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Keynote: NGLC Blended Learning Study Report and Where Do We Go from Here?

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NGLC Blended Learning Study Report and Where Do We Go from Here?

Blended Learning in the Liberal Arts Conference • 20 May 2013
OVERVIEW
Why Blended Learning?

- Idea for study came from discussions of blended learning among LAC deans
- Research on blended learning suggested it was extremely effective
  - Higher satisfaction with blended courses
  - Greater student engagement
  - Improved student performance
But, Studies at *Large* Institutions

- Would blended learning offer the same or equivalent benefits at a liberal arts college?
  - Ex. Student satisfaction related to reduced “seat time”
  - Ex. Control courses vs. typical LAC course
- Was it compatible with culture and values of liberal art colleges?
Goals of the Study

1. Encourage and support faculty experimentation
   - 14 Bryn Mawr faculty, 2011-2012
   - 40 faculty at 25 partner colleges, 2012-2013

2. Collect and analyze data on these experiments
   - Faculty and student perceptions of impact
   - Quantitative assessment of impact (where possible)

Research sponsored by a grant from NEXT GENERATION LEARNING CHALLENGES
What do we mean by “blended”?

1. Students receive feedback on learning outside classroom through computer-based materials

2. Extra-classroom component alters or informs how instructor uses class time
No Other Prescriptions

- No requirement to reduce “seat” time
- **Faculty** identify pedagogical challenges & goals
- Pedagogy drives technology
Kinds of Courses Developed

Subjects

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See our website for course descriptions, syllabi, and links to resources used.
Summary of Findings

1. Blending can improve learning outcomes in LACs

2. Faculty and students find it useful and consistent with LAC values

3. Keys to success:
   a. Pedagogy drives technology
   b. Focus on mitigating “start up costs”
      
      [“Swarthmore College gets it”]
POSITIVE IMPACT ON STUDENT LEARNING
Merit Completion Rates*

- 85% for all BMC blended courses in piloted study
- 93.5% for piloted gateway STEM courses
  - vs. 83% average for non-blended gateway STEM courses

*Proportion completing with grade of 2.0 or higher required for credit toward major.
Improvement over Historical Norms

- Historical comparison possible for four courses at BMC: BIOL101, CHEM101, CHEM103, GEOL202

- In blended version of three BIOL101, CHEM101 and GEOL202
  - Average grade was ~ 1 std. dev. higher
  - Merit completion rate was 100%, which was 0.8-1.5 std. dev. higher
4th Course: CHEM103

- Mixed results when compared to historical data
  - Average grade .2 std. dev. higher
  - Merit completion rate was 87.2%, which was 0.5 std. dev. LOWER

- But, analysis of learning data suggests online materials did have strong positive impact
4th Course: CHEM103

- Strong correlation between % online material completed and final grade based on exams ($r(60)=.417, p<.001$)

- For undergraduates, adding completion rate better predicted final grade than SATM alone
  - SATM + % completed: $R^2 = .58$ ($F(2, 36) = 15.87, p < .001$)
  - SATM alone: $R^2 = .30$ ($F(1, 37) = 24.98, p < .001$)

- Similarly strong correlation observed in smaller course at partner college ($r(17)=.884, p<.001$)
Summary

● Students who do their homework consistently fare better

● Probably not unique to blended courses, but
  ● Patterns *more visible* with online assessment
  ● Online assessments graded more quickly so students know sooner
  ● Amount of formative assessment often increased
FACULTY PERSPECTIVES
Strong Faculty Uptake

- **All** faculty in Bryn Mawr pilot have continued
- Majority of respondents from partners have/will
- Often report carrying tools/techniques over into other courses
- At BMC, visible experimentation outside of initial cohort
Why? Formative Assessment

- Assess more often and quickly
- Emphasize formative assessment and mastery
- Take advantage of
  - “Testing effect”
  - Reviewing at intervals
Why? Learning Data

- Real-time information on learning
- Supports “agile” teaching
- Leads to more fruitful conversations with students
Rational Decision-Making

- When faculty decided not to continue, it was through cost-benefit analysis:
  - I won’t be teaching course again/frequently
  - Available materials don’t work, and developing my own would be an inefficient use of my time

- In other words: LAC faculty are rational actors when rejecting as well as adopting technology
NGLC Blended Learning Study Report

STUDENT PERSPECTIVES
Student Feedback Mostly Positive

Do you think the computer-based materials impacted (have impacted) how well you did (are doing) in this class?

- Yes, I did considerably better than I would have without them.
- Yes, I think they helped somewhat.
- I don't think they really helped, but they didn't hurt either.
- I think they had a negative impact on how well I did.
- Not sure

At Bryn Mawr

- 50% (Not sure)
- 25% (Yes, I think they helped somewhat)
- 20% (I don't think they really helped, but they didn't hurt either)
- 2% (I think they had a negative impact on how well I did)
- 3% (Yes, I did considerably better than I would have without them)

At partner colleges

- 49% (Not sure)
- 24% (Yes, I think they helped somewhat)
- 22% (I don't think they really helped, but they didn't hurt either)
- 4% (I think they had a negative impact on how well I did)
- 1% (Yes, I did considerably better than I would have without them)
- 2% (Not sure)
What was helpful about online materials?

- Instant feedback
- Chance to practice on additional problems
- Summaries of information
- Visual presentation of material
- Animations or video
- Chance to explore additional topics
- In-depth presentation of information
- Concepts presented in a new way
- Audio presentation of material
- Virtual experiments helped
- Other

BMC

NONBMC
How did you use online materials?

- To prepare in advance for a lecture or assignment
- To complete an assignment
- To go back over something I didn't understand in a lecture or assignment
- For additional practice
- To review for exams or quizzes
- To explore on my own
- Other
Why? Instant Feedback

- Can ask better questions
- Can get help before class moves on
- Can better structure study time
- Like being able to practice before “it counts”
- Like being able to STOP once they’ve gotten something
Why? Audiovisual vs. Text

- Animations, simulations, video demos, diagrams are very helpful
- But, not necessarily
  - Long videos
  - Videos of person talking
  - In lieu of classroom demos
CONDITIONS FOR SUCCESS

NGLC Study Report
What We’ve Learned

- Pedagogy must drive technology
- Adoption is rational, cost-benefit analysis
  - Main barrier is heavy “start-up costs”
  - Second barrier is lack of suitable materials
  - Keep in mind factors that might limit ability to capitalize on investment – reusability, longevity, etc.
WHERE DO WE GO NEXT?
Continue Crowdsourcing to Lower Start-Up Costs

- Annual conference / archives:
  http://repository.brynmawr.edu/blended_learning/

- “Tools for Blended Learning” webinar series specific to LAC faculty

- New collaboration website:
  http://serendip.brynmawr.edu/exchange/blended
Research and Development

- Development of online course materials in areas of collective need/expertise (ex. research prep)
- Continued coordination of research on impact of techniques, materials, etc.
References


