Blended Learning Environments, Active Participation, and Student Success

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ABSTRACT

Purpose: Online discussion within blended learning environments is essential to student success in a well-designed course. Our research briefly describes ways in which online discussion can be evaluated to predict student learning. The paper will present some online data regarding active and passive use of Web-CT-based course content as it relates to student performance. **Methods**: Thirty-seven RN (Registered Nurse) to BSN (Bachelor of Science in Nursing) students in a blended online and face-to-face biostatistics course participated in this research for 15 weeks. **Results:** Students who were engaged in active, original postings to discussion threads in response to relevant, course-based reading were most likely to do well, regardless of the total frequency of their visits to the discussion site. Students who engaged in frequent, but passive, less relevant postings did not do as well in terms of midterm quizzes or final grades. **Discussion:** Qualitative discussion rubrics can be labor-intensive; in large classes, it may be possible to supplement them with quantitative, Web-CT records of overall postings, original postings, follow-up postings, and total visits in order to determine which students are using discussion as a useful tool.

INTRODUCTION
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There has been an explosion in the use of blended learning environments. In particular, actively engaging students in the online, off-campus components of courses has received a great deal of recent attention. For example, when searching for "online discussion rubrics," one gets a typical count of over a quarter million hits to practical sites or research that describes ways to create and encourage good discussion.[1] Students take online, or blended courses (that is, both online and on-campus) mainly because they are time or space-bound. Millennial students, those born between about 1977 to 1994 and the majority of college students at present expect online discussion to be efficient and organized to facilitate learning.[2] Wang and Newlin have shown that teachers should know student expectations regarding online discussions, and they should closely observe online activity because both factors have been shown to predict student success.[3] Some instructors try to increase online activity and use of discussion lists by creating a point system for participation. The present research shows that the nature of the online activity, rather than the frequency, may make a difference in student outcomes.

Online Activity and Student Success

Online instructors faced with large classes may not always have the time to inspect each discussion point made in order to determine its quality. A WebCT environment automatically collects several online records of student activity that might have interesting predictive power and aid the overwhelmed evaluator. For example, it is possible that students who go to more links and spend more time on them do better in a class. Baugher, Varanelli and Weisbord have found that total hits do not predict student success, but hit consistency, or the extent to which hits are well-timed with course content, does.[4] Bonk and Graham

review recent course designs and show that most instructors consider the timing and content of online discussion when designing and evaluating course materials.[5] Clark points out that in small classes, a content analysis of online discussion is the best way to gauge effectiveness, but in larger classes, this can be a very time-consuming task.[6] The present study will look at the importance of visits to various pages in a website, the number of discussions read, original posts to discussion, and follow-up posts as measured in one online course system, WebCT, to student success.

METHODS
A sample of convenience consisting of thirty-seven RN (Registered Nurse) to BSN (Bachelor of Science in Nursing) students in a blended online and face-to-face biostatistics course participated in this research for 15 weeks. In accordance with ethical standards, all students read and signed an informed consent as per a university-level Institutional Review Board. Descriptive statistics for online course-related activities were tabulated, and correlations with student performance were calculated.

RESULTS
Website activity in a WebCT environment provides a variety of quantitative measures for each student. The distribution of visits to the course site and to each of the subcomponents of it, such as the homepage, organizer pages, assignments, mail, grades, and other sections such as chat, is automatically generated for each student. Table 1 shows the descriptive statistics for these variables. The number of times the student makes an active posting to the website, other than for required assignments, is also provided and is divided into original posting initiated by the student and follow up postings in response to others. See Table 1 for descriptive statistics.

Table 1. Descriptive statistics for online course-related activities, final grade in the class (grade) and first quiz grade (quiz1) in 15 weeks of a statistics course

	N	Minimum	Maximum	Mean	Std. Deviation
grade	37	81	97	91.43	3.88
hits	37	384	2711	983.48	439.17
read	37	78	311	246.59	69.89
posted	37	1	34	10.40	8.61
originalpost	37	.00	12	1.97	2.65
followup	37	.00	31	8.56	7.11
homepage	37	111	1070	298.21	191.53
organizer	37	17	227	60.32	38.98
assignm	37	116	855	239.05	128.68
mail	37	4	529	54.94	85.73
grades	37	5	128	30.24	25.89
other	37	.00	121	44.81	35.15
quiz1	37	9	15	13.45	1.46
totalvisits	37	301	2424	727.59	408.19
Valid N (listwise)	37				

Correlations with Student Performance
Bivariate correlations show that it is not the amount of visits per se that predicts final grades (r = -.03), but the number of times the student posts actively to the site, especially original postings (r = .40), (see Table 2). Final grades represented a somewhat truncated range of 81 to 97%, with an average of 91 and a standard deviation of 3.8. Sixteen percent of the variance in student grades (r^2 = .16) was accounted for by the number of original postings the student made over the 15 weeks of the course. The total number of visits to the site, over 727 on average, and with much more variability, SD = 408, was not related to grades, nor were the number of visits to any particular place in the site. Student initiative in terms of original postings to the site, rather than the number of times the students passively reads something on the site, including the posting of fellow students, or his or her own follow up postings, is the only reliable predictor of how well students do in the course. None of the other variables in Table 1 made a reliable contribution to grade, at least for this initial sample of BSN students.

Table 2. Bivariate correlations among final grades, overall postings to the discussion forum, original self-initiated postings, follow-up postings in response to others, and total number of visits to the web site in a 15 week course

		grade	posted	originalpost	followup	totalvisits
Grade	Pearson Correlation	1	.308	.400(*)	.247	-.033
	Sig. (2-tailed)		.064	.014	.141	.847
	N	37	37	37	37	37
Posted	Pearson Correlation		1	.790(**)	.969(**)	.136
	Sig. (2-tailed)			.000	.000	.421
	N		37	37	37	37
Original post	Pearson Correlation			1	.628(**)	.015
	Sig. (2-tailed)				.000	.931
	N			37	37	37
Follow-up	Pearson Correlation				1	.160
	Sig. (2-tailed)					.345
	N				37	37
Total visits	Pearson Correlation					1
	Sig. (2-tailed)					
	N					37

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION AND CONCLUSION
Active Engagement in Online Learning
Active engagement with information, as measured especially by original postings, is the best predictor of student success. Students who initiate discussion more often, regardless of how often they engage in other online activities, will do better in the class. Active learning also includes reducing the conceptual gap between what the student knows and what the teacher knows. In small classes, the instructor has a better chance of seeing the beginning of these gaps. In larger classes, it may be useful to look at individual student patterns of website use to anticipate conceptual issues. The challenge of online and blended learning will be to anticipate, rather than simply predict post hoc, what activities that can be monitored online will lead to the best outcomes. And of course, in a correlational study such as this one, some qualities of the students with the highest grades, such as good study habits and careful attention to detail, may be causing more initiative in producing discussions, which in turn may be linking this variable to better grades.

Implications for Teaching
Finally, instructors should be wary of simply imposing a set number of postings. Instructors are likely to have better outcomes if they set up contingencies whereby students are encouraged to initiate their own postings at appropriate intervals. Future research should provide students with ways to become more actively engaged in their own learning and ways to link quantitative to qualitative information about online discussion behaviors.[7] Furthermore, the advent of Web 2.0, blogging, vblogging, and other interactive tools will also provide students and instructors with the means to more actively engage in coursework online. Learning and practice in a technologically challenging environment is part of 21st century life. The challenge of blended learning is to help students keep up with the pace of change.[8,9] The satisfaction of teaching online is knowing that students who are reinforced for taking initiative, and who practice learning to learn will do better in the short and long run than those who learn to memorize a set of static facts. What has always applied to learning, that active is better than passive, is true again in online discussions held in blended learning environments.

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