods do these technologies, pedagogies, and standards enable us to do? How do these actually improve our students' learning experiences? How do we use educational technology to increase the reach, effectiveness, and efficiency of our instruction? Traditional course structures engage all students in the same series of learning activities regardless of their abilities, preferences, goals and interests. Individualized learning environments supported by the "buffet" model offer students a broad array of learning materials and activities, allowing students to choose the kind of experience that best suits them. Students can move quickly through content they already know and spend more time on areas they find more challenging. The advantages of the buffet-style are: Assessment of each student's knowledge and preferred learning style; interactive learning materials and activities; individualized study plans; and built-in, continuous assessment to provide instantaneous feedback. Findings reveal that most students find that the buffet model is much more desirable than a straightforward online course or traditional course.

## INTRODUCTION

Although many believe that learning environments targeted to the individual learning needs of students are more expensive than traditional one-size-fits-all methodologies, new designs based on information technology can allow for more cost-effective ways of learning cost-effective for both the institution and the student. What is interesting is that many of the features used to improve the quality of education are also evident in reducing costs. Moreover, it is more efficient use of student resources as they use only what is needed.

Traditional course designs supply multiple instructors at fixed times and places. Buffet-style learning environments reduce (or eliminate) the number of lectures and/or class meetings, replacing lectures with a variety of activities supported by interactive software and more individualized assistance. Such a strategy is not only more effective in dealing with learning issues but also more economical.

Automated grading of homework (exercises, problems), quizzes, and exams for those subjects that have correct or

easily assessed outcomes not only increases the level of student feedback but also offloads these rote activities from faculty and other instructional personnel.

Without the availability of information technology tools, creating and managing individualized study plans for students would be highly labor-intensive and hence costly. Sophisticated course-management software packages such as WebCT and Blackboard, however, enable faculty to monitor student's performance, track student's time on task and overall progress, and intervene when necessary on an individualized basis. Many types of communication can be automatically generated to provide needed information to students and encourage their participation. Regular weekly, computer-generated emails can inform students about their progress and, if necessary, suggest additional activities based on homework and quiz performance.

By constructing a support system of various kinds of instructional personnel, the right level of human intervention can be applied to the particular student problem. And, with an expert system in place non-academic tutors that can provide individualized assistance to students when they encounter problems or group activities can answer all tasks associated with a course.

Computers and software are tools, and their purpose is to help people interact with words, numbers, and pictures. What is different today is that computers are being used for activities that never used to be considered interactive - such as reading, watching, or simply being entertained. Interactivity in instructional refers to active learning in which the learner acts on the information to transform it into new, personal meaning. Farah (1995), Boschmann (1995), and Randall (1995) believe that, in a constructivist sense, the learner co-constructs meaning by exploring an environment, solving a problem, or applying information to a new situation that he/she helps to define.

The World Wide Web has proved to be challenging for academic teaching. Simply ask the students to get on the Web in groups, look for certain types of information, and report back to the class what they found. These types of discussions prove much more useful in teaching about the Web than lecturing about it. Barr and Tagg (1995) used a similar strategy to teach students about mass communications using the Web. They asked the students to use the Web to find information on an emerging technology.

Penhale wrote (1997), "The merits of cooperative learning and of introducing students to the chemical literature argue for the development of

assignments that include both. Chemistry students become more engaged, they learn more effectively, and they emulate the activities of the professionals in the discipline."

Pellegrino (1995), Johnson & Johnson (1987) agree that the web provides an avenue to help us develop our students' critical literacy. Confronted by the expansive resources of the Internet, students will learn how to manage information by mastering evaluation skills. As a directional tool, it helped readers assess information on related web sites. As an evaluation tool, it gave the students practice in assessing and integrating information found on the web.

Universities and colleges are continuing to purchase the best and latest Information Technology software, hardware, and network connections to consistently attempt to provide their students with an attractive electronic information environment. Student expectations abound when it comes to campus technology. Information Technology (IT) amenities have been stated as items that can make or break a college (Roach 2000). 38% of dormitories are offering Internet connections in academic year 2000-2001 versus 28% the year before (Olsen 2000). Campus Computing Project's recent survey reports that computer technology has become core components of the campus environment and it is a way of life for most students (Shaw and Giacquinta 2000). Shaw further reports that students come to campuses to learn with technology versus the singularly auditory and visual overheads methodologies. Even further, students scrutinize commitment to technology and see how this commitment translates for students into professional advancement and higher salaries. Students are quoted: "I pay high tuition and expect touch for high tech – services and support, individual attention, lab equipment, knowledgeable faculty, and Internet access (Shaw and Giacquinta 2000; Shaw and Black 2001). More and more jobs are requiring high IT skills, especially in arenas that are intense in the data transaction fields (Thomas 2001). The demand also infers acquisition of these technology skills in a wide variety of applications, have available workshops and demonstrations, fully have integrated computers in the curricula, and have adequately skilled faculty (Shaw and Giacquinta 2000)

## METHODOLOGY

A "buffet" strategy was implement, offering students a choice of interchangeable paths to learn each course objective in the framework of a four-stage learning model: 1) familiar example, 2) alternate context, 3) general principle, and 4) hands-on practice. The "buffet" includes lectures (reduced by half), individual discovery laboratories (in-class and Web-based), team/group discovery laboratories, individual and group review (both live and online), small group study sessions, videos, remedial training modules, contacts for study groups, oral and written presentations, active large group problem solving in class, homework assignments and individual and group projects.

To promote student commitment to follow-through and to enable efficient tracking of their progress, students will enter into a "contract" at the beginning of each unit that captures their choice of learning modes.

An assessment plan involves both "before-after" comparisons of student mastery of computer concepts and the investigation of differential outcomes for different "buffet" choices. As a result, it will collect summative data on effectiveness and provide considerable information about the interaction between student characteristics and specific aspects of instructional provision.

## THE BUFFET STYLE MODEL

Distance education is similar to traditional classroom instruction except that it uses technology-based delivery systems (online). This is based on shifts in what learners need to be prepared for in the future as well as on new capabilities in the pedagogical selection of teachers. This model can shape the emergence of distributed learning as a new pedagogical model.

## THE STUDY

The course studied here was Computer Information Systems during Spring of 2002. The course was split into two parts (A & B) to allow student to try two different methods in the course. Students were asked to complete anonymous survey (see Appendix 2) to compare their experiences with lecture setting only method and the buffet method as discussed previously. The design was not to compare this course to another course, but rather to have students compare their experience in the first part of the course to the second part as they chose when they signed the student contract (see Appendix 1) at the beginning of the class. The hypothesis of the study is that the buffet method is superior to the other method either lecture only, or online only.

## RESULTS

The survey was anonymous, 113 students completed the surveys for 95% response rate. One-tailed paired *t* testing was used to check if the Buffet method mean was lower (better) than Lecture Only (face-to-Face). As shown in Table 1, the survey results overwhelmingly support the buffet method as a useful tool in the learning environment. The *t* statistics and the *p* values strongly indicate that the means for all the responses concerning the buffet method were superior to the means for all the responses concerning Lecture only (face-to-face). Only six students choose to use the Internet only method, and there are not included in the test because of their small size.

## DISCUSSIONS

There is an increasing focus on the challenge of maintaining high levels of student success with decreased contact hours to promote independent study courses and learning at a distance, but it seems that even for some well-prepared students they demonstrated poor performance. For example, half of the students in the self-paced class scored below 70% on the common final exam despite exhibiting stronger study skills, greater self-confidence, and less computer anxiety in the survey at the start of the semester.

As the number of possible choices in the buffet increases, it will become more challenging to keep content coverage moving at nearly the same pace for all students. This is important to facilitate common exams. Moreover, the challenge of producing the desired on-line system is likely to become more difficult if the maintenance of the current technology begins to use up substantial time.

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**Table 1: Survey Results**

	(Lecture Style)	(Buffet Style)	Paired <i>t</i> Test (one	Paired <i>t</i> Test
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	(Average responses) “ 1 strongly agree, 7 strongly disagree”	(Average responses) “ 1 strongly agree, 7 strongly disagree”	tailed with hypothesis “Buffet mean < F-2-F mean”) <i>t</i> Statistics	– <i>p</i> value
<b>Course Content</b>	4.79	1.24	10.60	0.000
<b>Mixed Activities</b>	4.61	1.39	10.41	0.000
<b>Internet: WebCT</b>	4.12	1.47	9.11	0.000
<b>Satisfaction levels</b>	4.45	1.44	8.72	0.000
<b>Social Benefits</b>	5.17	1.79	9.94	0.000