SLAM MICHIGAN

SYMPOSIUM ON LEARNING ANALYTICS AT MICHIGAN

Classroom Walls That Talk

Using Learning Analytics to Raise Awareness of Underperforming Students
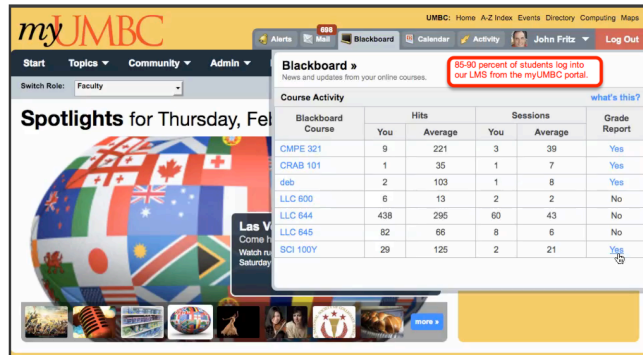
John Fritz, UMBC

Symposium on Learning Analytics at Michigan (SLAM)

January 11, 2012

Overview

- Problem
- **A** Solution—not **THE** Solution
- Implications
- Next Steps
- More Information
- Q & A

About UMBC

- Founded in 1966
- "Research extensive university" Carnegie classification
- Fall 2010 Stats
  - 12,870 Students
    - 9,947 undergrad, 2,923grad
  - 730 Faculty
    - 480 FT, 250 PT
- Selected Brags
  - #1 "Up and Coming National University" *U.S. News America's Best Colleges 2011, 2010 & 2009*
  - 1st in undergrad chemistry degrees awarded to African Americans
  - One of 50 Best Colleges for Women
  - 7-time National College Chess Champions

About Blackboard @ UMBC

- Blackboard Learn 9.1
- As of Spring 2011 (began using in SP200)
  - 95% of all students
  - 75% of all instructors
  - 65% of all courses
  - 356 Communities
    - Includes all student, faculty and staff senates
- Support Staff:
  - 2 FTE (Admin & Support)
  - 1 Server Admin
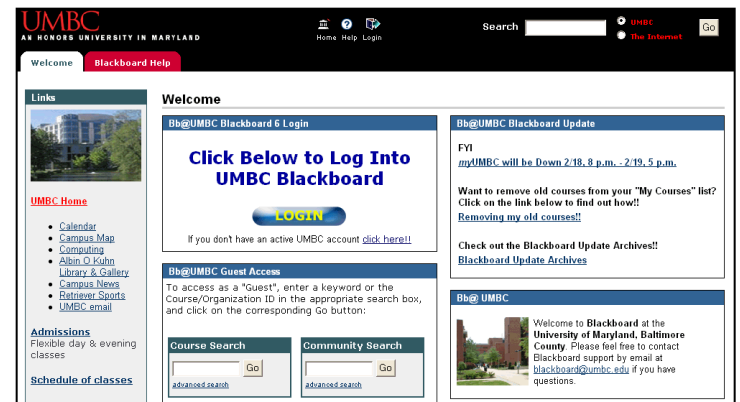
"So, is Blackboard making a difference?"

Former UMBC Provost Art Johnson in 2003

PROBLEM
HOW DO YOU ANSWER?

Bb System Reporting

Bb Course Reporting

Questions

- Functional
  - What is the relationship between Blackboard use and teaching and learning?
  - What tools can we give users to shed light on (and improve) their own performance within the system?

- Technical
  - How do we query the system without breaking it?
  - How do we scale and maintain the process?
    - Bb – Core product?
    - Community – Building Blocks?
    - Other?
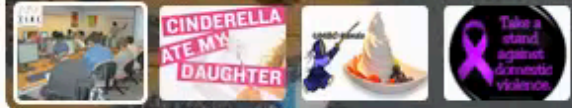
A SOLUTION--NOT _THE_ SOLUTION

myUMBC

Alerts | Mail **2982** | Blackboard | Calendar **12** | Activity **3** | John Fritz ▼ | **Log Out**

Start | Topics ▼ | Community ▼ | Admin ▼

Switch Role: [Faculty ▼]

Spotlights for Monday, Oct

CIRC

CIRC
Prog...

Wed., O...

Free ha...
MATLAB...
worksho...
and assu...
line inte...

CINDERELLA ATE MY DAUGHTER | hope

Blackboard »
Your courses and activity inside of Blackboard.

Course Activity   what's this?

Blackboard Course	Hits		Sessions		Grade Report
	You	**Average**	**You**	**Average**	
Fall 2011					
ELC 688YL	30	282	2	12	Yes
FYS 101R	28	230	2	21	No
LLC 644	173	904	18	35	Yes
LLC 646	158	175	21	14	No
Fall 2010					
CMPE 321	9	225	3	40	Yes
LLC 644	456	283	63	42	No
SCI 100Y	29	127	2	22	Yes
Spring 2010					
LLC 600	11	26	3	4	No
Summer 2007					
CRAB 101	1	31	1	5	Yes

What's New for Fall

- UMBC Community Standards
- Groups Directory
- Following Groups
- Updated Start Page
- Enhanced Pawpularity
- Streamlined Topics Menu   and more...

Inside Blackboard

myUMBC

Alerts | Mail **2982** | Blackboard | Calendar | Activity **3** | John Fritz ▼ | **Log Out**

Start | Topics ▼ | Community ▼ | Admin ▼ | Help ▼ | ★ Favorites ▼ | Search [Enter search terms] **Go**

Switch Role: [Faculty ⬍]   Hide this bar »

Blackboard Reports

Honors Forum, Lecture Hall 1
by Stefanie Mavronis

Check My Activity

- Hits are in no way representative of the grade you will earn.
- Attempting to game the system will not result in a higher course grade.
- This tool is for personal use only.
- Tip: Improving Your Engagement In a Class

Blackboard Course	Hits		Sessions		Grade Report
	You	**Average**	**You**	**Average**	
Fall 2011					
ELC 688YL	30	282	2	12	Yes
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Help Us Improve

☐ I am willing to be contacted about how I use Check My Activity. (You can change this at any time)

Save Setting

Disclaimer

In compliance with the Family Educational Rights and Privacy Act (FERPA), your use of this site may be monitored to improve its educational effectiveness for you and future students. However, all UMBC officials are obliged to keep your identity confidential. For more information, please read the Notification of Rights under FERPA.

Video Demo of UMBC's Check My Activity Tool for Students

Definitions

- **Hits** - Every time you view a file, post to a discussion, or read an announcement, that is considered a hit.
- **Sessions** - Every time you log in to a Blackboard course, that is considered a new session.
- **Grade Distribution Report** - If your instructor uses the Bb gradebook, this report will show how your own activity compares with those who earned the same, higher or lower grade on any assignment.
- More info...

UMBC

AN HONORS UNIVERSITY IN MARYLAND

Tool Usage for fritz in SCI100_0101_SP2009
Report Run On: March 25, 2009
Data Last Updated: March 25, 2009
Back to Blackboard Reports

fritz's Usage

Tool	Hits	
Announcements	11	█
Check Grade	0	
Collaboration	0	
Communications Area	0	
Content	0	
Discussion Board	1		
Electric Blackboard	0	
Glossary	0	
Groups	0	
Messages	0	
Personal Information	0	
Send Email	0	
Staff Information	0	
Tasks	0	
Tools	0	
Other	11	█
Total	**23**	

Course Usage (Avg. Hits Per User)

Tool	Hits	
Announcements	41.54	████████
Check Grade	4.78	▌
Collaboration	0.04	
Communications Area	0.36	
Content	0.39	
Discussion Board	67.81	███████████
Electric Blackboard	0.04	
Glossary	0.01	
Groups	19.93	███
Messages	0.03	
Personal Information	0.01	
Send Email	0.26	
Staff Information	5.20	▌
Tasks	0.02	
Tools	0.76		
Other	126.14	████████████████████
Total	**267.30**	

*my*UMBC

Start **Topics** ▾ **Community** ▾ **Admin** ▾

Switch Role: [Faculty ⬍]

Spotlights for Monday, Oct

CIRC

CIRC
Prog...
Wed., ...

Free ha...
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CINDERELLA ATE MY DAUGHTER | Take a stand against domestic violence | hope

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Bb Activity by Grade Distribution

Distribution for SCI100_3278_FA2010
For Gradebook Item: Nutrient Pollution
For Student: fritz
No Date Limit on Activity
Report Run On: October 3, 2010
Data Last Updated: October 3, 2010
Back to Blackboard Reports

Note: Your grade is indicated in red.

Grade	Hits	Users	Avg. Hits Per User	Sessions	Avg. Sessions Per User
0	1079	11	98	88	8
4	170	1	170	15	15
6	105	1	105	11	11
7.5	78	1	78	7	7
8	186	1	186	18	18
8.5	1102	9	122	97	11
9	1976	12	165	163	14
9.5	2514	18	140	192	11
10	3467	23	151	304	13
10.	243	1	243	22	22
Total	**10920**	**78**	**140**	**917**	**12**

Bb Activity of D & F students

- **Students earning a D or F tend to use Bb 39 percent less than students earning higher grades**.

  - SP2011   1435 courses | 43 percent less
  - FA2010   1414 courses | 33 percent less
  - SP2010   1461 courses | 47 percent less

  - FA2009   29 courses | 37 percent less
  - SP2009   11 courses | 47 percent less
  - FA2008   13 courses | 40 percent less
  - SU2008   7 courses | 33 percent less
  - SP2008   26 courses | 32 percent less
  - FA2007   15 courses | 36 percent less

NOTE: Analysis using iStrategy since Spring 2010.

- Does the pattern hold true during the semester?
- What if students knew this information sooner?

Bb Activity by Grade Distribution
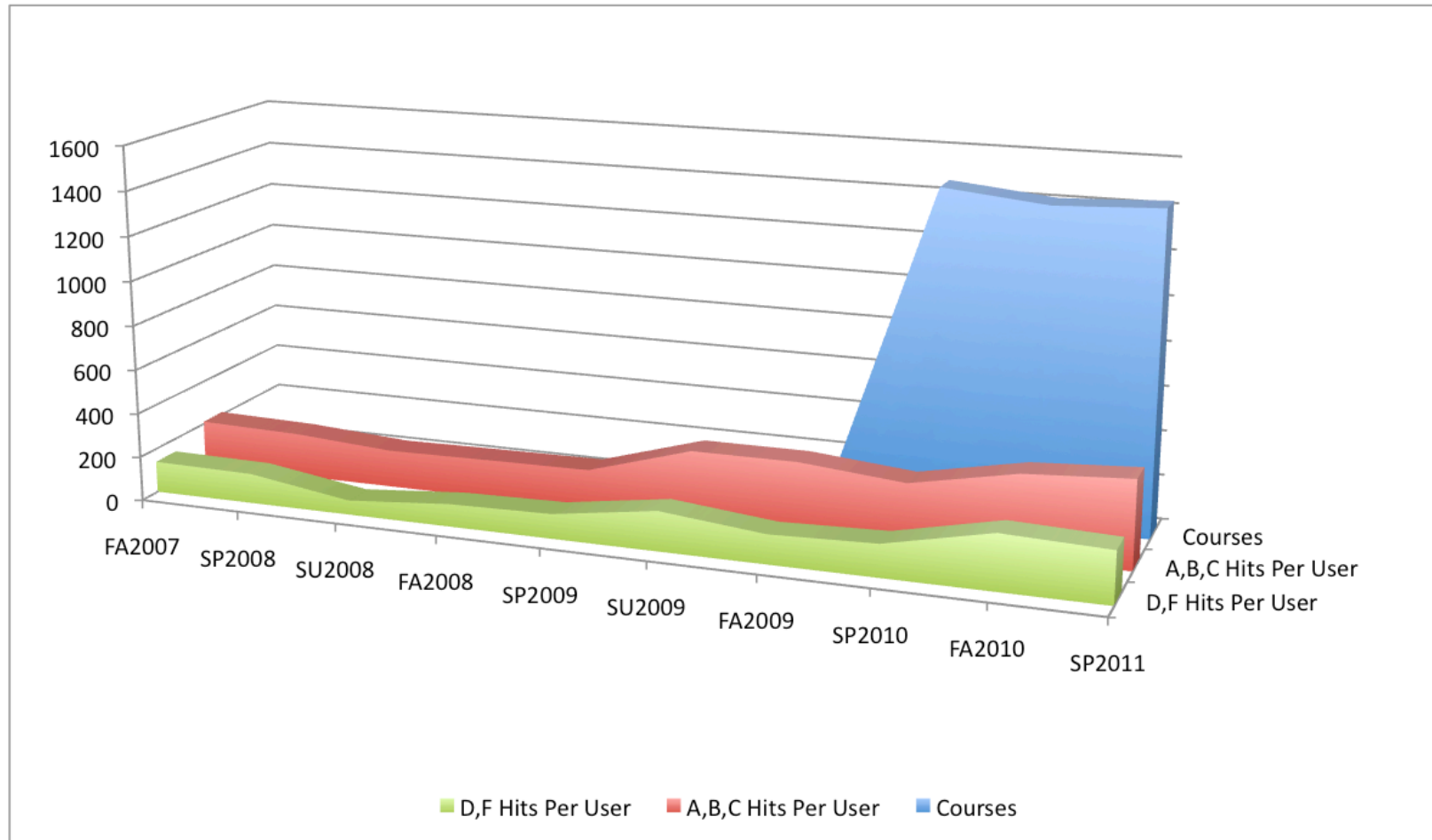
GDR (Bb Courses Since SP2010)
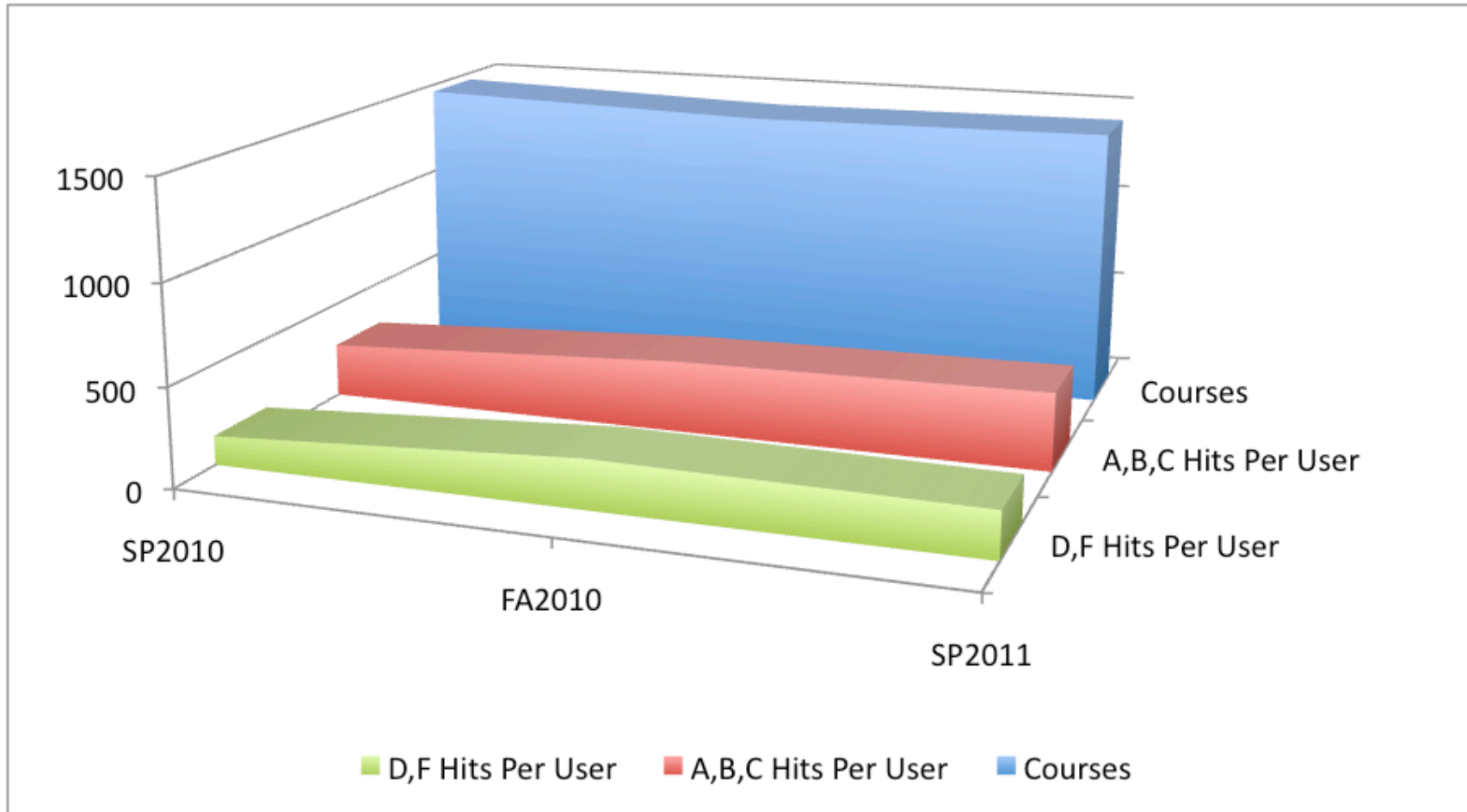
Avg. Bb Hits Per User (SP2011)
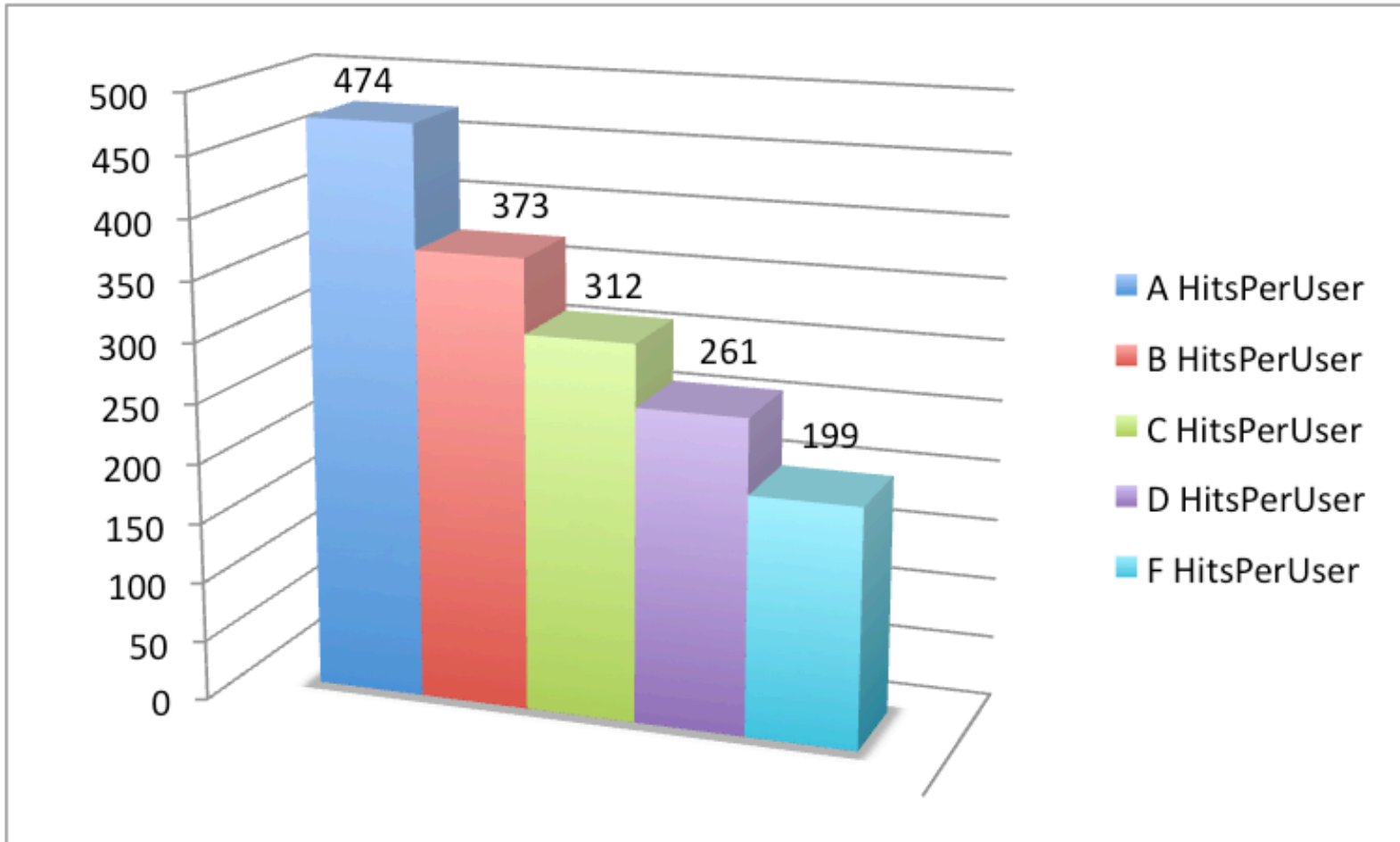
FA2008 SCI100 Findings

- How would you describe the CMA's view of your Bb activity compared to your peers?

  - 28% "I was surprised by what it showed me"
  - 12% "It confirmed what I already knew"
  - 42% "I'd have to use it more to see"
  - 16% "I haven't used it."
  - 2% did not respond to this question

FA2008 SCI100 Findings

- If your instructor published a GDR for past assignments, would you be more or less inclined to use the CMA before future assignments are due?

  - 54% "More inclined"
  - 10% "Less inclined
  - 36% "Not sure"

CMA Student Usage

CMA Avg. Hits by GPA (SP2011)

CMA Users by GPA (SP2011)

Legend:
- >= 3.0
- 2.0 to 2.99
- 1.0 to 1.99
- < 1.0
- No GPA

Values: 1134, 241, 55, 1943, 27, 28

N = 3,373
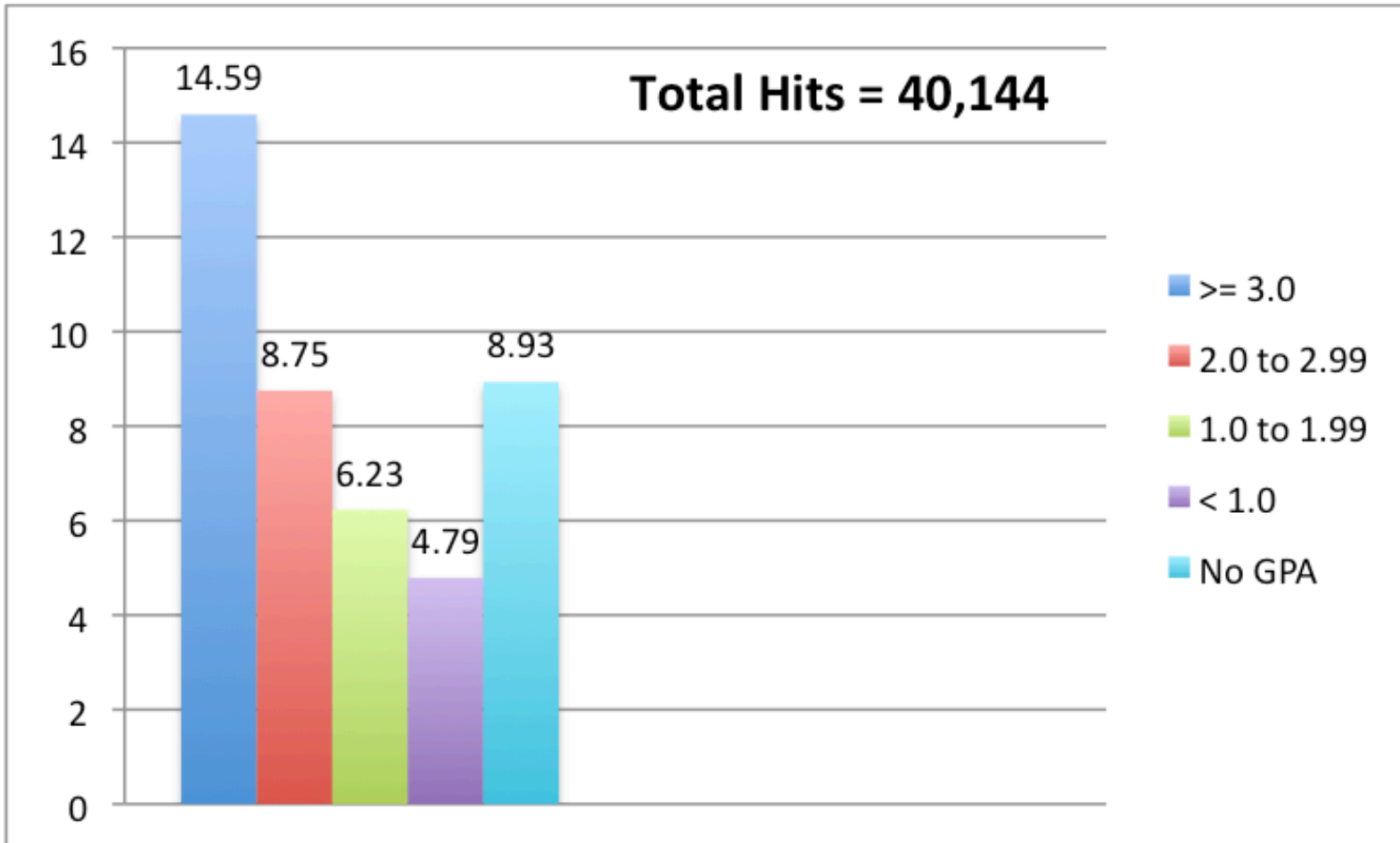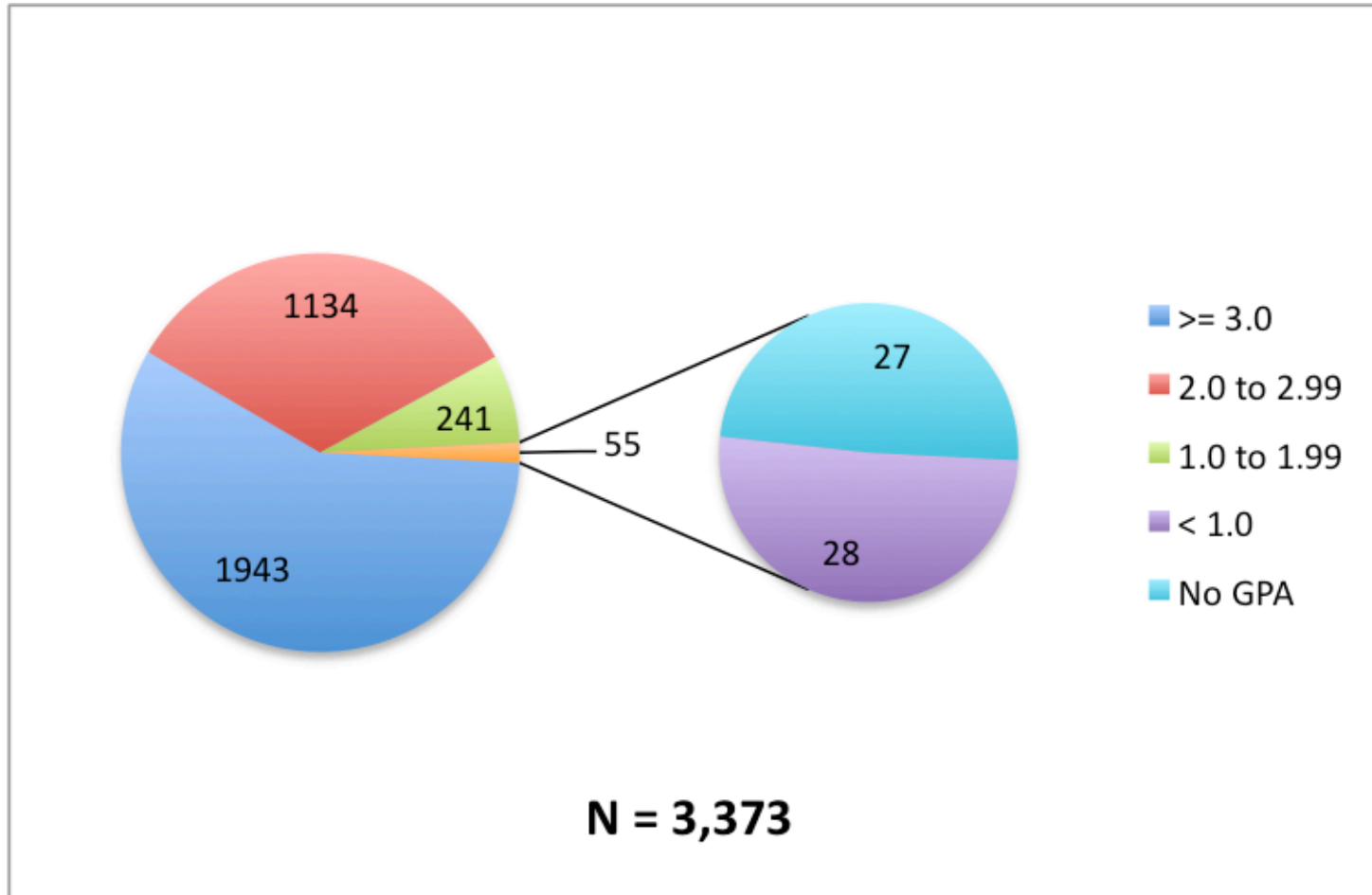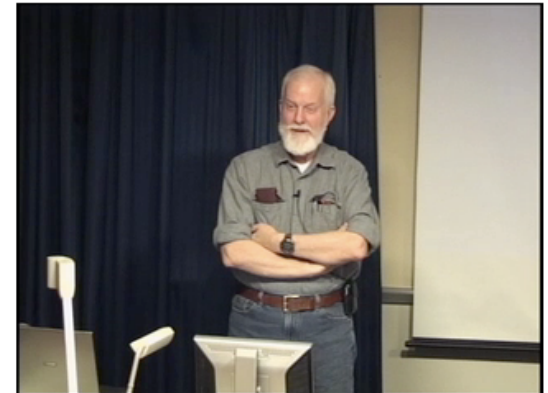
FYI Student Usage of Bb CMA (SP2011)
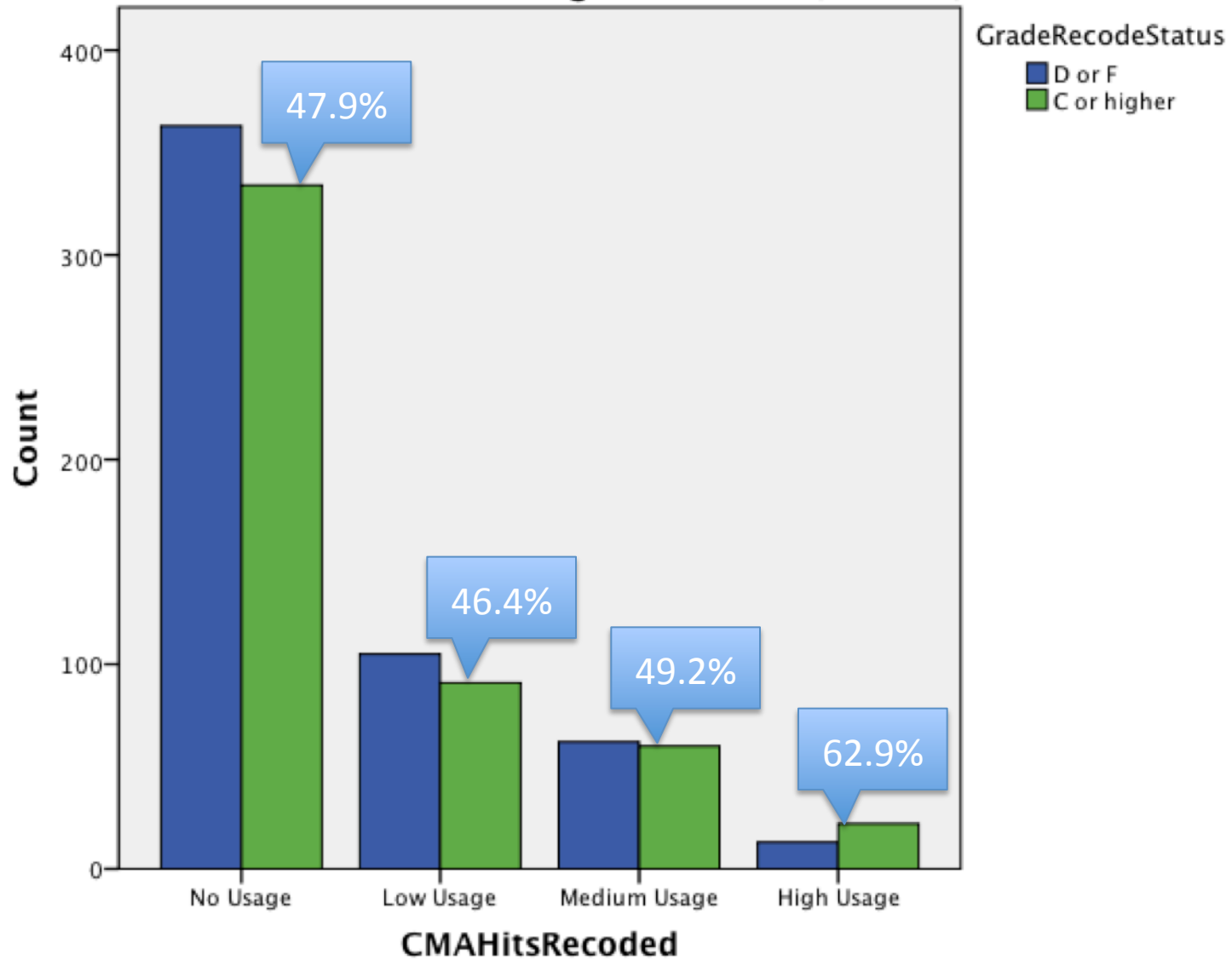
IMPLICATIONS

We can't make them drink

- *I cannot teach anybody anything. I can only make them think. – Socrates*

- *Knowledge must be gained by ourselves. -- Benjamin Disraeli*

- *The only real object of education is to have a man in the condition of continually asking questions. -- Mandell Creighton*
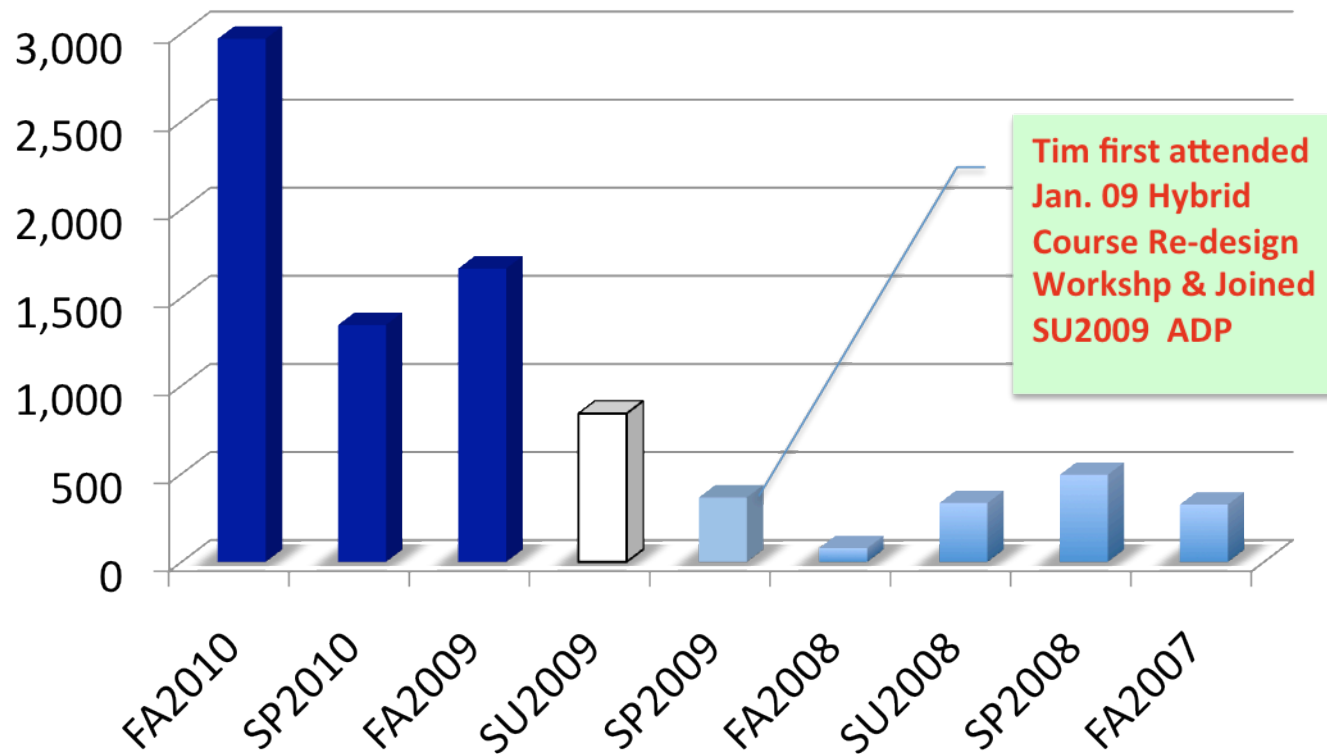
SHIFTING RESPONSIBILITY FOR LEARNING
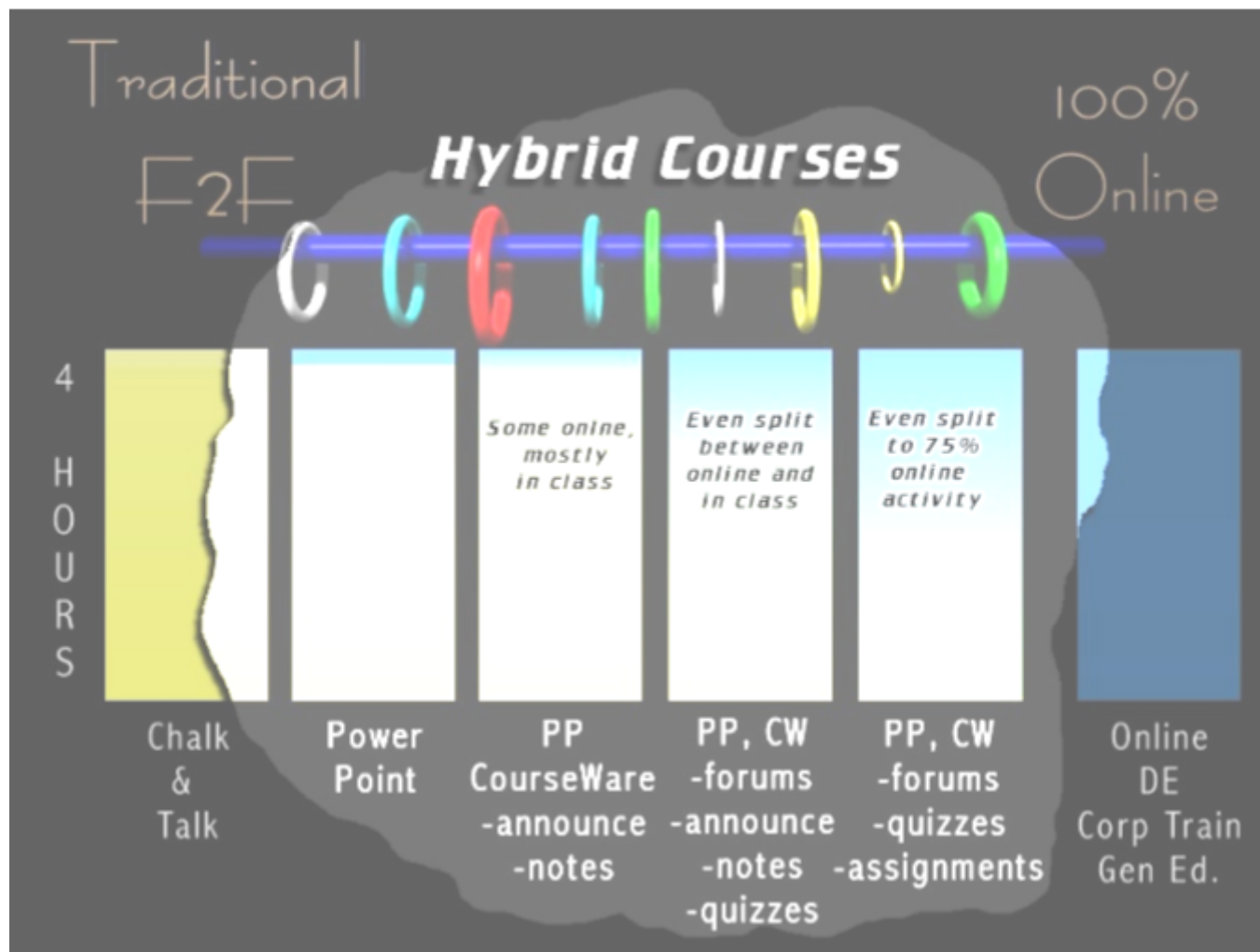
Tim Hardy & ECON 122

AVG. Bb Hits per Student

Tim first attended Jan. 09 Hybrid Course Re-design Workshp & Joined SU2009 ADP

Categories: FA2010, SP2010, FA2009, SU2009, SP2009, FA2008, SU2008, SP2008, FA2007

Adaptive Release

- Create rules governing access to material

- ADP uses this in work with faculty to facilitate self-directed learning and demonstrate the approach.

- Syllabus or AI quiz before students can access assignments or turn in any work for credit).

- One of three "Effective Practices" emphasized during Hybrid Workshop and ADP
  - www.umbc.edu.oit/hybrid/practice

Adaptive release

7 Principles of Good Practice in Undergraduate Education

1. Encourages contact between students and faculty,
2. Develops reciprocity and cooperation among students,
3. Encourages active learning,
4. Gives prompt feedback,
5. Emphasizes time on task,
6. Communicates high expectations, and
7. Respects diverse talents and ways of learning.

NEXT STEPS

Academic Analytics: Goldstein (2005)

Stage 1: Extraction and reporting

Stage 2: Analysis and monitoring

Stage 3: "What-if" scenarios

Stage 4: Predictive modeling & simulation

Stage 5: Automatic triggers and alerts

Analytics on Campus (2005)

Table 6-6. Primary Use of Academic Analytics (N = 376)

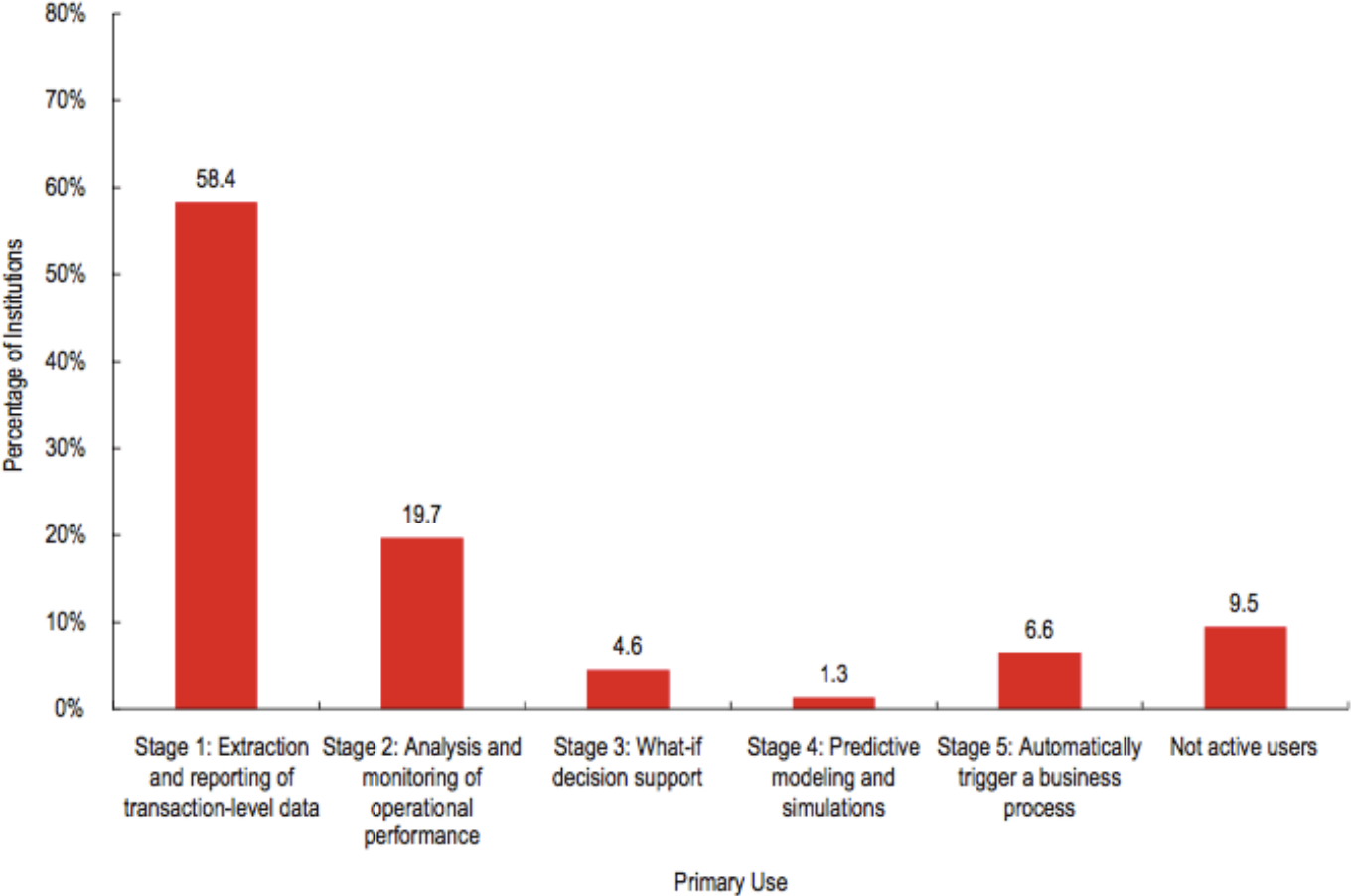| Use	Number	Percentage
Stage 1: Extraction and reporting of transaction-level data	263	69.9%
Stage 2: Analysis and monitoring of operational performance	51	13.6%
Stage 3: What-if decision support (e.g., scenario building)	6	1.6%
Stage 4: Predictive modeling and simulation	7	1.9%
Stage 5: Automatic triggers of business processes (e.g., alerts)	17	4.5%
Not active users	32	8.5%
Total	**376**	**100.0%**

Analytics on Campus: Yanosky (2009)

Figure 4-10.
**Primary Use of
Analytics (N = 305)**

How We Used to Query Bb

Blackboard (Static Replica)

Blackboard (Production)

Complete copy of database made daily at 1 a.m. for reports

Queries (PHP Scripts)

Cached Reports
www.umbc.edu/blackboard/reports

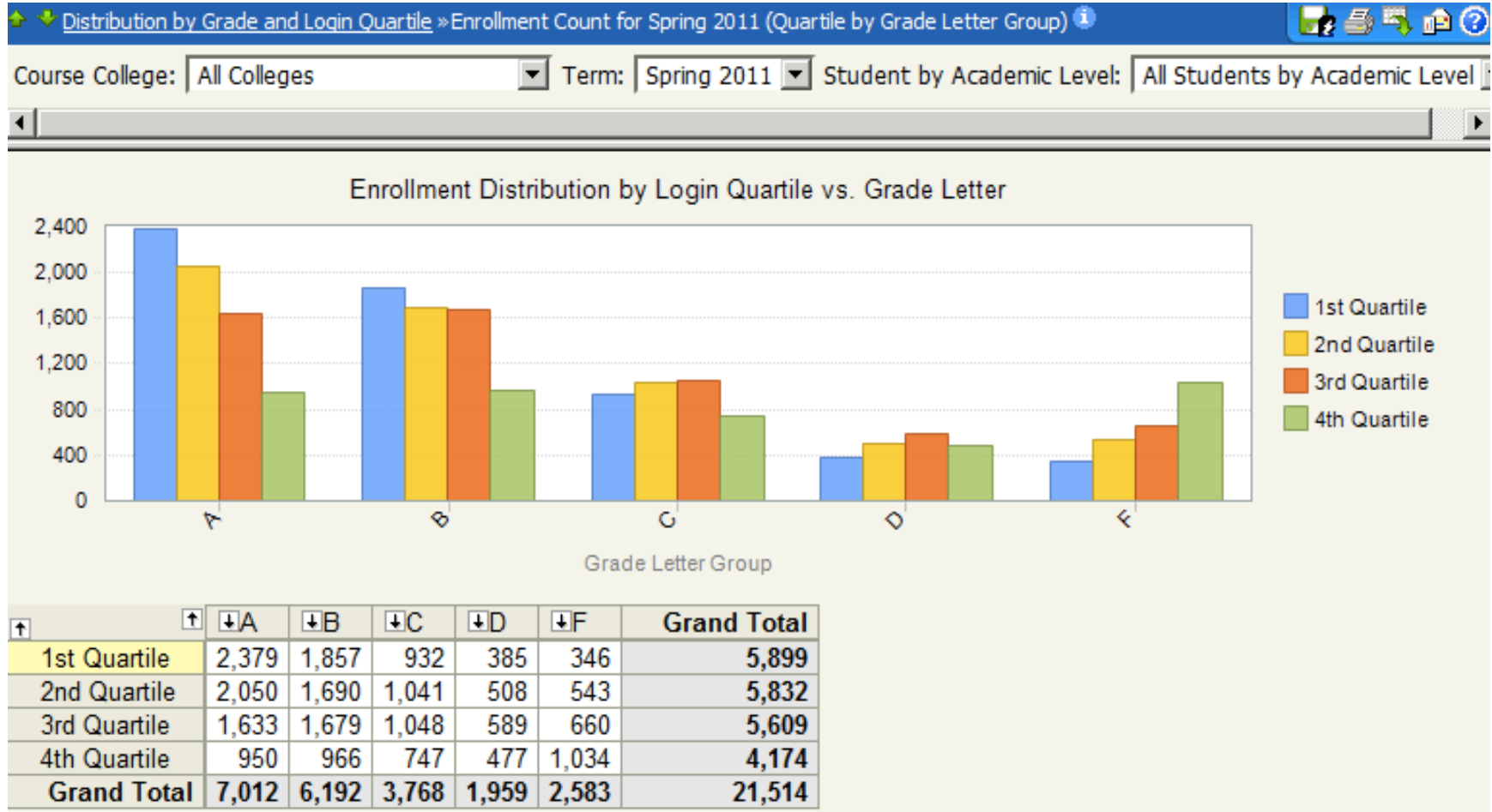# New Method: iStrategy

iStrategy
Data Warehouse
(Queries)

Blackboard
(Activity)

Student Admin.
(Grades,
Demographics)
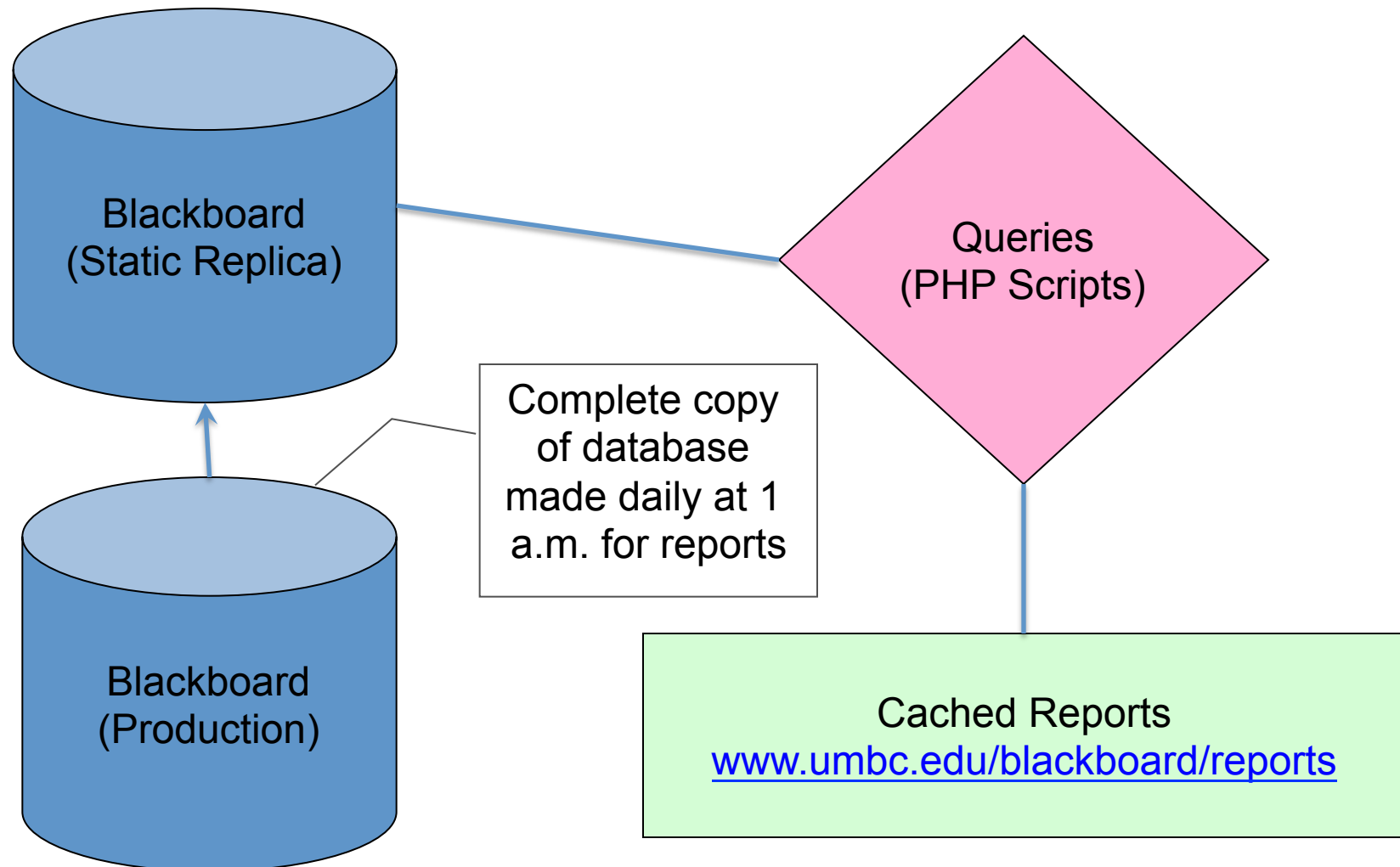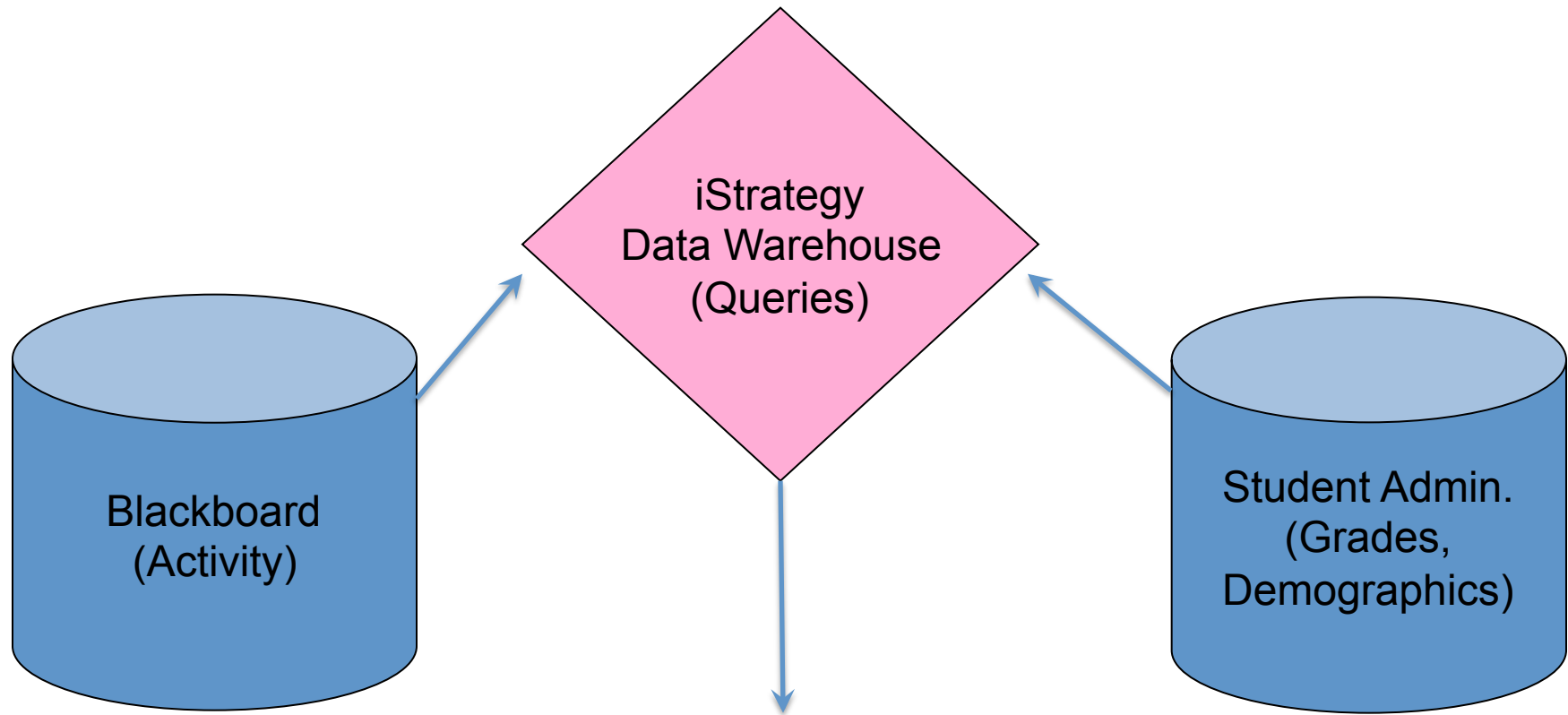
Check My Activity (Students)
Most Active Bb Courses (Faculty)
www.umbc.edu/blackboard/reports

Bb Analytics for Learn

Oetting, Prall,Yoshino Educause 2011

@ UMBC

- Quantitative
  - ~~Expand the sample of UMBC courses being studied.~~
  - Study the demographic backgrounds of students.

- Qualitative
  - Why do UMBC students use the CMA?
  - Why do they return?

- Review of Literature & Practice
  - ~~CMS activity as proxy for engagement?~~
  - Technology as culture & its impact on self-awareness?

Proposed CMA Changes

1. Display activity ranking of student's Bb course

2. Opt-in alert when student's Bb activity falls below peers earning desired GPA or grade.

3. Sharing monitoring rights with someone else.

4. Better graphical display of overall Bb activity compared to peers.

*my*UMBC Check My Activity (CMA)

Most Active Bb Courses

Most Active Courses for Spring 2011 (All Courses) (Student Activity)
Report Run On: May 16, 2011
Back to Blackboard Reports

	Hits	Users	Avg. Hits Per User	Avg. Sessions Per User	Course ID	Tool Usage	Course Name	Instructor(s)
1	90833	32	2838	52	ECON122_4065_SP2011	ECON 122 Principles of Accounting II (04.4065) SP2011	Timothy Hardy
2	22648	9	2516	127	EHS720_2721_SP2011	EHS 720 Emergency Health Services Quality Assessment (01.2721/02.7801) SP2011	Brian Maguire, Mike Taigman
3	15448	7	2206	136	EHS658_2717_SP2011	EHS 658 Materials and Fleet Management (01.2717/02.3993) SP2011	Brian Maguire, William Vidacovich
4	32818	16	2051	88	EDUC603_2636_SP2011	EDUC 603 Instructional Systems Development II (02.2636) SP2011	Jeannette Campos
5	25237	13	1941	122	EDUC655_2650_SP2011	EDUC 655 Teaching Reading and Writing to ESOL/Bilingual Students PartII SP2011 ONLINE	Colleen Grisham
6	32642	20	1632	126	IS669_1949_SP2011	IS 669 Project Management Operations (01) SP2011	Jie Du, Marcella Wilson
7	18643	12	1553	100	LLC600_3300_SP2011	LLC 600 II: Introduction to Language, Literacy, & Culture Spring 2011	Beverly Bickel
8	31026	20	1551	114	IS634_1946_SP2011	IS 634 Structured Systems Analysis and Design (02) SP2011	Wayne Lutters, Gergely Kovacs, Richard Goldman

Bb Activity by Disciplines

UMBC
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| Course Prefix ID	Course Prefix Name	Active Courses ▲	Active Gradebooks	Avg Hits Per Student	Avg Sessions Per Student
IS	Information Systems	88	60	312	44
PSYC	Psychology	79	47	325	32
EDUC	Education	72	40	361	35
ENGL	English	55	15	147	25
ART	Art	50	19	78	15
HIST	History	46	27	178	29
ECON	Economics	44	12	110	17
MATH	Mathematics	42	31	298	55
SPAN	Spanish	41	35	255	38
SOCY	Sociology	37	30	206	34
BIOL	Biology	36	22	305	49
GES	Geography & Environmental Sciences	35	23	249	34
POLI	Political Science	32	17	184	29
CMSC	Computer Science	32	17	144	26
MUSC	Music	28	6	48	14

Activity Rank in Discipline & Overall

Most Active Courses in IS for Spring 2011 (All Courses) (All Activity)
Report Run On: May 16, 2011
Back to Blackboard Reports

Rank In Discipline	Overall Rank	Hits	Users	Avg. Hits Per User	Avg. Sessions Per User	Course ID	Course Name	Instructor(s)
1	8	34947	24	1456	88	IS147_1243_SP2011	IS 147 Introduction to Computer Programming (03.1243) SP2011	Henry Emurian
2	13	31265	26	1202	108	IS698_7218_SP2011	IS 698 Special Topics in Information Systems (03) SP2011	George Karabatis
3	14	23341	20	1167	109	IS369_1264_SP2011	IS 369 Research Seminar: Writings in Information Systems (01.1264) SP 2011	Drew Alfgren, Henry Emurian
4	36	26631	31	859	67	IS601_1282_SP2011	IS 601 Foundations of Information Systems (1.1282) SP2011	Roy Rada
5	44	19735	26	759	103	IS448_1276_SP2011	IS 448 Markup and Scripting Languages (1.1276) SP2011	Sreedevi Sampath
6	45	12074	16	754	81	IS804_1289_SP2011	IS 804 Advanced Experimental Design Methodology (1.1289) SP2011	Henry Emurian
7	46	8066	11	733	81	IS709_7230_SP2011	IS 709 Computational Methods for IS Research (01.7230/IS809_7861) SP2011	Aryya Gangopadhyay
8	48	17643	25	705	87	IS651_1286_SP2011	IS 651 Distributed Systems (1.1286) SP2011	kip Canfield
9	56	10435	16	652	63	IS147_1238_SP2011	IS 147 Introduction to Computer Programming (01.1238) SP2011	Tate Redding

% of Active Grade Books (SP2011)
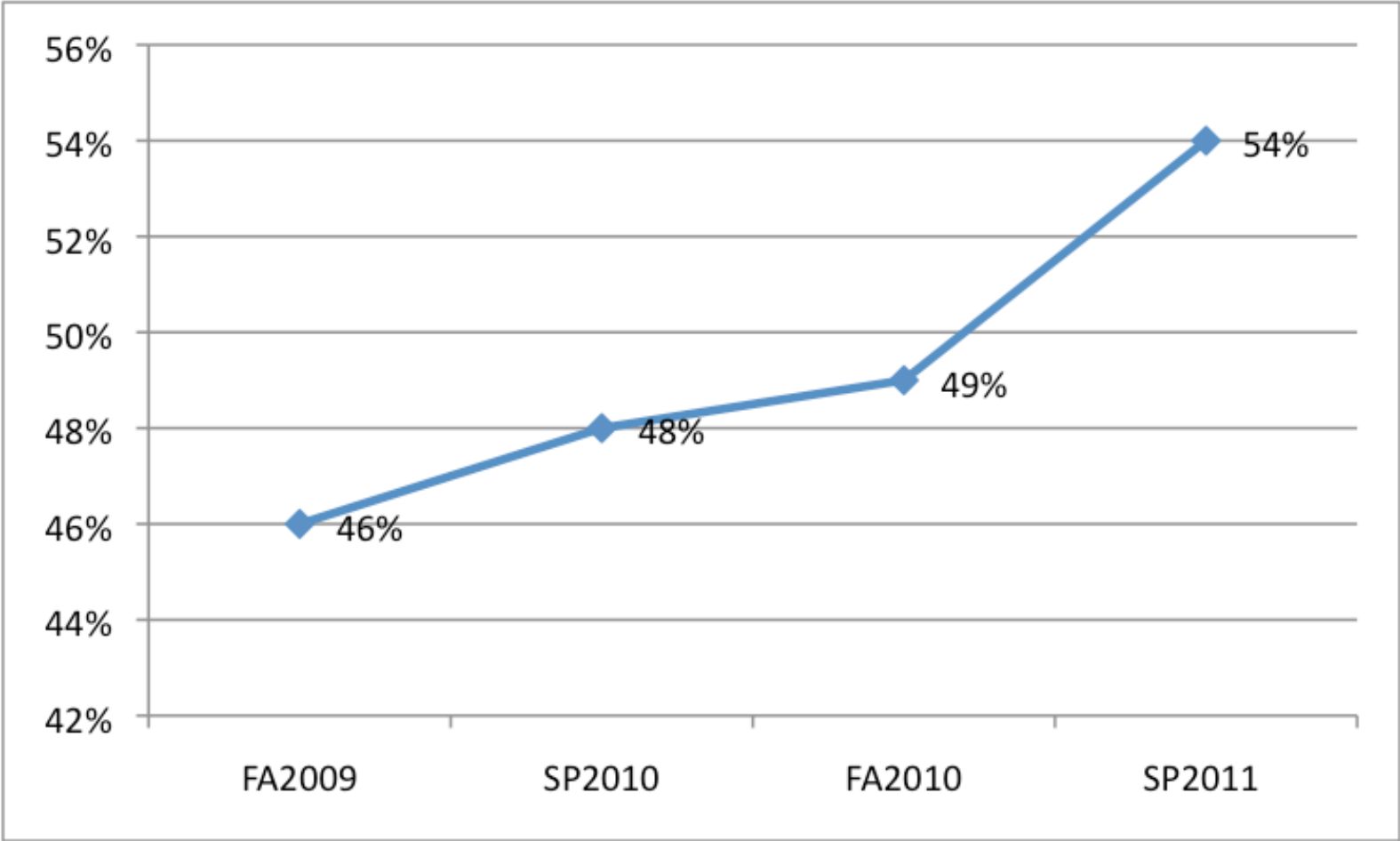
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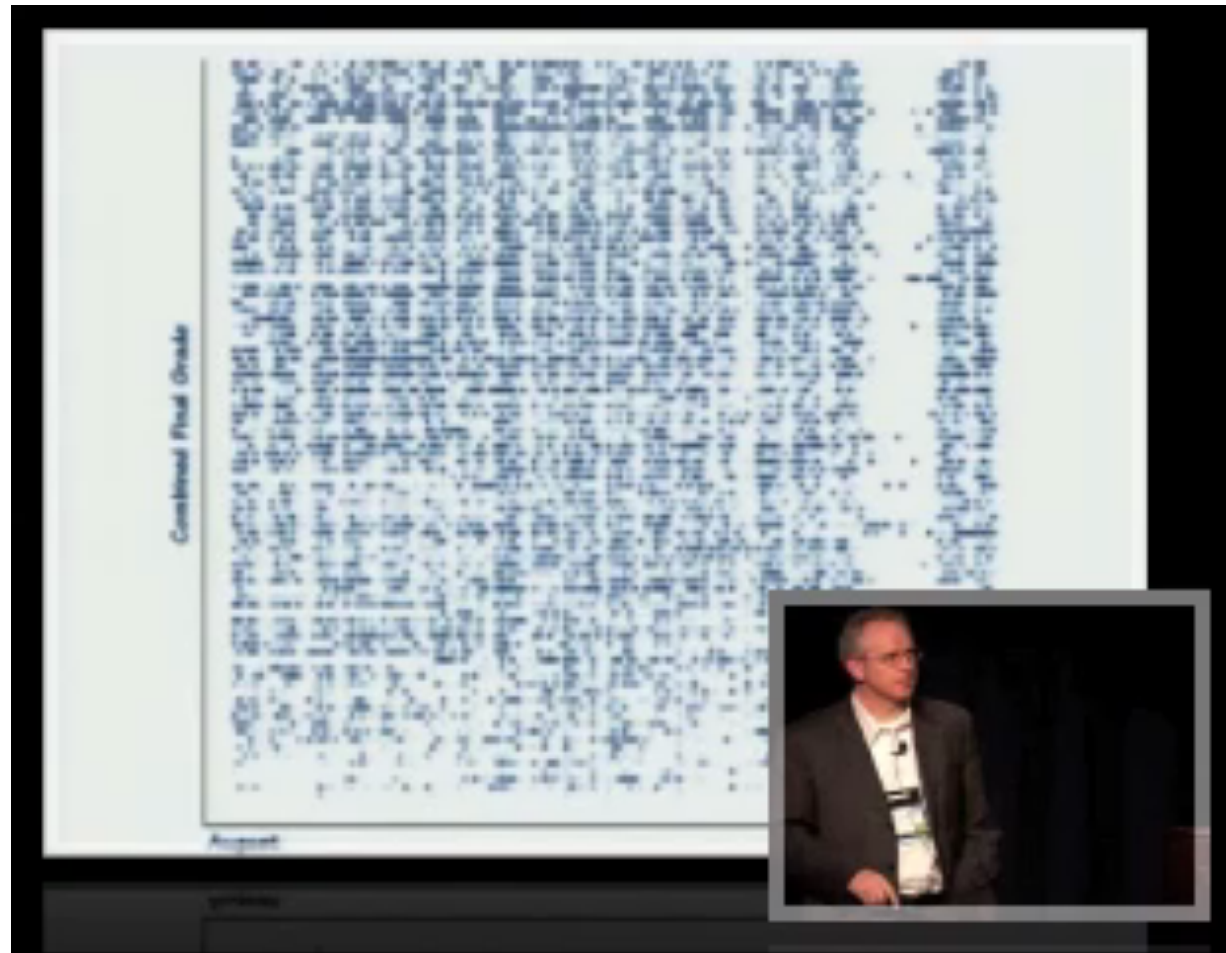
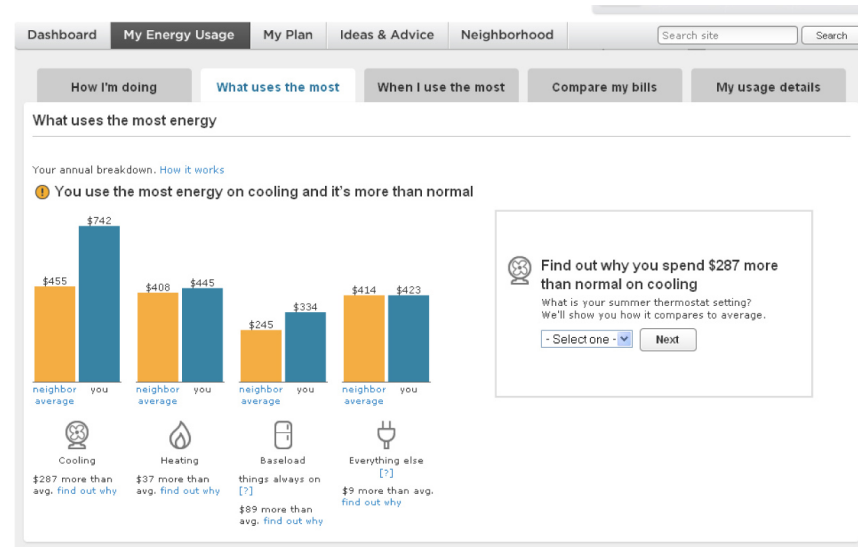# Others I'm Watching

Cole Camplese, PSU

Jon Mott, BYU
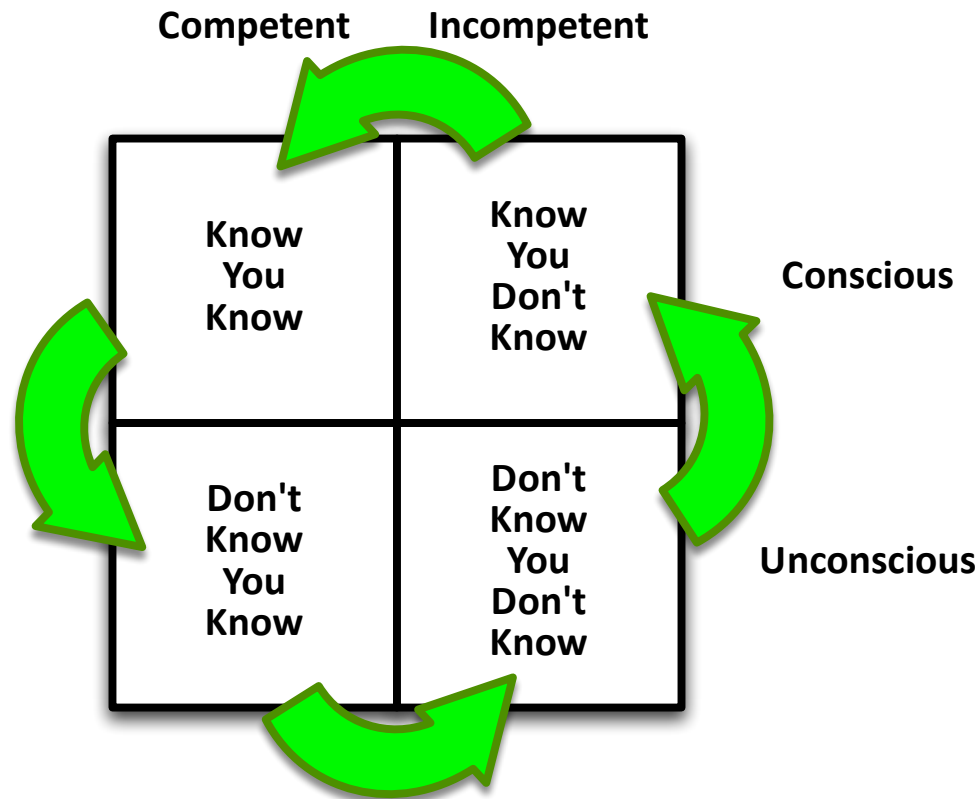
David Wiley's LMS Waterfall & Academic DNA 💬

Khan Academy Dashboards

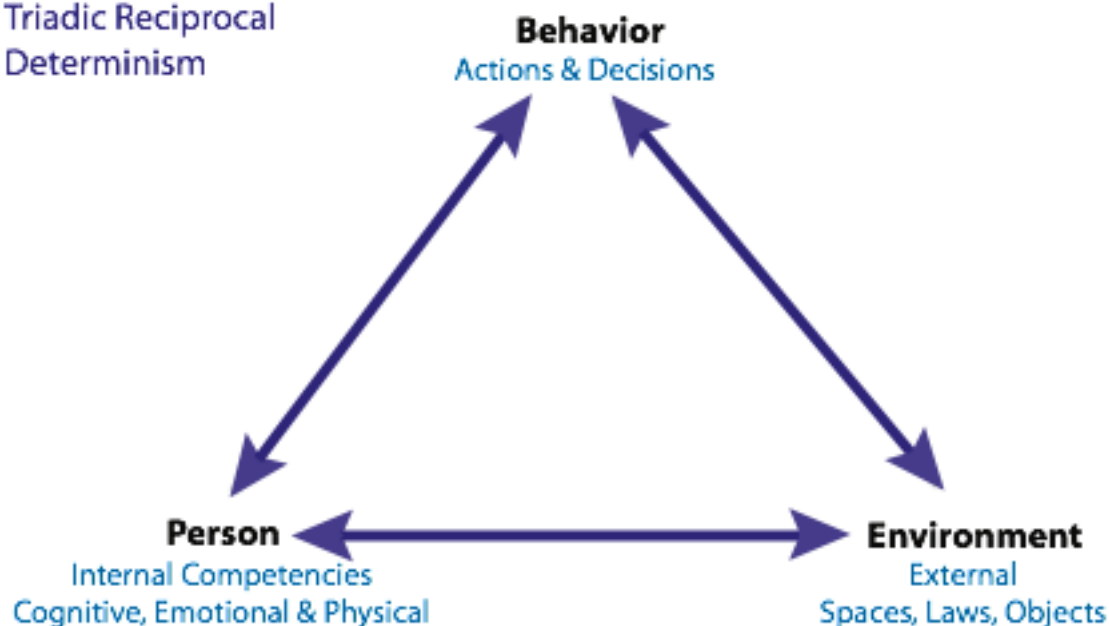Salman Khan talk at TED 2011 (from ted.com)
by khanacademy

Personal Analytics in Action

How Might We Learn From Others?

Social cognitive theory - Bandura

Self-regulated learning: Zimmerman

- **Observational**: students learn to distinguish the major features of a model's skill or strategy.

- **Emulative**: a learner's performance enactive approximates the general form of a model's skill or strategy.

- **Self-control**: students can perform a skill or strategy based on mental representations of a model's performance.

- **Self-regulation**: learners can adapt their skills and strategies systematically as personal and contextual conditions change.

www.umbc.edu/blackboard/reports

UMBC
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SEARCH

[GO]

Blackboard Reports

» Contents

What's New

About

All Courses

Graduate Courses

Undergraduate Courses

By Discipline

Communities

System Tool Usage

Grade Distribution

Most Active Instructors

Most Active Students
(Faculty and Staff Use Only)

Self Service Reports

User Survey Results

What's New

Educause Publishes Video Demo of UMBC "Check My Activity" Tool for Students
February 4, 2011

The final 2010 issue of *EDUCAUSE Quarterly* includes a brief (5 minute) video demo of UMBC's "Check My Activity" (CMA) tool for students. The CMA demo was part of *EQ*'s special focus on student retention, and includes new information comparing how students use Blackboard by final grade distribution in all 1,461 Spring 2010 Blackboard courses. Specifically, D & F students used it 47 percent less than students earning a C or better, which is similar to results from previous semesters based on much smaller samples. A similar analysis is being conducted on all Blackboard courses for Fall 2010.
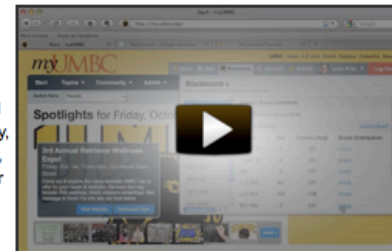
A Case for Using The Blackboard Grade Book
May 19, 2010

In 2008, a national study of more than 30,000 seniors and freshmen at more than 100 colleges and universities (including UMBC) reported that students value the ability to check their grades far more than any other function in a course management system (CMS) like Blackboard. Yet, less than half of UMBC's Bb courses used the grade book this past fall and spring. We understand why: it takes a little time to master the Bb grade center, faculty may prefer to use Excel functions in an "offline" mode, and there may be a reluctance to put a grade on everything students do. But apart from keeping students from constantly pestering faculty, an active Bb grade book can be "leveraged" in some interesting ways.

www.educause.edu/ELI/SEI

Questions? Comments?

Thanks

fritz@umbc.edu

www.umbc.edu/blackboard/reports