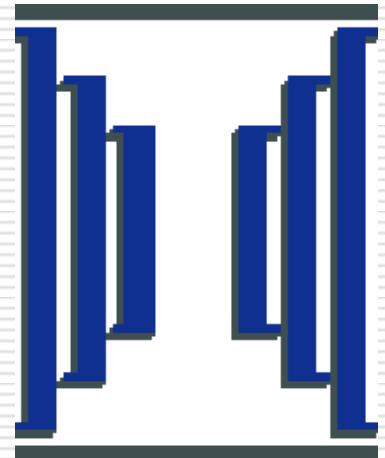
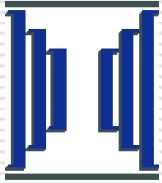


Open Source Collaborative: Moodle Assessment Report

- Bill Randall, Ed.D, Associate Vice President
- Jonathon Sweetin, MS Ed., Application Integrator (Lead Writer)
- Diane Steinbeiser, MA, Distance Learning Assessment Coordinator

North Carolina Community
College System





Snapshot of NCCCS

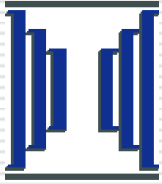
(<http://www.nccommunitycolleges.edu/>)

- 58 colleges serving 100 counties
- Host 52 of 60 NC Early College High Schools
- Offer certificates, diplomas, and associate degrees using common course library
- 14,500 full-time faculty and staff
- 669,075 Distance Learning course registrations (duplicated headcount)
- Average student age is 32, 63% female
- 2/3 of students work - juggling college, jobs, and family

North Carolina Community Colleges

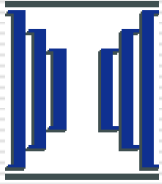
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Fifty-eight Institutions Creating Success for North Carolina



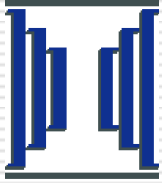
Snapshot of NCCCS

- ❑ Online curriculum course registrations
260,000+
- ❑ 37.9% increase in curriculum enrollment &
27.5% in Con Ed from 2007/08 – 2008/09
- ❑ Virtual Learning Community centrally
develops & supports 248 online curriculum
courses & 29 online Con Ed courses
- ❑ 33 associate degree programs available
online to all 58 institutions
- ❑ Common course library



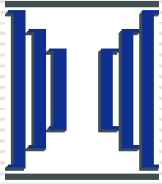
Presentation Overview

- Rationale for Study
- Student & Faculty Surveys
- Case Studies & Total Cost of Ownership
- Functionality Comparisons
- Conclusion and Recommendations



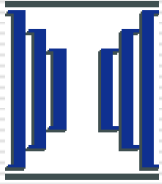
Rationale for Study

- NC State Board of Community Colleges commissioned the Moodle assessment
 - Research Question: Is Moodle a viable alternative to Blackboard?
- Compliance with state-wide and System guidelines and policies
 - E-Learning Commission recommendations
 - NCCCS Learning Technology Systems Business Requirements



Rationale for Study - Background

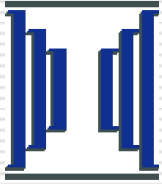
- Success of 3-year exploration of North Carolina Moodle User Group (NCMUG)
- Past and ongoing independent migration to Moodle by NCCCS institutions – four colleges migrated to qualify for study
- Financial considerations
 - Increasing costs of proprietary solutions
 - Economic crisis and budget cuts



NCCCS Business Requirements

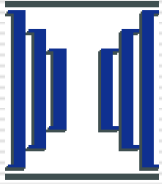
All e-learning infrastructure, content development, and support components must support and/or be in alignment with:

- Recommendations of the NC e-Learning Commission & PreK-20 focus
- An Alignment Strategy that places emerging e-learning infrastructure and support services of different educational entities on converging paths
- Integrated functionality concept
- Good stewardship of public funds – reduce duplication of development costs
- Spirit of collaboration and resource sharing
- A Culture of Assessment – implies evolution of process, technology & teaching methodology

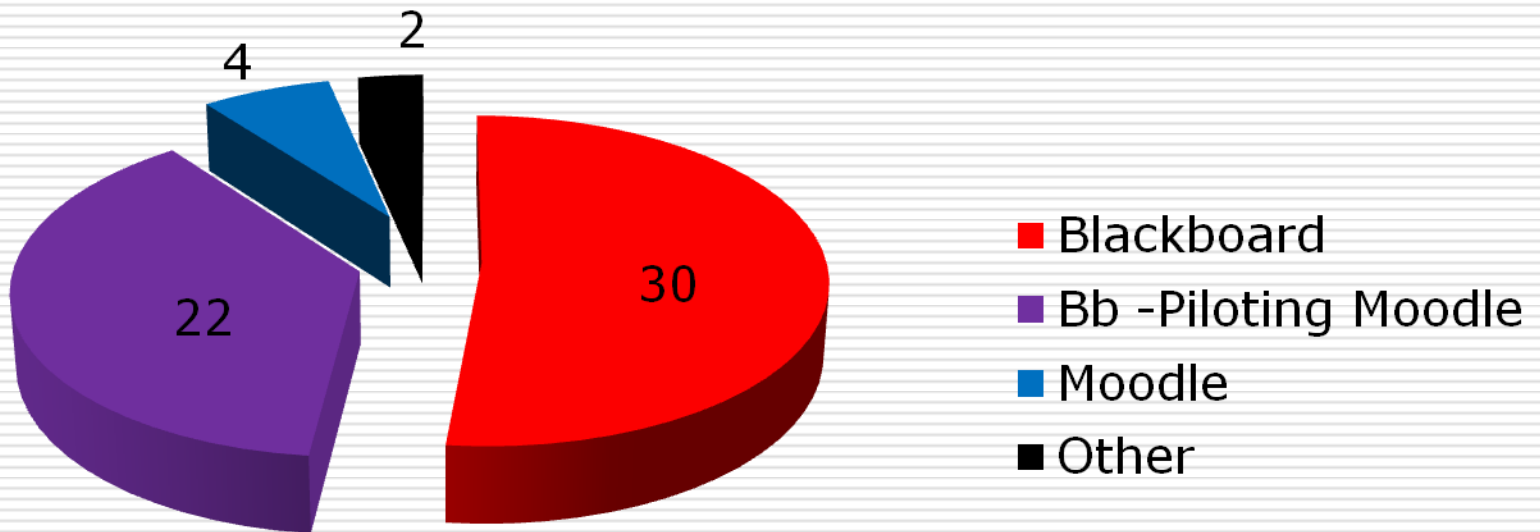


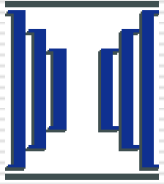
NCCCS Business Requirements

- In accordance with the North Carolina E-Learning Commission
 - Established in 2004-05, reports to Education Cabinet and Joint Legislative Education Oversight Committee
 - Initial focus on e-learning standards and establishing technology infrastructure
 - Goal of seamless K-20 Education access & opportunities



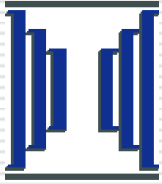
CMS/LMS used by the 58 NC Community Colleges (Aug 09)





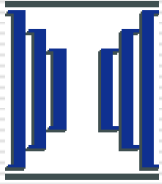
Moodle Assessment Approach Objective

The objective of the Moodle Assessment was to investigate Moodle as an effective learning/teaching platform focusing on academic considerations such as course navigation, ease of use, communication and collaboration tools, course content, assessment, and upload capabilities.



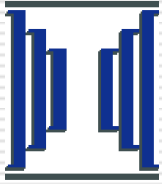
Moodle Assessment Scope and Limitations

- Assessment conducted by distance learning/e-learning staff – not professional researchers
- Focus specifically on NCCCS
- Scope/mission creep a concern
- Reduction of researcher bias a goal
- Use of existing UNC instruments
- Result, an original study



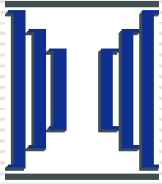
Moodle Assessment Approach Triangulated Study

1. Student and faculty end of term CMS evaluation surveys
2. Case studies of four NCCCS colleges previously migrated from Blackboard to Moodle
3. Functionality comparison of Moodle and Blackboard versions in use



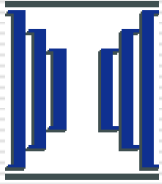
Student/Faculty - End of Term Surveys

- Document user perceptions of Moodle & Blackboard independently in areas impacting academic concerns
 - Ease of use
 - Communication
 - Functionality



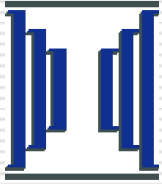
Faculty/Student Surveys Methodology

- 10 colleges selected to participate in study
- 4 exclusively Moodle
- 6 exclusively Blackboard
- Blackboard colleges selected to match up with Moodle colleges
 - By size (FTE), best match possible
 - Not biased with Moodle experience



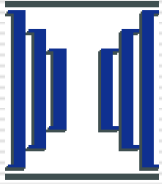
Faculty/Student Surveys Methodology

- Survey instruments based on University of North Carolina Teaching Learning Technology Collaborative survey instruments
- Surveys were disseminated to students & faculty by college distance learning administrators



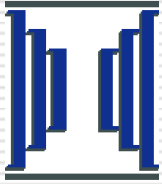
Faculty/Student Surveys Methodology

- ❑ Online survey instruments pilot tested by volunteers at 15 colleges
- ❑ Appropriate changes made to online surveys reflecting recommendations
- ❑ Survey instruments established reporting databases appropriate for statistical analysis



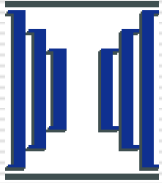
Faculty/Student Surveys Methodology

- Data from both the student and faculty surveys analyzed using descriptive statistic and t-Test comparison of means analysis. A question was considered statistically significant if its p-value was lower than .050 (the accepted standard in t-Test analysis).



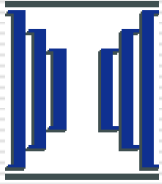
Faculty Survey Results & Analysis

- 199 instructors from 10 institutions participated in the faculty survey – 93 Moodle, 106 Blackboard
- Survey items were composed of 8 ease of use, 44 performance, and 4 overall questions
- Initial review of descriptive statistics revealed no unusual trends in either CMS data set



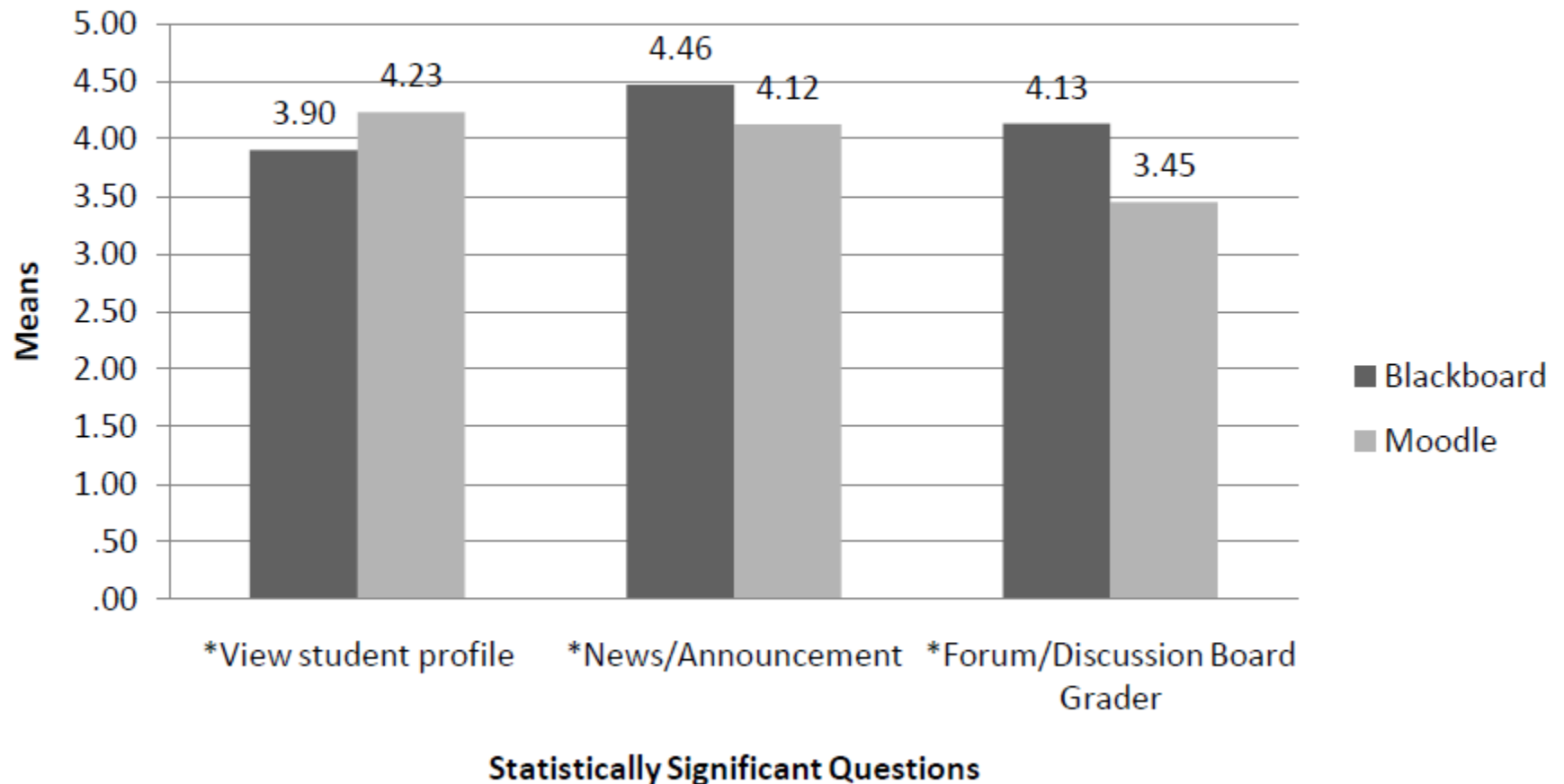
Faculty Survey Results & Analysis

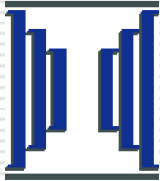
- After completing t-test analysis of means for all 56 questions, there were only 3 questions with statistical significance – “viewing student profile” (advantage Moodle) and “news and announcements” and forum-discussion board” (advantage Blackboard)
- Faculty survey results show little-to-no statistical differences regarding CMSs.



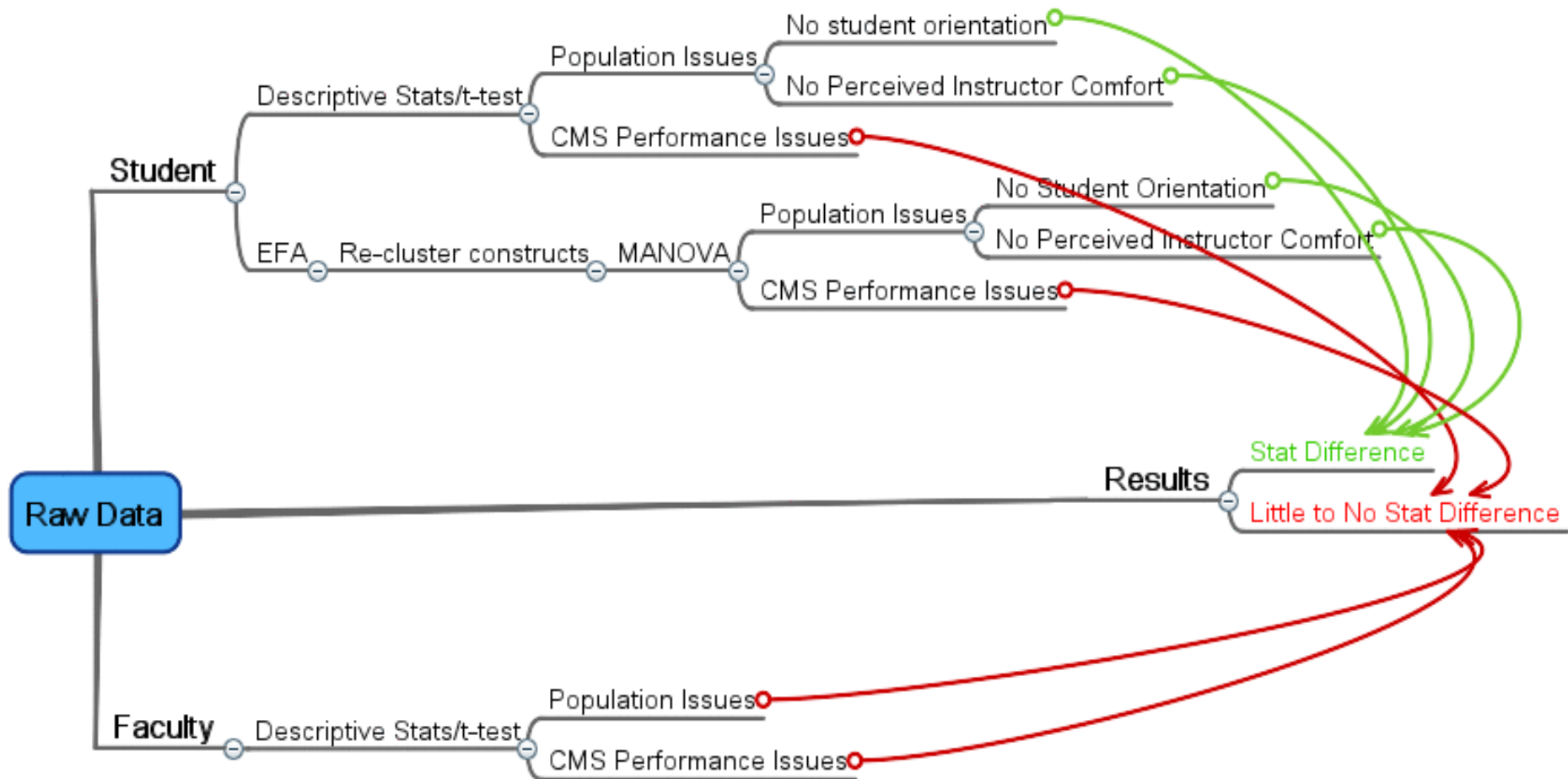
Faculty Survey Results & Analysis

Mean Comparison





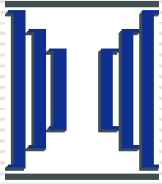
Student/Faculty Data Analysis Diagram



North Carolina Community Colleges

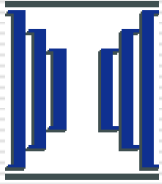
www.nccommunitycolleges.edu

Fifty-eight Institutions Creating Success for North Carolina



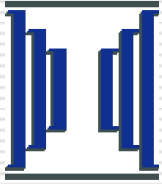
Student Survey Results & Analysis

- The Student End-of-Term Survey recorded 1,127 student responses from the 10 participating NCCCS institutions. Two hundred forty-eight students were from the four Moodle institutions and 879 students were from the six Blackboard institutions.
- Student survey composed of 38 questions.



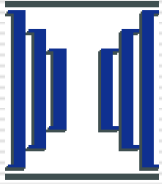
Student Survey Results & Analysis

- Descriptive statistics revealed
 - 34% of Moodle students reported they had no orientation compared to 28% of Blackboard students – a significant difference of 8%.
 - 8% of Moodle students perceived their instructors as not being comfortable using the CMS versus only 4% for Blackboard – resulting in a significant difference of 4%.



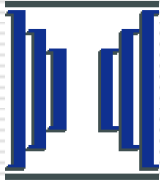
Student Survey Results & Analysis

- The Assessment Team concerned with validity of data from participants not familiar or comfortable with the learning platform.
- Concerns shift from CMS performance to student population characteristics regarding (1) their orientation and (2) perception of their instructor's comfort level.

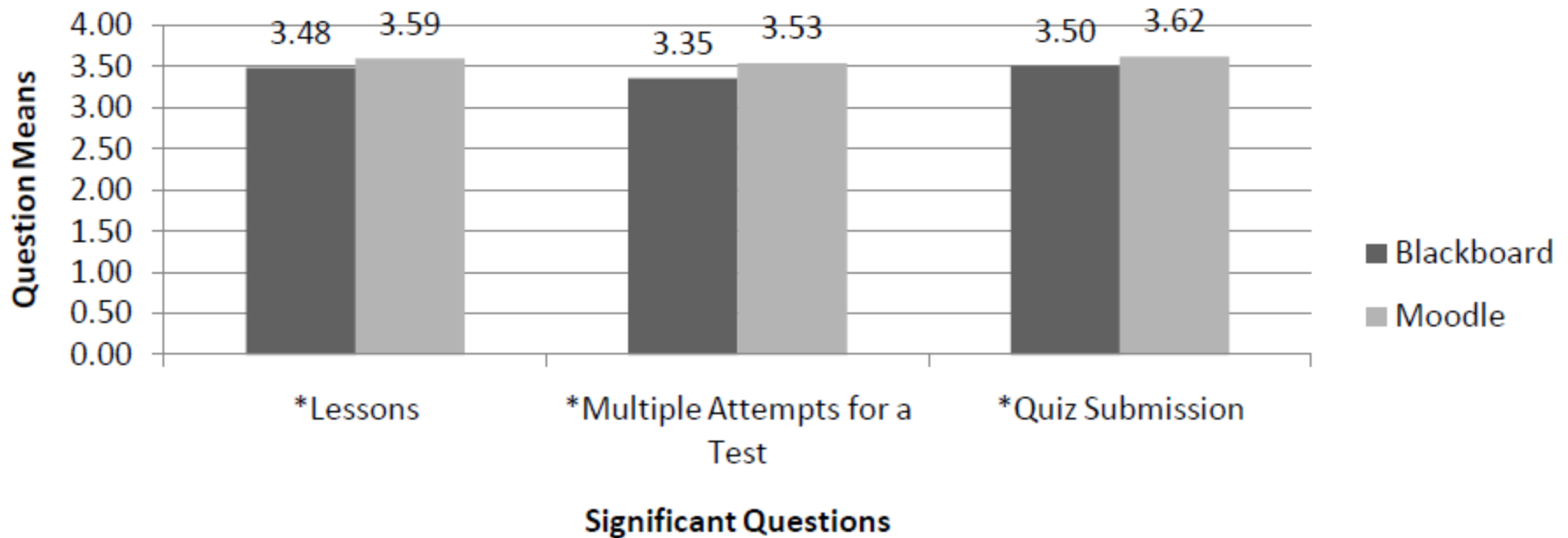


Student Survey Results & Analysis

- T-test analysis completed with non-oriented students and students who perceived instructors uncomfortable with CMS removed from data set.
- When these survey items were factored out of the data set, CMS scores leveled out.



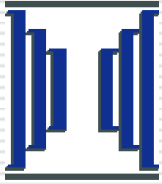
Mean Comparison of Statistically Significant Questions (with non-oriented students & uncomfortable instructors removed)



North Carolina Community Colleges

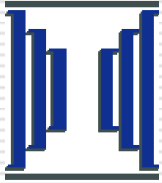
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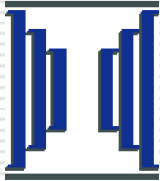
Student Survey Results & Analysis

- Therefore, exploratory factor analysis (EFA) and multi-analysis of variance (MANOVA) were conducted on **raw student** survey data to identify **other** trends in data that might not be readily apparent.
- Questions grouped into 6 constructs for analysis.

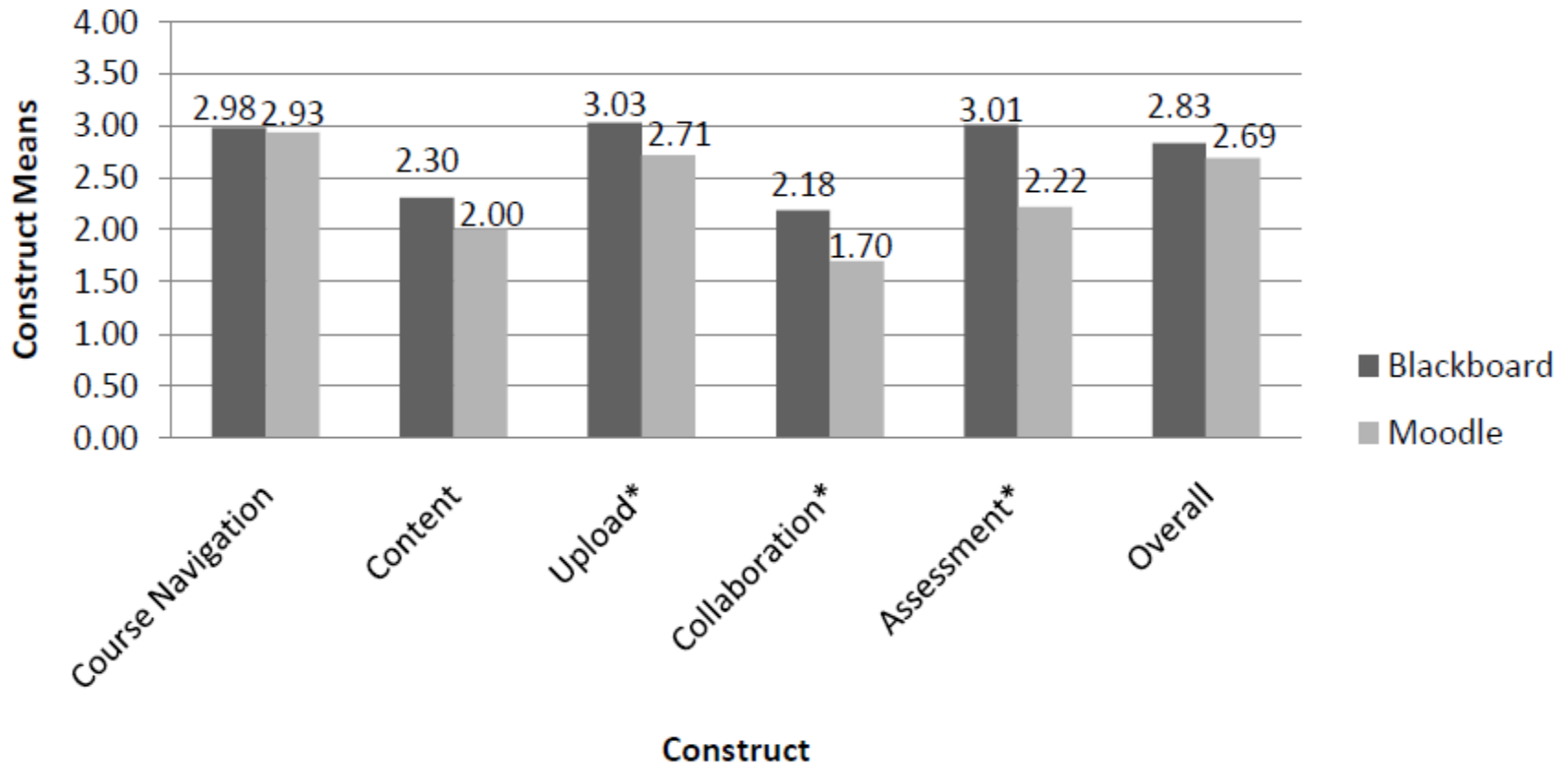


Student Survey Results & Analysis

- MANOVA revealed statistical “construct means” significance in 3 of 6 constructs when comparing CMS ONLY – advantage Blackboard.



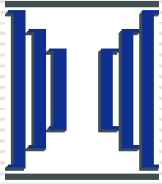
Construct Means by CMS



North Carolina Community Colleges

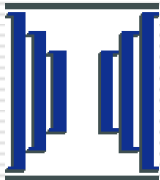
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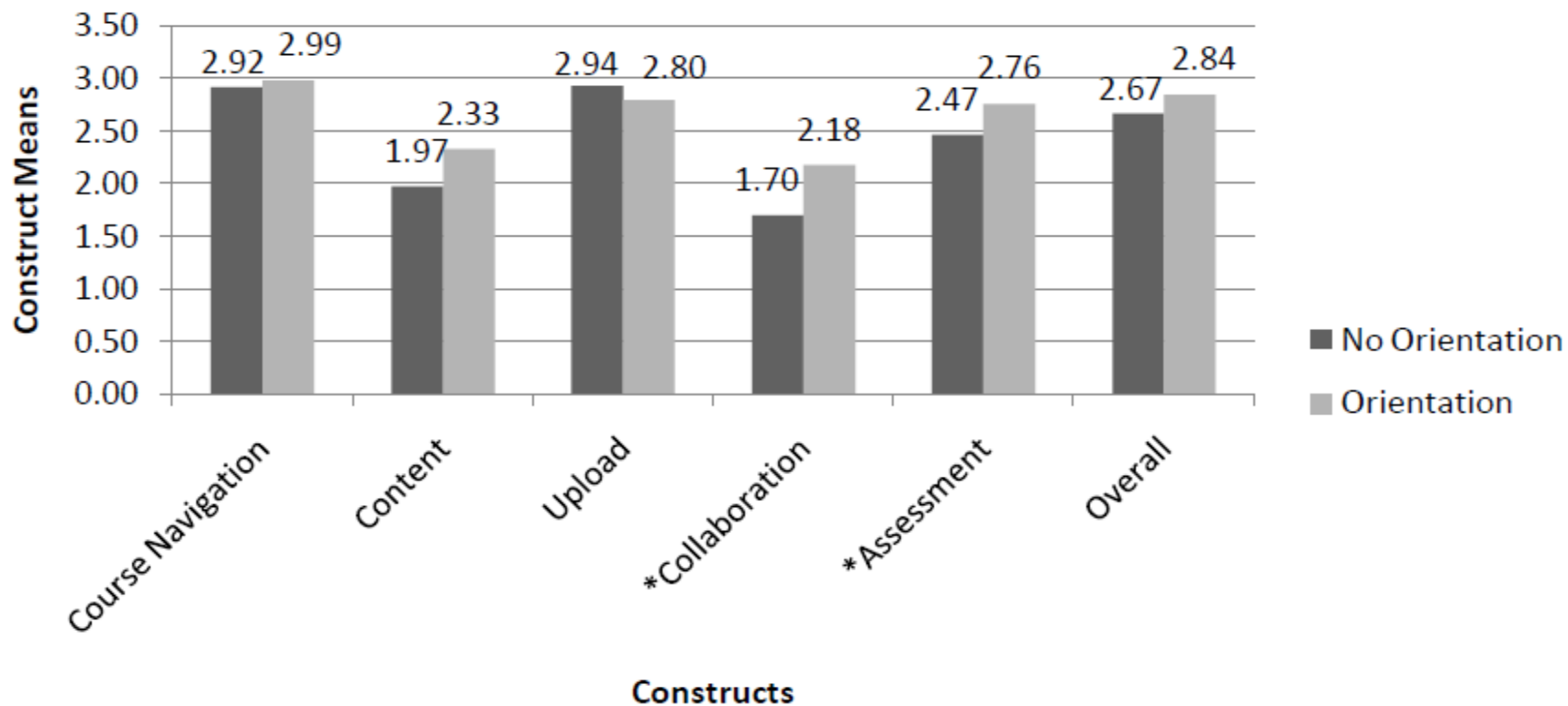


Student Survey Results & Analysis

- MANOVA analysis also revealed students who receive an orientation ranked their CMS higher in 2 constructs, “collaboration” and “assessment”.
- This comparison not by CMS but orientation or non-orientation.



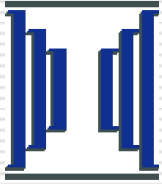
Constructs Means with Student Orientation Interaction



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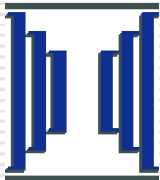
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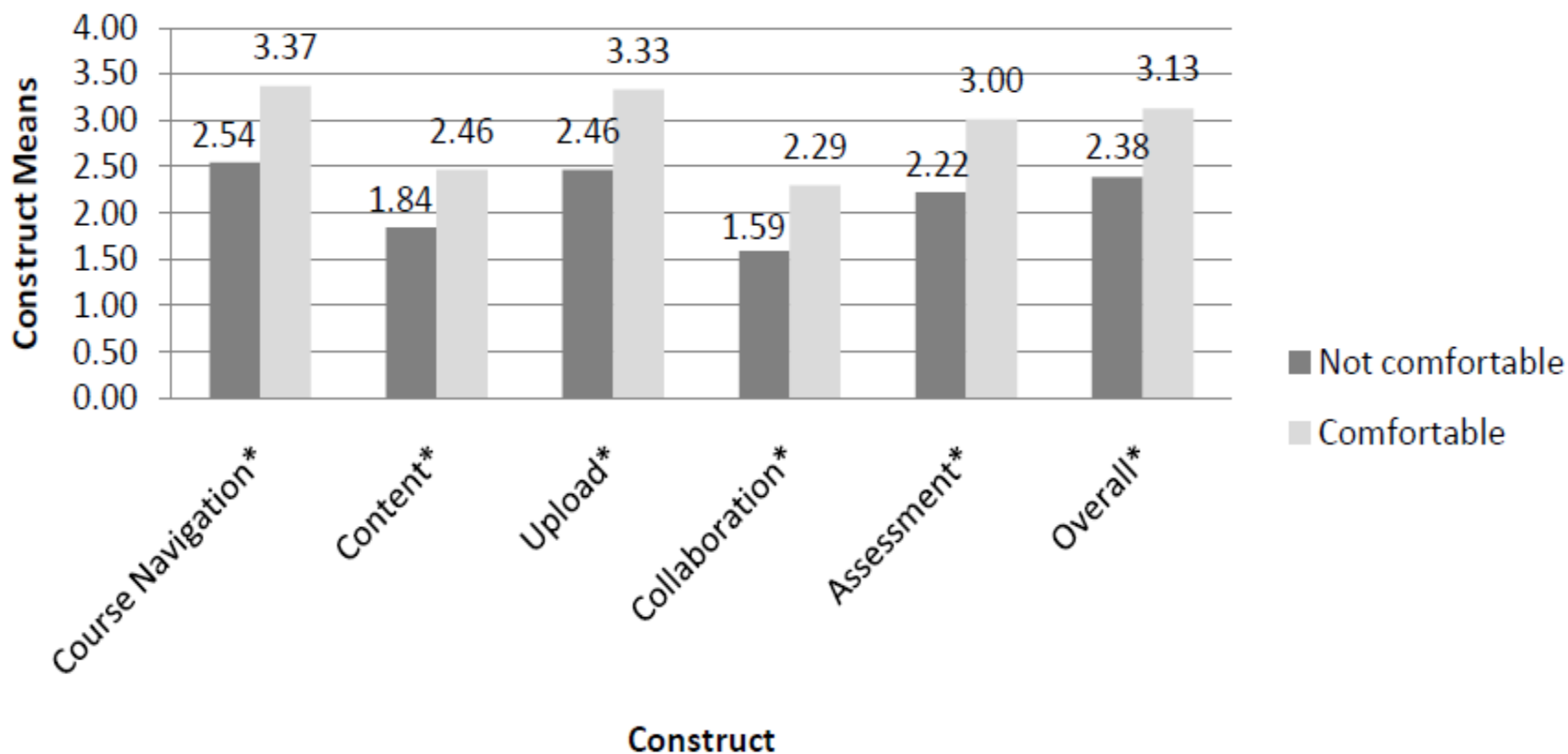


Student Survey Results & Analysis

- MANOVA analysis revealed, when instructors are perceived by students to be comfortable with CMS, students gave higher scores in all 6 constructs – regardless of CMS.



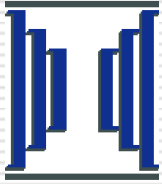
Construct Means by Comfort Rating



North Carolina Community Colleges

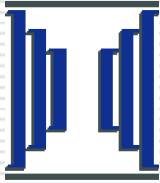
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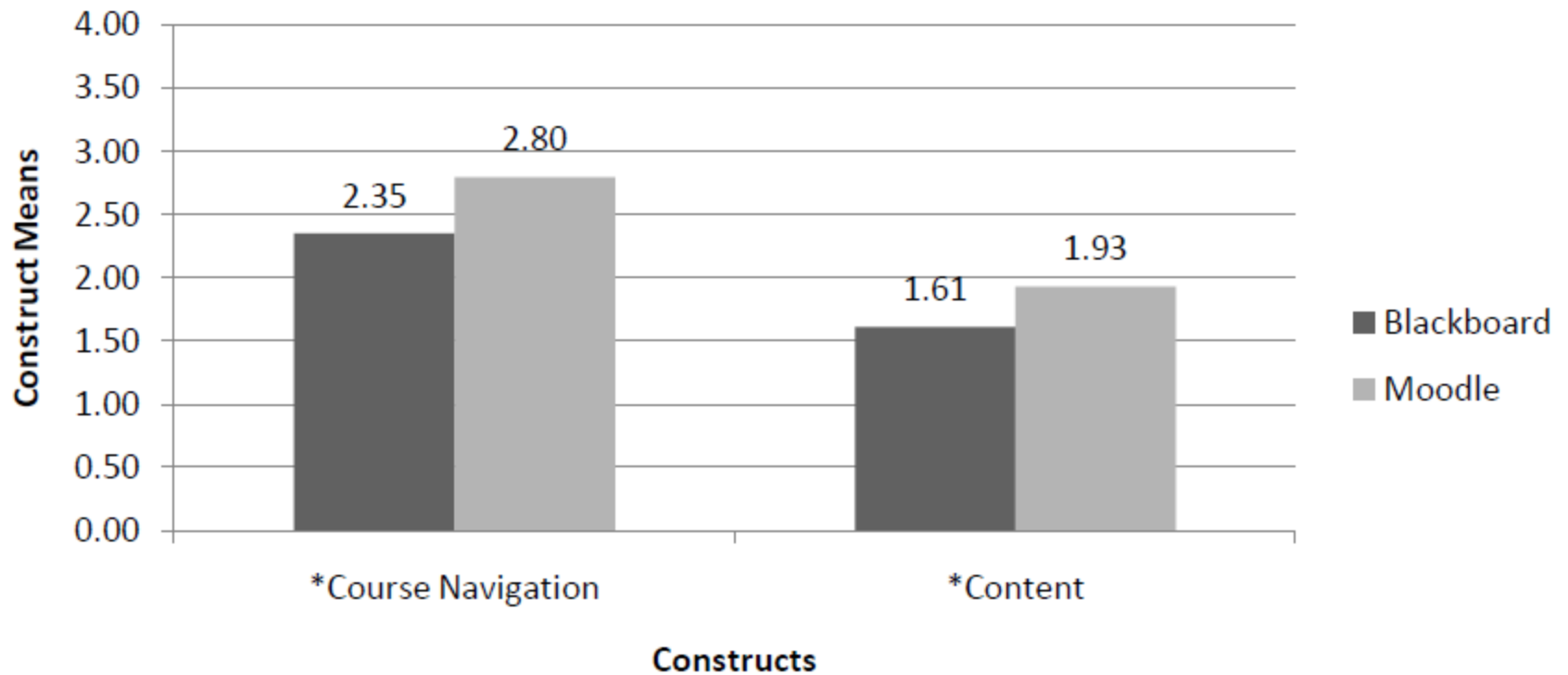


Student Survey Results & Analysis

- MANOVA analysis also revealed that in 2 constructs “course navigation” and “content,” Moodle was ranked higher than Blackboard with no student orientation and no instructor perceived comfort



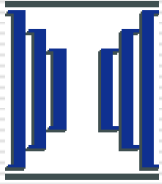
Statistically Significant Constructs by CMS with No Orientation and No Instructor Comfort



North Carolina Community Colleges

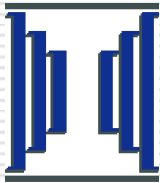
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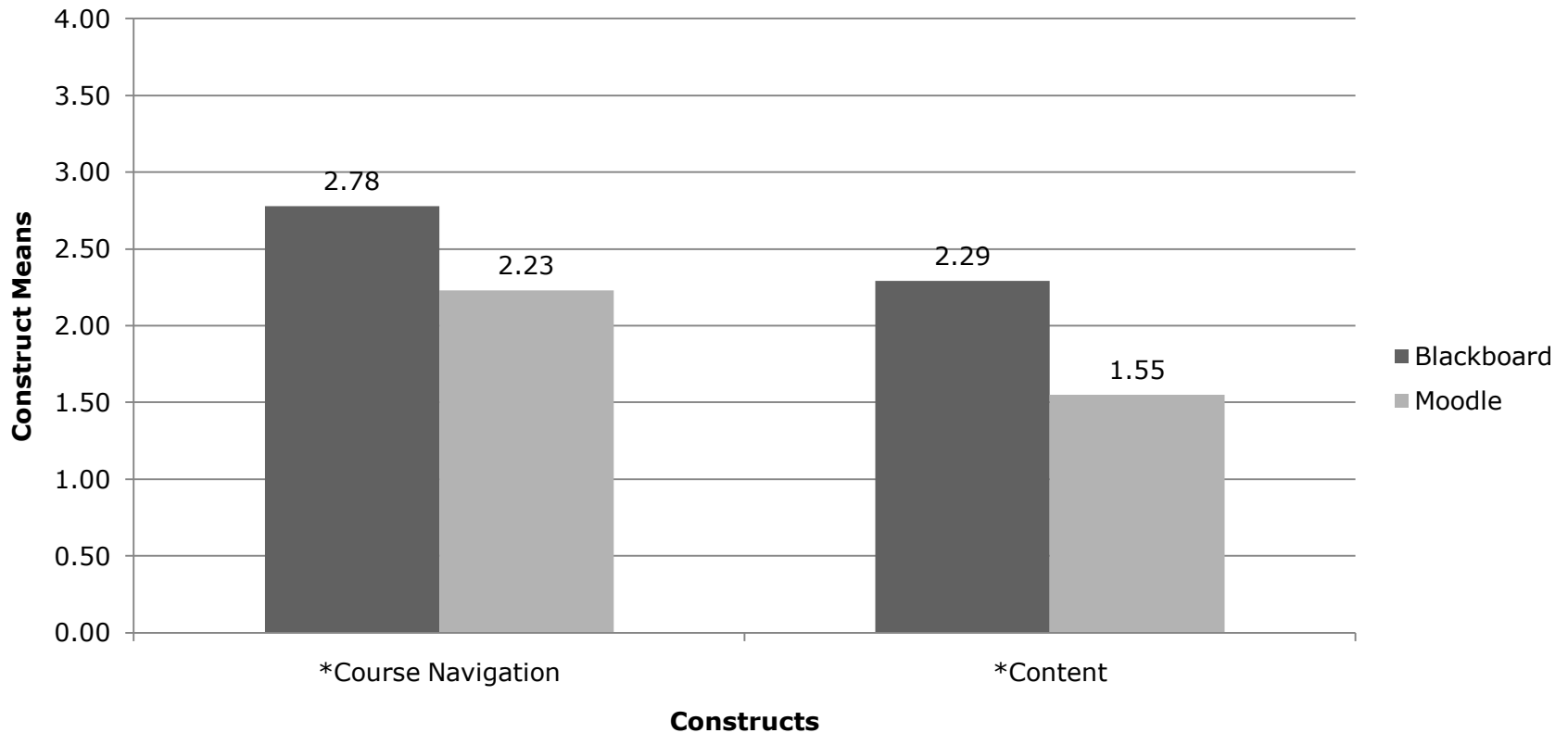


Student Survey Results & Analysis

- MANOVA analysis revealed that when either students were oriented or instructors were comfortable, Blackboard was ranked higher than Moodle in 2 constructs – “course navigation” and “content”.



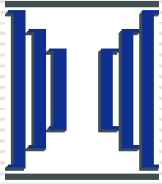
Statistically Significant Constructs by CMS with either Orientation or Instructor Comfort



North Carolina Community Colleges

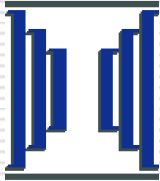
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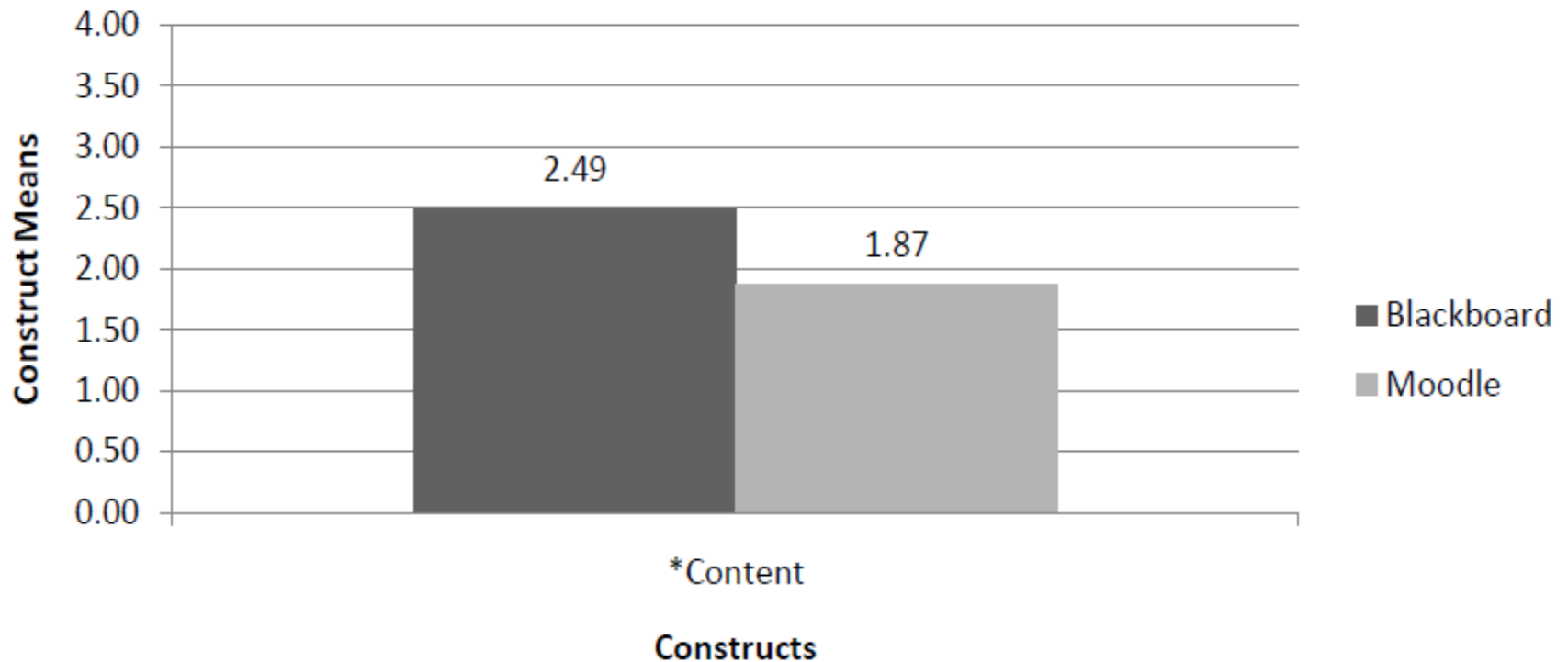


Student Survey Results & Analysis

- MANOVA analysis revealed that when students had no orientation but instructors were comfortable, there was significant Blackboard advantage in one construct - "content".



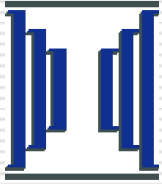
Statistically Significant Constructs by CMS with No Orientation but with Instructor Comfort



North Carolina Community Colleges

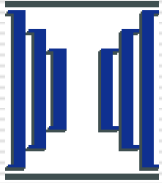
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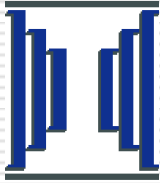
Student Survey Results & Analysis

- Ultimately, "Blackboard and Moodle are not that different. The real difference is found in students' perception of their teachers' comfort level with the application. There exists a significant correlation between student survey scores of both Blackboard and Moodle with the perceived comfort level of instructors using either application." Friday Institute



Student Survey Findings

- Three important findings:
 - Student orientation impacts opinions of CMS performance
 - Perceived comfort level of instructor is critical
 - Colleges do not use all functions of either CMS



Student Survey Curiosities

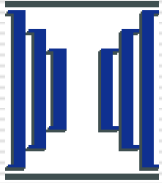
(courses by subject)

Blackboard courses taken by %			Moodle courses by %		
Subject:	n	% of total	Subject:	n	% of total
Education	106	11.065%	Information Systems	41	15.356%
Information Systems	82	8.559%	English	30	11.236%
Business	75	7.829%	Business	24	8.989%
English	65	6.785%	History	13	4.869%
Psychology	63	6.576%	Education	12	4.494%
Medical Assisting	59	6.159%	Academic Related	11	4.120%
Biology	53	5.532%	Art	10	3.745%
Sociology	45	4.697%	Psychology	10	3.745%
Office Systems Technology	44	4.593%	Humanities	9	3.371%
Health Information Tech	34	3.549%	Nursing	9	3.371%
Spanish	33	3.445%	Sociology	9	3.371%
Computer Information Technology	27	2.818%	Biology	7	2.622%
Humanities	21	2.192%	Math	7	2.622%

North Carolina Community Colleges

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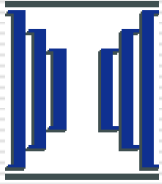
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Student Survey Curiosities

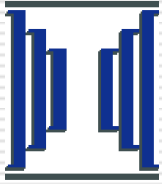
(non-use of features summary)

Name of CMS Feature:	% of non-use	Rank
Ability to Support Multiple Languages	89%	1
Chat	71%	2
Glossary	67%	3
Surveys	66%	4
Groups	64%	5
Sub Question Pools/Categories	60%	6
Create Groups	54%	7
Adaptive Release (The ability to release course content based on criteria.)	48%	8
Password Protection	43%	9
Calendar	42%	10



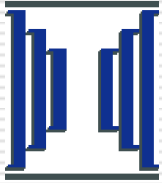
Case Studies of Four Moodle Colleges -

- Case study research was utilized to gain an understanding of the issues the four colleges encountered during migration to Moodle.



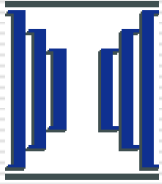
Case Studies of Four Moodle Colleges

- Each college unique in size, location, skills sets, needs, and timeline (Fall '06 – Spring '09)
- Overall Reasons for Migration:
 - Dissatisfaction with current system, server performance, technical help desk delays, unacceptable hosting solutions, increasing costs, failing upgrades, lost content, and system crashes
- Each willingly took this challenge upon themselves at their own expense
- All were successful



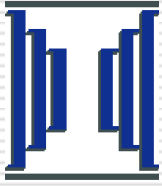
Case Studies - Migration

- ❑ Requires considerable time, funding & resources
- ❑ Disrupts existing processes, systems & people
- ❑ Every aspect of training, support, instructional methodology, application & finance affected
- ❑ Requires dual CMS solutions operating simultaneously



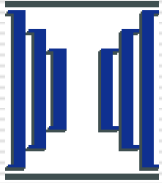
Case Studies - Migration

- Cons
 - No ideal one-to-one migration tool exists
 - Course conversion costs range widely
- Pros
 - Course migration a one-time cost
 - Professional assistance is available
 - Strategies exist for colleges to migrate with own staff & resources
 - Colleges can share the expense
 - Moodle.org a rich resource



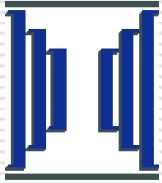
Case Studies – Migration Transition Strategy

- Appropriate administration, technical support, and academic leaders were involved and empowered to design a transition plan
- Moodle was first established at a testing and training level
- Production-level solutions were verified
- College-wide training was planned, scheduled, and implemented
- An assessment strategy was created in parallel
- Migration to Moodle accomplished



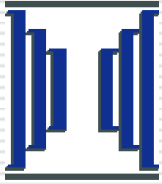
Case Studies – Implementation

1. Create leadership team
2. Establish first pilot then production Moodle environments
3. Develop orientation & training resources for instructors
4. Enroll early Moodle adopters
5. Phase in instructors from each department



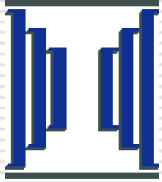
Case Studies – Implementation

6. Generate feedback, performance measures & assessment resources to measure progress
7. Create student orientation & support resources
8. Select transition period
9. Implement the plan and include continuous improvement strategies



Total Cost of Ownership

- Three one-year reporting periods
 - Pre-transition
 - Transition
 - Post-transition
- Four main expenditure areas
 - CMS license fee
 - Self- or vendor server hosting
 - Faculty and staff training costs
 - Course conversion costs



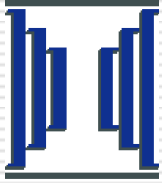
Total Cost of Ownership – Sample College

	Pre Transition Year	Transition Year		Post Transition Year
	BB	Moodle	BB	Moodle
Migration Years:	FA06-SP07	FA07-SP08		FA08-SP09
License Fee:	\$ 18,000.00	N/A	\$ 21,000.00	N/A
Vendor Hosting Fees (hardware, OS & Admin fees):	\$ 40,000.00	\$ 9,000.00	\$ 40,000.00	\$ 9,000.00
Training:	Not Reported	Not Reported	N/A	Not Reported
Course conv:	N/A	\$4,000.00	N/A	N/A
sub-totals:	\$58,000.00	\$ 13,000.00	\$ 61,000.00	\$ 9,000.00
CMS TCO/year:	\$58,000.00	\$74,000.00		\$ 9,000.00

North Carolina Community Colleges

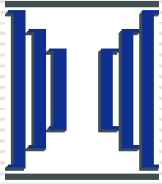
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Fifty-eight Institutions Creating Success for North Carolina



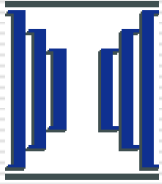
Cost Analysis of 4 Case Study Institutions (average)

Category	Pre-Trans.	Transition	Post-Trans.	Savings vs. pre-tr.
Dollars	\$184,410	\$248,300	\$52,296	\$132,114
Percent of change pre-trans. costs	n/a	+35%	-72%	



CMS Functionality Comparison

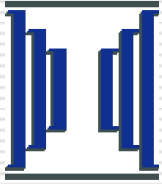
- Two unique functionality survey instruments were developed targeting instructor use and software administration.
 - 283 questions on the instructor survey
 - 111 questions on the administrator survey
- CMS versions evaluated were Moodle 1.9.x, Blackboard 7.x Learning System (LS), Blackboard 8.x LS and Blackboard 7 or 8 Academic Suite (AS)



Functionality Topics Evaluated (small sample)

- Instructor Comparison topics
 - Authoring Tools & Internal / External Resource Management
 - Content Use, Navigation & Viewing
 - Assignments/Drop box
 - Quizzes & Tests
 - Collaborative & Universal Design/Access Support
 - And others

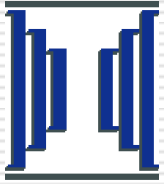
- Admin Comparison topics
 - Course Management
 - User Management
 - Add-on Management & Admin Communications
 - Database Management, Security, Scalability & High Server Availability
 - And others



CMS Functionality Comparison Results & Analysis

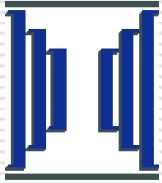
- Participation in the Comparison:
 - 137 instructors from 28 of the 58 institutions
 - 36 administrators from 27 of the 58 institutions

- A modified frequency count was utilized to determine the highest level of perceived functionality of the CMSs.



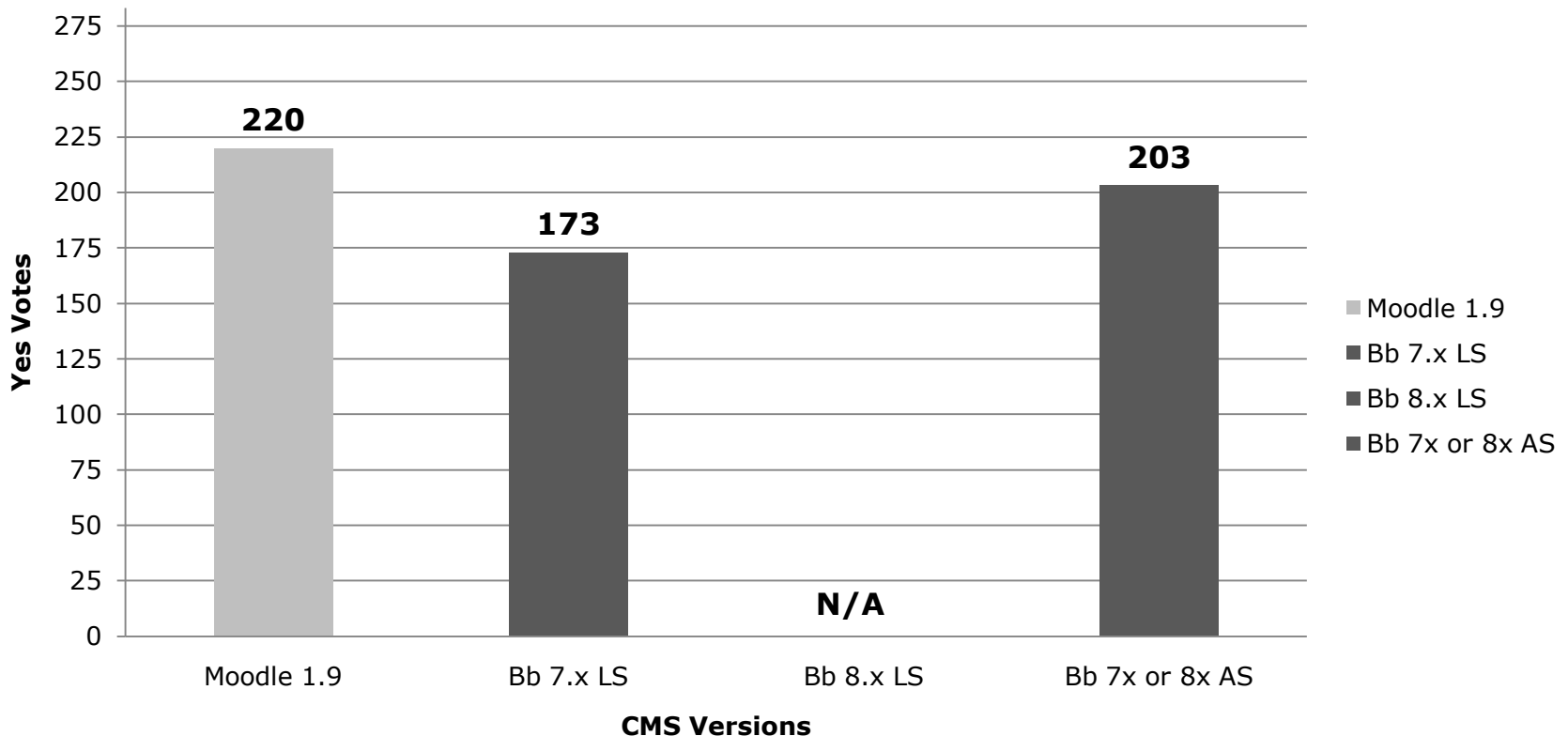
Instructor Functionality Comparison Findings

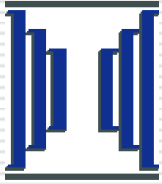
- Instructor: Moodle 1.9 was given the highest functionality rating, with “yes” responses in 220 of the 283 total questions. This was higher than any of the Blackboard versions evaluated.
- * Lack of data to evaluate Bb 8.x



Instructor Functionality Comparison Findings

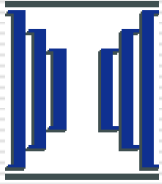
Instructor Functionality Comparison (283 total questions)





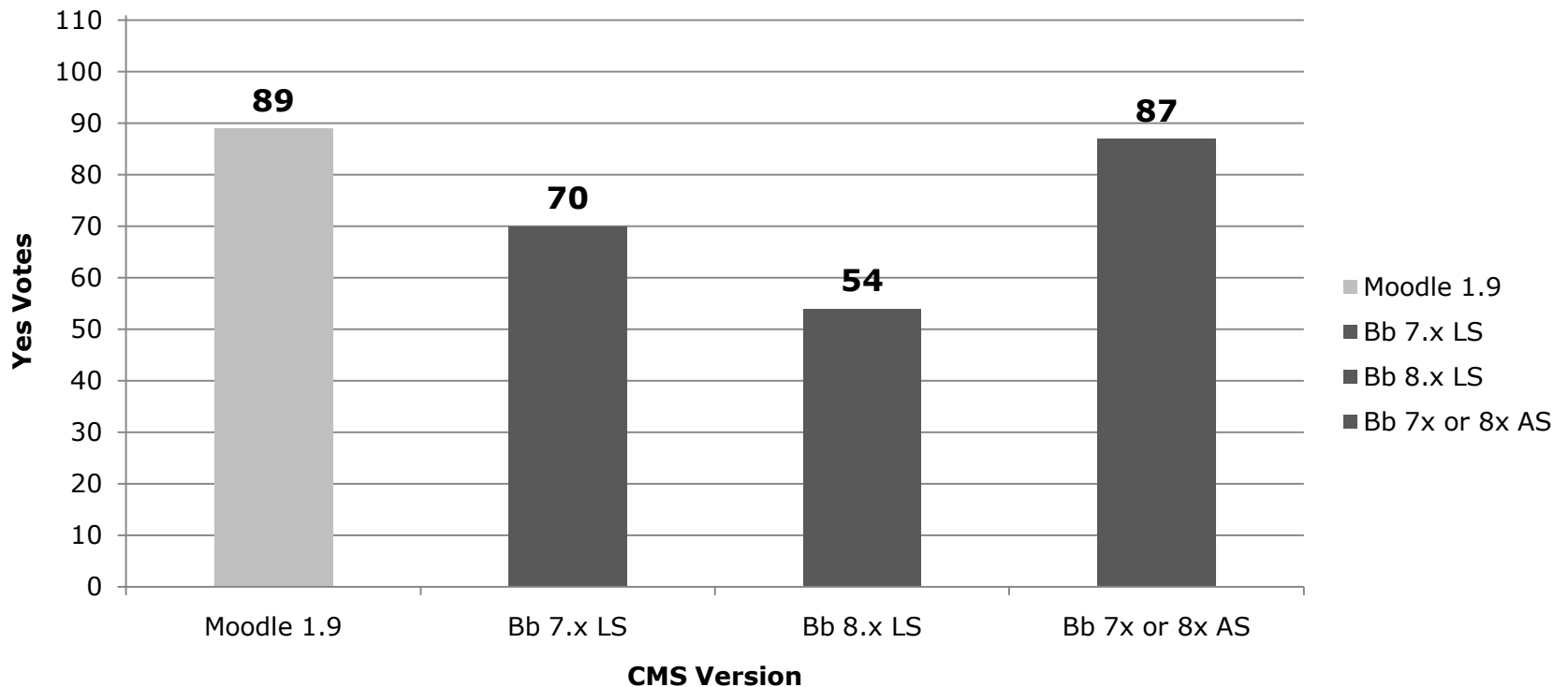
Admin Functionality Comparison Findings

- Administrator: Moodle 1.9 was given the highest functionality rating, 89 of the 111 total questions. This was higher than any of the Blackboard versions evaluated.



Admin Functionality Comparison Findings

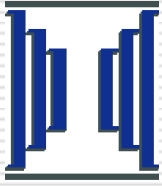
Admin Functionality Comparison (111 total questions)



North Carolina Community Colleges

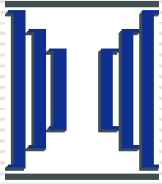
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Fifty-eight Institutions Creating Success for North Carolina



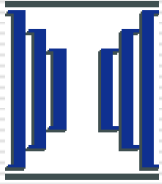
Conclusions and Recommendations

- ❑ Both CMSs have similar functionality
- ❑ Student orientations and faculty training are critical to either system
- ❑ Neither CMS was used to its full capability
- ❑ Case study colleges are pleased with Moodle – worth the migration challenge
- ❑ Hold-outs for Bb indicate we will remain a binary CMS system



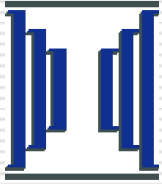
Conclusions and Recommendations

- This study did not assess compatibility and interoperability with all learning technology applications
- Funding for transitional periods would have to be obtained and would include increased help-desk costs
- Recommend determination (second phase study) of these two (technical and financial) considerations



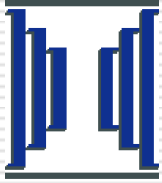
Conclusions and Recommendations

- Conduct “feasibility study” to determine total compatibility, interoperability of all learning technology
- Frame study in total cost of ownership



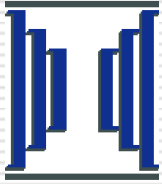
Conclusions and Recommendations

- Options to consider
- Status quo
 - Blackboard as primary, Moodle as secondary
- Adoption of Moodle as primary CMS
- Development of hybrid CMS
"Bboodle"
- RFP



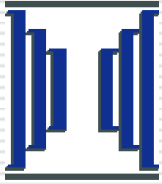
Post Assessment Observations

- Current model, institutions simply replace one CMS with another
- Reluctance to consider shared CMS resources/solutions



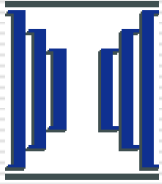
Post Assessment Challenges

- Need for “production cluster”
 - Concern with future support if local customization of Moodle results in deviation from Moodle.org code
 - Resulting loss of centralized/regionalized advantages (hardware, IT staff, help desk, admin, etc.)
 - “Scope challenge” System-wide solution
 - Obligation to be good stewards of public funds



Need for Business Requirement Standards

- Client-established guidelines
- Vendor/client dialogue & agreements
- Alignment strategy
 - Standards-based, scalable, consortium contracts or open source solutions
- Integrated functionality
 - Goal for menu of compatible resources
 - Maximize flexibility & choices balanced with wide-spread services



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Questions?

Link to full report:

<http://oscmoodlereport.wordpress.com/>

