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Using log data to investigate the impact of
(a)synchronous learning tools on LMS interaction

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Background & objectives

- Apparent correlation between level of LMS student interaction and grades (Beer et al., 2009; Macfadyen & Dawson, 2010)

“average hits on the forum for the courses from the education group were somewhat higher especially for students receiving the top two grades” (Beer, Jones & Clark 2009)

- Explore the impact of synchronous and asynchronous learning tools on LMS interaction

Methodology

- 'Unit Statistics' function on Blackboard 8 & 'Summary of User Activity' function on Blackboard 9.1 to generate reports on the number of user hits on the various LMS applications
- Units ran 2009 - 2011 & vary in terms of the degree of asynchronous & synchronous learning activities

Using Blackboard log data

- Track statistics option to be manually set for each application.
- User activity data must be manually cleaned. Includes ALL enrolled students (including incompletes) tutors, administrative & IT staff.
 - Incompletes identified using grade centre output & then manually deleted.
 - Log data are separate from the grade centre... Very time consuming for larger cohorts.
- Log data available for unit duration, but purged shortly after completion.

Log statistics: student hits by unit/learning activity design

Online course or unit	Live chat main learning activity	Thread & live chat activity	Thread only learning activity
<u>A-SP2</u>	✓		
B	✓		
C	✓		
D	✓		
<u>A-SP3</u>		✓	
E		✓	
F		✓	
<u>A-SP4</u>			✓
G			✓
H			✓*



* Assessment component linked to participation in thread discussions

** Collaboration & discussion board application hits combined for interactive application hits

Log statistics: student hits by unit/learning activity design

Online course or unit	Live chat main learning activity	Thread & live chat activity	Thread only learning activity	Total students	Total hits interactive application areas**
A -SP2	✓			53	2536
B	✓			15	751
C	✓			31	803
D	✓			19	1380
A -SP3		✓		176	19988
E		✓		77	11823
F		✓		81	12547
A -SP4			✓	85	17833
G			✓	410	78016
H			✓ *	343	161910

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** Collaboration & discussion board application hits combined for interactive application hits

Log statistics: student hits by unit/learning activity design

Online course or unit	Live chat main learning activity	Thread & live chat activity	Thread only learning activity	Total students	Total hits interactive application areas**	Mean hits interactive application areas**
A -SP2	✓			53	2536	49
B	✓			15	751	50
C	✓			31	803	26
D	✓			19	1380	72
A -SP3		✓		176	19988	114
E		✓		77	11823	154
F		✓		81	12547	154
A -SP4			✓	85	17833	210
G			✓	410	78016	190
H			✓ *	343	161910	472

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** Collaboration & discussion board application hits combined for interactive application hits

Log statistics: student hits by unit/learning activity design

Online course or unit	Live chat main learning activity	Thread & live chat activity	Thread only learning activity	Total students	Total hits interactive application areas**	Mean hits interactive application areas**	Total hits all application areas
A -SP2	✓			53	2536	49	NA
B	✓			15	751	50	2197
C	✓			31	803	26	4622
D	✓			19	1380	72	3705
A -SP3		✓		176	19988	114	32311
E		✓		77	11823	154	20195
F		✓		81	12547	154	21365
A -SP4			✓	85	17833	210	25589
G			✓	410	78016	190	193273
H			✓ *	343	161910	472	215377

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** Collaboration & discussion board application hits combined for interactive application hits

Log statistics: student hits by unit/learning activity design

Online course or unit	Live chat main learning activity	Thread & live chat activity	Thread only learning activity	Total students	Total hits interactive application areas**	Mean hits interactive application areas**	Total hits all application areas	Mean hits all application areas
A -SP2	✓			53	2536	49	NA	NA
B	✓			15	751	50	2197	146
C	✓			31	803	26	4622	149
D	✓			19	1380	72	3705	195
A -SP3		✓		176	19988	114	32311	183
E		✓		77	11823	154	20195	262
F		✓		81	12547	154	21365	263
A -SP4			✓	85	17833	210	25589	301
G			✓	410	78016	190	193273	471
H			✓ *	343	161910	472	215377	628

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** Collaboration & discussion board application hits combined for interactive application hits

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B	✓			15	751	50	2197	146
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Blackboard 8 log data validity

“Due to the way statistics are collected, not all totals are consistent.”
(Blackboard 8 caveat)

- Total hits vary depending upon the section of the statistics report used.
 - e.g., unit F “Access / Application” section 21365 hits, but 22488 in the “Access / Day of Week” section.
- For the units reported variations in hits of between 2% and 5% observed.
- Any inconsistencies in Blackboard’s statistics reporting function raises concerns about the validity of using these LMS log data.

Blackboard 9.1 log data validity

- **NB.** Significant inconsistencies between the total hits reported in different sections of user activity reports.
 - Across five 2011 units “Access / Application” vs. “Access / Day of Week” hit totals vary 20% - 60%
- Suggests Blackboard 9.1 ‘Summary of User Activity’ data are unusable.

No caveat provided in Blackboard 9.1 log data output report. No explanation yet forthcoming

Take out...

- Implications for LMS design (Blackboard)

- Resolve user log reporting issues
- Automatically enable track statistics for all applications
- Log data should NOT be purged but saved
- Improve case selection capability, e.g., completing students
- Improve cross referencing ability of log user data and grade centre.

- Suggests potential of log data to inform online teaching practice

- ~ Learning design impacts student interaction with the LMS
- ~ Asynchronous activity may generate increase student interaction not just with the interactive applications but with the LMS overall
- ~ Linking assessment to participation activity increases interaction

Relevance given reported correlation
between LMS interaction & grades?

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Thank you