

**Abstract**

This study examines the usage of the Blackboard Learning Management System (LMS) by faculty members and instructors at a graduate school of education in the Northeast United States. Specifically, the researchers investigate:

1. the rate of adoption of Blackboard by members of the university's instructional group,
2. the educational context within which instructors are using Blackboard, and
3. possible changes in the instructional practices of "expert" Blackboard instructors.

The researchers employ unobtrusive data collection procedures to analyze five years of backend usage records for the purposes of:

- i. describing the LMS technologies that instructors are assimilating, and
- ii. highlighting pedagogical shifts within the instructional unit over time.

Based on the findings, the researchers discuss the potential of LMS as a pedagogy transformation tool.

**Background & Context**

The institution involved in this study, uses, in addition to Blackboard, two other Learning Management Systems - ClassWeb which is linked with the school's student information system and thus serves as the default platform for instructors to communicate with students and also create and administer individual courses, and Moodle which is used mostly by both instructors and students as an e-collaboration space.

On its part, Blackboard was implemented purposely as a platform for the delivery of online distance learning courses. However, some instructors by their own volition, choose to use Blackboard to support their regular class-based and hybrid courses, and the presumption is that such instructors are interested in exploring and possibly using other technological functionalities to augment their course delivery in ways that they thought ClassWeb was incapable of supporting. Investigating the Blackboard usage patterns of such instructors over a given period, should therefore shed more light on whether continual use of LMS can potentially influence pedagogical practice.

**Study Questions**

1. What is the rate of adoption of LMSs by members of a university's instructional group?
2. To what functional uses do instructors apply LMSs on campuses of higher education institutions?
3. How does prolonged use of a LMS affect the instructional practices of particular faculty members?

**Theoretical Perspective**

Two main theoretical frameworks guide this study:

1. the Diffusion of Innovations (DoI) theory (Rogers, 2003), (for most members of a social system, the innovation-decision depends greatly on the decisions made by other members of the system)
2. Imersheim's (1977) approach to the issue of changing teaching/learning paradigms (organizational change requires shifts in the "world views" of those involved in the change).

**Methodology**

Blackboard has been used by the College under study since the summer term of 2002 as a platform for the delivery of fully online courses, and for the support of hybrid and face-to-face courses. In order to obtain an accurate and objective picture of the rate of adoption and trend of usage by instructors in this college, and how the respective components and tools are being used by each individual instructor, the researchers (who are also the technical administrators of the application), adopted the unobtrusive method of opening and manually checking individual course sites of all courses offered in the college through the Blackboard platform from the Summer term of 2002 to the end of the Fall term of 2008. For each course, the researchers determined the identity of the instructor(s), numbers of students that enrolled and completed the course, and all the Blackboard features and components that were employed in the learning processes.

Though this method is a limited approach to studying instructor adoption and usage of a LMS, the research team believes it represents the most suitable way of obtaining large quantities of objective and reliable data, and can thus represent a step towards providing a backdrop for more exhaustive and comprehensive studies using additional methods and instruments.

This method thus yielded quantitative data pertaining to:

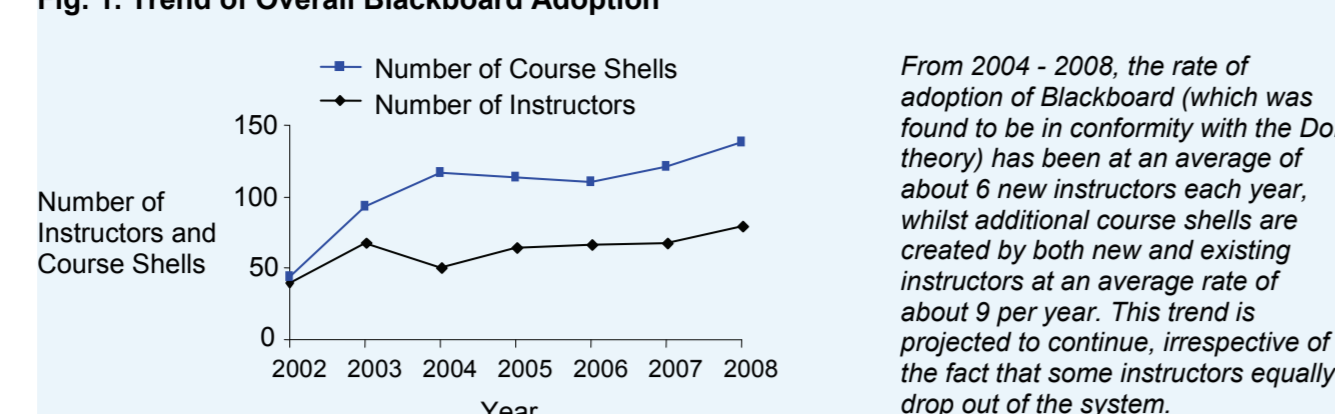
- the numbers and identities of faculty members/instructors using the resource each semester
- total numbers of courses offered each semester
- types of courses offered i.e. face-to-face, hybrid or online each semester
- the various pedagogical tools employed in each course and the extent to which they were used.

Using Microsoft Excel spreadsheets, the data was compiled, sorted, coded and in some cases displayed graphically to establish trends and relationships. Instructors who were identified as having been using Blackboard continuously for a period of 15 semesters or more had their courses re-examined to establish whether or not, any transformation in their practices and tool usage took place over time.

**Results & Discussion**

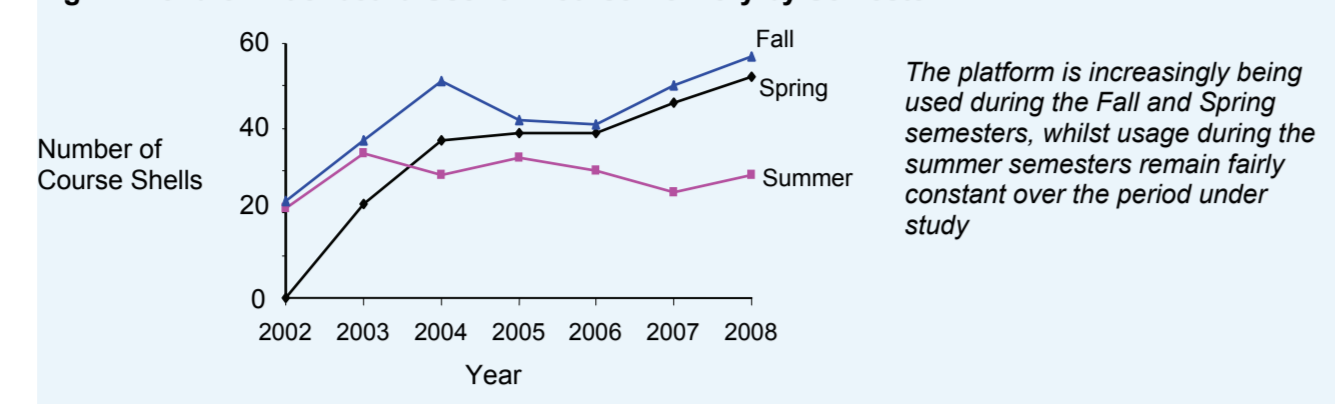
**Rate of Blackboard Adoption and Context of Use**

**Fig. 1. Trend of Overall Blackboard Adoption**



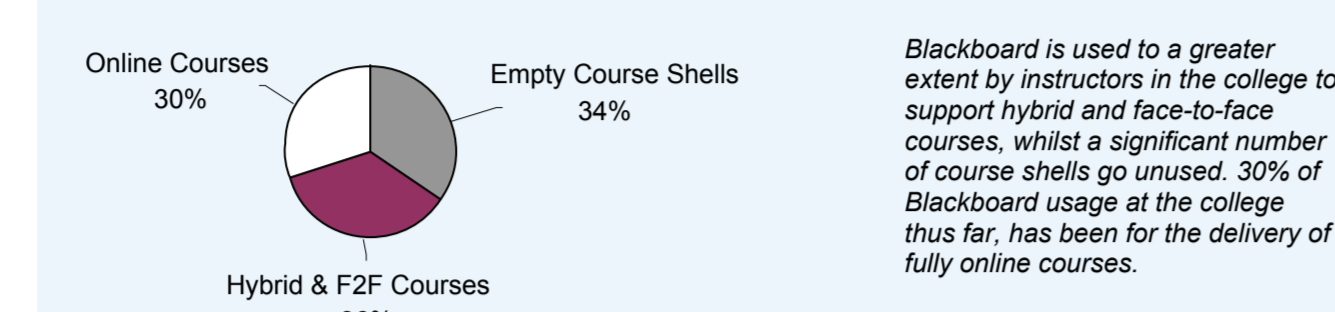
From 2004 - 2008, the rate of adoption of Blackboard which was found to be in conformity with the DoI theory has been at an average of about 6 new instructors each year, whilst additional course shells are created by both new and existing instructors at an average rate of about 9 per year. This trend is projected to continue, irrespective of the fact that some instructors equally drop out of the system.

**Fig. 2. Trend of Blackboard Use for Course Delivery by Semester**



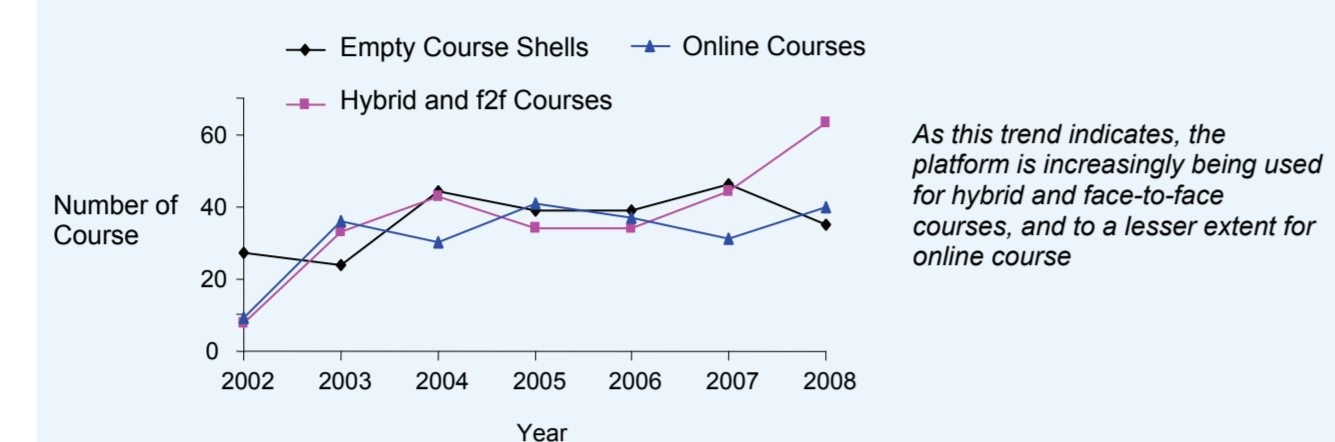
The platform is increasingly being used during the Fall and Spring semesters, whilst usage during the summer semesters remain fairly constant over the period under study.

**Fig. 3. Context of Blackboard Use**



Blackboard is used to a greater extent by instructors in the college to support hybrid and face-to-face courses, whilst a significant number of course shells go unused. 30% of Blackboard usage at the college thus far, has been for the delivery of fully online courses.

**Fig. 4. Trend of Blackboard Use for Course Delivery by Course Type**



As this trend indicates, the platform is increasingly being used for hybrid and face-to-face courses, and to a lesser extent for online course.

**Conclusion & Recommendation**

Learning Management Systems are playing an increasingly critical role in the fulfillment of the academic goals of higher education, as they have become the main platform for the delivery of online courses, and for supporting traditional courses. Indeed, for most faculty members, these applications are the primary entry point into the use of technology for instruction delivery. However, despite heavy investments being made by higher education institutions in the procurement and use of LMSs, less research and analysis has been invested in determining whether these resources are being put to effective use.

As pedagogy greatly influences learning outcomes, this study, among other things, sought to establish whether as instructors become more agile in the use of these LMSs, their pedagogical approaches will likely be transformed in ways that will further make LMS use more beneficial. Acknowledging that the singular method of only analyzing usage data over a five year period is probably inadequate to draw firm conclusions in this direction, the findings thus far can be seen as pointing to the fact that instructors who voluntarily adopt LMSs, progressively use the available tools and resources in ways that will facilitate their instruction delivery. Their efforts are thus more directed towards selecting the particular tools that will aid them in this direction, rather than allowing the presence of these tools to force them into rethinking their delivery activities in ways that will maximize the potentials of the tools.

Further research work is thus required to establish an understanding into why instructors voluntarily use LMSs, what motivates them to continue using these technologies and in what context, and more importantly, the effects of such instructional strategies on student learning and satisfaction.

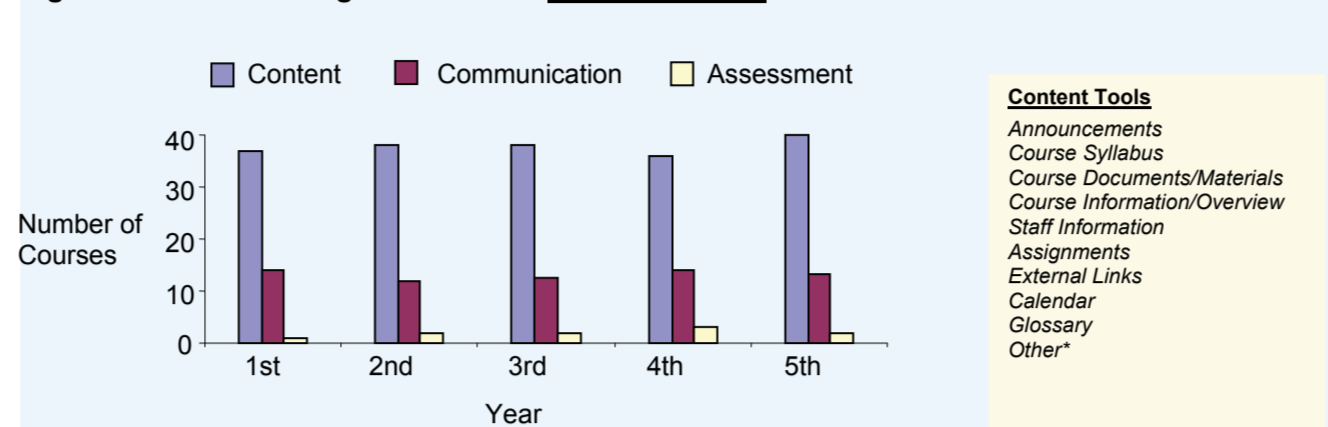
**Results & Discussion Cont'd**

**Blackboard Use and Pedagogy**

Sixteen (16) instructors who were identified as having used Blackboard continually each year (and each semester) for at least five years, had their respective courses examined extensively. Whilst some of these instructors offered at least three courses each year, others offered as many as nine. Most of these course offerings were however mostly different semester iterations of the same course. Also, whilst majority of these instructors taught online and hybrid versions of the same course each semester, others offered online courses in one subject area and hybrid courses in another.

- The data on these 16 instructors' activities was thus accessed and compiled as follows:
1. the year a particular instructor first adopted Blackboard was located, and the course(s) he/she offered that year were examined individually to determine all the resources utilized.
  2. if a course used any of the content, communication and assessment tools, then that particular course was assigned to each of these categories.
  3. this process was repeated for the subsequent year for that particular instructor, and so on to the fifth year.
  4. These three steps were repeated for each of the remaining 15 instructors.
  5. The numbers were then summed and plotted as shown in Figures 5 and 6.

**Fig. 5. Instructors' Usage of Tools for Hybrid Courses Over 5 Years**

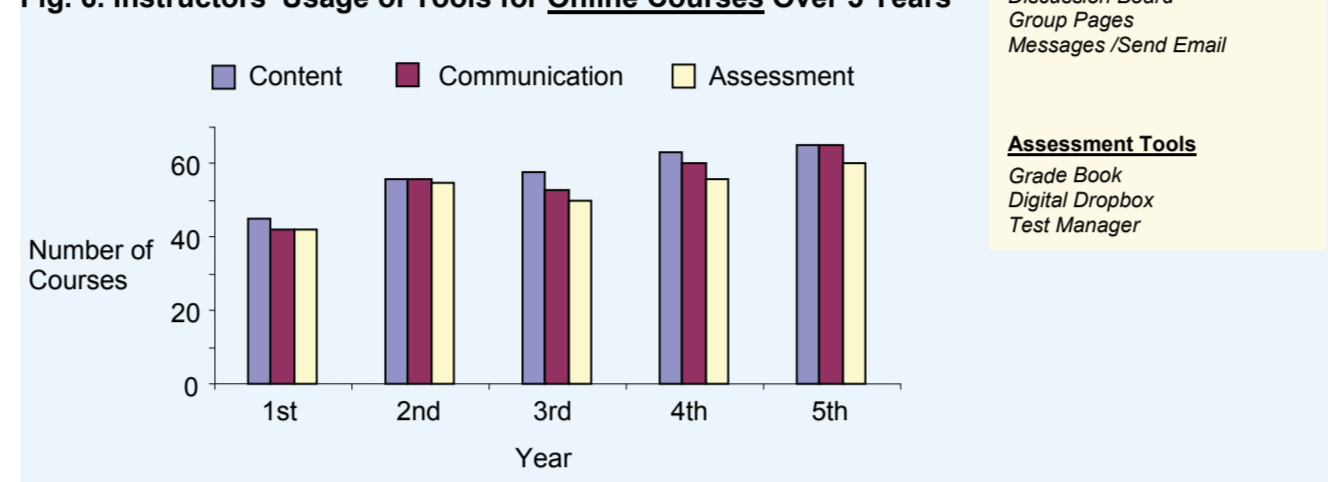


- Content Tools**
- Announcements
  - Course Shells
  - Course Documents/Materials
  - Course Information/Overview
  - Staff Information
  - Assignments
  - External Links
  - Calendar
  - Gateway
  - Other\*

- Communication Tools**
- Collaboration
  - Discussion Board
  - Group Pages
  - Messages (Send Email)

- Assessment Tools**
- Grade Book
  - Online Quizzes
  - Test Manager

**Fig. 6. Instructors' Usage of Tools for Online Courses Over 5 Years**



Instructors predominantly used the content tools for hybrid courses, whilst for online courses, they engaged resources in all three categories. As time progressed, no significant change in resource usage is observed, though some instructors of online courses progressively adopted advanced communication, collaboration and file sharing tools.

In terms of pedagogy vis-à-vis Blackboard usage, the following could be inferred from the results:

- repeated use of Blackboard one semester after the other has very little impact on instructors' pedagogical practices, particularly in the case of hybrid and face-to-face courses where students were only required to download recommended texts, upload assignments and occasionally communicate with the instructor
- for online courses, constructivist pedagogy is the dominant practice, as instructors tend to implement more collaborative and ill-structured learning activities, thus making more extensive use of Blackboard's features
- instructors are generally willing to try out any of the Blackboard tools if only such tools are deemed to be capable of facilitating their work, but are reluctant to change their practices in ways that could further harness the affordances of the technological tools available.

**Selected References**

Imersheim, A. W. (1977). The epistemological bases of social order: Toward ethnoparadigm analysis. *Sociological Methodology*, 8, 1-51.

Rogers, E. M. (2003). *Diffusion of innovations*. New York: Free Press.