

STUDENTS' EXPOSURE TO ON-LINE LEARNING MATERIAL: IS MORE ALWAYS BETTER?

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ABSTRACT

Online learning is spreading like wildfire throughout the educational systems of the world, and there seems to be a general view that "more is better", that just giving students access to more material will improve their learning. Thus many approaches to online learning rely heavily on increasing students' exposure to the online material. This paper will show that there is a positive relationship between how many times students are exposed to material in an online learning environment and their final results for the course they are taking.

ONLINE SUPPORT FOR TRADITIONAL TEACHING

Teaching and learning with the help of information and communications technologies (ICT) has been given many names, including distance learning, distance education, and online learning. The technologies used for this form of teaching and learning have also gone under many names. For this paper I chose to use the term Online Learning Environment (OLE). Jones & Buchanan define an OLE as "... a set of tools, systems, procedures and documentation that allows any and all parts of the learning experience to occur using some form of computer mediated communications." [1]

Online learning in its most extreme definition means to deliver teaching to students completely online, without any interaction and communication in a traditional classroom setting. OLEs can also be used to support traditional classroom teaching, which according to McCormack & Jones [2] is the most common use of this form of technology. The Internet in general and the World Wide Web in particular have brought about many changes for education, and is seen by many as what will save education from its present difficult situation. Public higher education is struggling with solving the problem of diminishing funds and increasing student numbers. However, it is important to remember that the web is only one tool out of many that an educator has at his or her disposal. In the words of Rosen the web is "merely a tool, as is a chalkboard, overhead projector, or VCR. Tools don't teach" [3]. Online learning should be seen in the context of all the other tools that are available, and be used whenever most suitable. Technology in general has been identified as having a positive impact on student learning by many, including the Office of Technology Assessment (1995), and online learning technology is just one of the latest examples of such technologies [4].

OLEs generally offer a wide range of functionality to educators and learners. Peh & Foo studied a virtual school project and concluded that students primarily used the OLE to access lecture material, such as lecture notes, instructions and additional reading [5]. Other common uses of online learning technology is to support interaction and communication via email, discussion boards, virtual workspaces, and shared databases. Online assessment is still in its infancy, but it is an area that is growing, and it will arguably be a major part of OLE usage in the future.

Advantages of using an OLE range from getting access to a wide variety of resources, to increased support for individual teaching and learning styles, and it is easier to find up-to-date information [6]. Factors, which discourage usage of an OLE include a lack of social contact with other students if the education is delivered solely online, students' and educators' lack of self-confidence and experience with the technology, and peer group pressure [6].

THE STUDY

The author of this article delivered four different MIS (Management Information Systems) courses during the academic year 2001-2002. One course was delivered in two sections for both Fall and Spring. For all sections, an OLE called BlackBoard¹ was employed to manage and enhance various aspects of the administration and teaching. BlackBoard is a proprietary web-based system that has become the standard OLE employed at Francis Marion University. It is a system that both students and educators find easy to learn and use. On the downside, BlackBoard is not very flexible and it can be hard for educators and students to adapt the system to their own individual teaching and learning styles, and requirements.

BlackBoard was used as a support medium to traditional teaching in lectures and tutorials. Although BlackBoard is an extensive system, for these particular courses only a few functions were used. They were primarily: 1) Course documents: making lecture notes, articles etc. available to students; 2) Announcements: letting students know about news, updates and changes to course delivery; 3) External links: links to web pages; and 4) Instructions to students concerning homework. This would be comparable to what Roberts, Jones & Romm call the "standard model" [7] of online learning, which features lecture notes online, a collection of hyperlinks, workshop tasks and forms of communication support, etc. Other features of BlackBoard include online surveys and quizzes, discussion boards, and support for groups of students working together. Students have their own individual account on a BlackBoard web, so an educator can in limited ways track what students do on the site.

Data on the number of times each student had accessed the learning material for a course was collected from BlackBoard after students had taken the final exam for the respective course. Using this data, I ran a correlation test between the students' number of access and the students' course performance. Students' performance, which I call the result, is the final results the students got for the courses, i.e. the combination of the various pieces of assessment (up to 100%). This result would then be transformed into a letter grade.

An overview and summary of the data can be seen in Table 1. Scatter-graphs and further details can be found in Appendix. Before putting together the final results, the data was slightly edited. Students who dropped the courses were taken out of the data as was the instructor and a test user account. As mentioned above, courses A and C were taught in two sections each. The sections were analyzed individually but there was virtually no difference between the correlations so I present them as one. For all four courses the pieces of assessment included two multiple-choice exams, writing an essay, and other activities such

¹ See <http://www.blackboard.com>

as creating a database or a web page. It should be noted that since the final exam results were distributed using BlackBoard the students kept accessing the course website for a while after the data was collected.

Table 1:

Course	Type of course	Semester	Students	Correlation
A	Introductory IS course (two sections combined)	Fall 2001	42	r=.54
B	Upper level ecommerce course	Fall 2001	34	r=.45
C	Introductory IS course (same as A, two sections combined)	Spring 2002	30	r=.56
D	Systems analysis and design course	Spring 2002	9	r=.399

The data clearly shows a positive correlation between the number of accesses to the online learning material and the students' grades for all four courses. Although the data in itself does not offer any explanation of this correlation, I suggest that the fact that there is a positive correlation is interesting enough. It would seem to indicate that students that log in to the OLE and read material online or download material more than other students end up with better grades. Somewhat surprisingly there seems to have been little previous research on this issue. In a similar study, Long & Javidi [8] found a positive correlation between the number of emails students contributed to a listserver used for a course and their class performance ($r=.57$) as well as grade point average ($r=.43$). They conclude, "It is clear that the frequency of online participation is a predictor of performance as measured by examination grades." Long & Javidi focused on students' participation in online communications like email and discussion boards, and not on students' exposure to online learning materials in general.

The data from this study shows that the more students access material on the web site the higher course grades they receive. This is an interesting finding in many ways. First, it would seem to suggest that indeed "more is better". There is a risk for information overload but with careful orientation from the educator, students can find their way in the online material. Of course this doesn't mean that OLEs should be loaded up with material just for the sake of it. The educator should accompany material provided to students with clear instructions and explanations, and the material should have a clear purpose for being there. Second, it suggests that students' interest in and willingness to find information about what they study, is related to their performance. An OLE can help provide students with more material and also help students put a structure and purpose to the material. The results also suggest that when embracing online learning technology, educational institutions should put careful consideration into how students can access the OLEs. Slow network connections, for example, either on the OLEs end or on the students' end, can significantly diminish the usefulness of the online learning experience.

LIMITATIONS

It should be pointed out that there is no way of knowing what students actually do when they access BlackBoard pages - the statistics do not reveal the nature of the accesses. Students could be downloading material, taking quizzes or taking part in discussions, but BlackBoard does not distinguish in its user statistics between activities. That is why I think the term exposure to learning material is appropriate. BlackBoard also doesn't say anything about from where students access the course material. Many students have access to the Internet from home, and this could be a factor in the exposure to the material. It is believed that most students regularly access BlackBoard from computers on campus as well as from

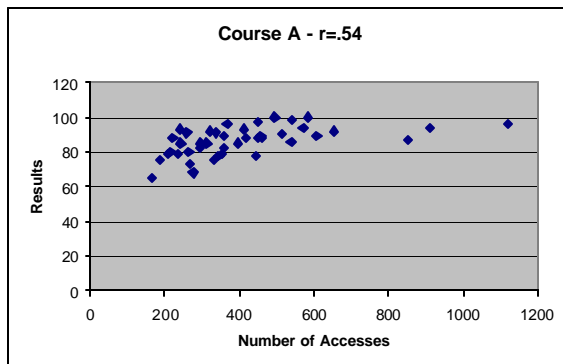
home and their workplace. So it could for example be very possible that students who can access the online learning material from home or from work end up with a better grade, because of that fact alone, or in relation to other variables. Another limitation of this study is that it only looks at students' final grade and not how they did on individual pieces of assessment. It is possible that for some assessments the students benefited more from accessing the online learning material than for other assessments.

CONCLUSION

In spite of some limitations, the results clearly suggest that there is a strong positive correlation between students' exposure to online learning material and their final grade on courses. Although I cannot draw certain conclusions beyond the data presented here, I would venture to say that students' exposure to learning material online does positively contribute to their improved performance and final grade. One of the implications of this is that easy and individualized access to the learning material offered to students online should be of primary concern to educators. This then applies to both the educators' end – making the OLE as user-friendly as possible, and the students' end – making sure students have access to the OLE from wherever they chose to study. More research will undoubtedly be necessary to further our understanding of this issue, but I submit that this is an important step on the way. It would be especially interesting to take a closer look at, and perhaps find an explanation for, the question of why greater exposure to the OLE results in students getting better grades.

APPENDIX

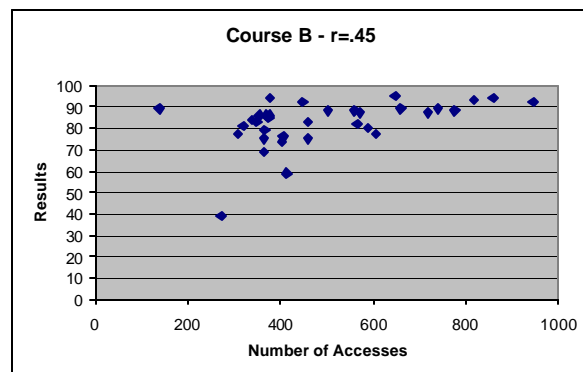
Introductory IS course



	Accesses	Results
Std.Dev.	199	8
Median	357	88
Mean	413	86
Max	1121	100
Min	165	65
n	42	

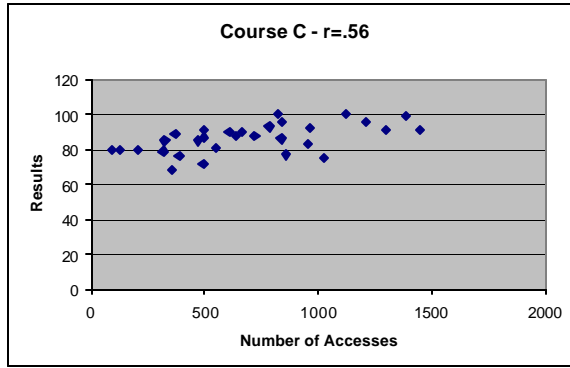
Introductory IS course

Upper level ecommerce course

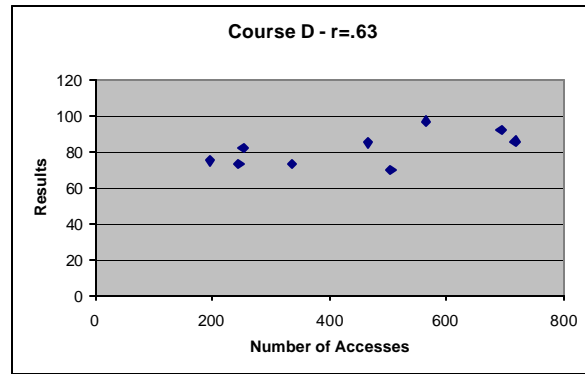


	Accesses	Results
Std.Dev.	188	11
Median	431	86
Mean	495	82
Max	945	95
Min	138	39
n	34	

Systems analysis and design course



	Accesses	Results
Std.dev.	368	8
Median	652	88
Mean	695	86
Max	1447	100
Min	92	68
n	30	



	Accesses	Results
Std.dev.	195	9
Median	466	79
Mean	442	81
Max	718	97
Min	196	70
n	9	

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