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Flipped Classroom or Flipped Out?: Professors Attitudes Towards Online Learning

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Flipped Classroom or Flipped Out? Professors Attitudes Towards Online Learning

The SoTL Commons
A Conference for the Scholarship of Teaching & Learning

March 27-29, 2013
Georgia Southern University
Savannah, Georgia, USA

- SoTL Conference
- Scholarship of Teaching and Learning
- Savannah Georgia March 27-29, 2013

- Presenters:
- Southern Polytechnic State University RLC
Southern Polytechnic State University

- Presenters:
  - Members of the SPSU Center for Teaching Excellence (CTE) faculty Research Learning Community (RLC)
  - Dr. Adeel Khalid, Assistant Professor Aerospace Engineering
  - Dr. Beth Stutzmann, Director of Bands & Senior Lecturer of Music
  - Donna Colebeck, Lecturer of Art

- Contributors:
  - John Sweigert, Dept. Chair Mechanical Engineering
  - Craig Chin, Assistant Professor Chemistry
  - Laura Beth Daws Associate Professor Speech
RLC Members

- D. Colebeck
- J. Sweigert
- B. Stutzmann
- S. Toson
- A. Kalid
What is RLC?

- **RLC = Research and Learning Community**
- At Southern Polytechnic State University it is under the umbrella of the Center for Teaching Excellence (CTE)
- We are a volunteer multi-disciplinary community of faculty members.
- We meet monthly on campus to collaborate on SoTL related research topics.
- We collaborate and engage in scholarly research and related endeavors regarding teaching and learning.
Disciplines represented in RLC:

- The Arts (Music & Art)
- Engineering (Mechanical, Electrical, Industrial, Technical, Aerospace)
- Law (Construction)
- Language (Spanish)
RLC Goals

- Provide a platform for faculty to share common values and beliefs related to the scholarly inquiry into student learning
- Advance the practice of teaching
- Provide a platform for faculty at SPSU to actively engage in the Scholarship of Teaching and Learning (SoTL)
- Learn the art of teaching together
- Learn the methods of advanced pedagogical design
- Provide a platform for faculty to bring their ideas, share them with others, seek help and work together with the aim of making the research public in the form of conference and journal publications
SoTL = Scholarship of Teaching and Learning

- SoTL is a key way to improve:
- Teaching effectiveness
- Student learning outcomes
- Continuous transformation of academic cultures and communities.

- SoTL:
  1. Advances the practice of teaching
  2. Focuses scholarship on student learning
  3. Shares the results publicly
SoTL & Scholarship Logos

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Teaching
Scholarly Teaching
Scholarship of Teaching and Learning

JoSoTL

Ernest Boyer's fourfold vision of Scholarship

Teaching & Learning
Discovery
Engagement
Integration
Presentation Overview:

- Part One: Introduction

- Part Two: Modes of Delivery:
  - Online,
  - Blended-Hybrid
  - Face-to-Face

- Part Three: Professor Attitudes toward online learning & instruction (interspersed)

- Part Four: Flipped classroom techniques and learning activities

- Part Five: Survey of SoTL audience
Part 1:

- Introduction
- How People Learn
- Student Engagement
How People Learn

Knowledge of How People Learn

Lecture Based
- written
- oral
- narrative videos

Technology-Enhanced
- simulations
- electronic tools
- assessment opportunities
- communication environments

Individual vs. Group
- self study
- cooperative learning
- jigsaw learning

Skills Based
- isolated drill and practice
- contextualized practice
- modeling

Inquiry Based
- cases
- problems
- projects
- learning by design

Knowledge of How People Learn
All modes of delivery consider ...

Methodologies of Teaching and Learning:

- Socratic Method (Socrates)
- Syllogistic Reasoning (Aristotle)
- Scientific Method (Bacon)
- Feldman Method (Feldman)
- Thinking Frames (Perkins)
- Engineering Design Processes
- Standards of Scholarly Work (Boyer)

The Student Learner:

- Brain preferences (Right / Left Brain)
- Multiple Intelligences (Gardner)
- Knowledge-base
- Higher Order Thinking Skills (Blooms Taxonomy)
- Critical Thinking Skills
Bloom's Taxonomy Comparisons
Old vs. New ("Flipped")

- Knowledge
  - Memorizing vast amounts of information. Being able to remember, but not necessarily fully understanding the material.

- Comprehension
  - Restating in your own words; paraphrasing, summarizing, translating.

- Application
  - Using information to solve problems; transferring abstract or theoretical ideas to practical situations. Identifying connections and relationships and how they apply.

- Analysis
  - Identifying components; determining arrangement, logic, and semantics.

- Synthesis
  - Combining information to form a unique product; requires creativity and originality.

- Evaluation
  - Making decisions and supporting views; requires understanding of values.

This pyramid depicts the different levels of thinking we use when learning. Notice how each level builds on the foundation that precedes it. It is required that we learn the lower levels before we can effectively use the skills above.

Higher Order Thinking Skills
- Creating
- Evaluating
- Analysing
- Applying
- Understanding
- Remembering

Lower Order Thinking Skills
Engagement is Key for all courses and modes of delivery for:

- Active learning
- Student Engagement
- Critical Thinking Opportunities
Engagement at a Polytechnic

- Students understand the mechanics of their occupation and can actually put it into practice.

- *Techne & Logos*
  - Hands on / apply knowledge

- Focus on application of information more than just theory.
Learning by doing

“If I hear it — I will forget it, if I see it — I will remember it, if I do it — I will learn it”

-Confucius
Learning by doing

- Learning by doing is **longer lasting** than learning by seeing

- Riding a bi-cycle – can’t watch a video to learn how to ride a bicycle

- Swimming

- Playing an Instrument

- Creating Art
Part 2:
Modes of Delivery

- Online
- Hybrid; Blended
- Face-to-Face; Traditional classroom
Part 2: Modes of Delivery - Online

- Positives
- Negatives - Downsides
- Other Considerations
Positives of Teaching Online

- Get students (non-traditional) with real world experience
- Schedule flexibility
- Teach from off campus - home
  - Illness
  - Epidemic
  - Natural disaster
- Re-usability of course material
- Voice over power point – helpful for qualitative and quantitative material (off-line)
Positives of Teaching Online

- Reach a large number of people around the world
- Reduced cost
- Travel / commute
- Technology
  - D2L / Wimba – students can talk to each other in breakout rooms
- Archiving
- Access to archives anywhere, anytime
- Graduate courses
  - Mature students
  - Top 15% of their undergraduate class
- Working professionals
Positives of Teaching Online

- Green – no paper (fewer trees cut)
- Rural students accessibility - don’t have to travel a long distance or go to a city.
Downsides of Teaching Online

- Can not teach all courses online
  - Lab course – biology, chemistry – specialty equipment needed, flasks, chemicals, bunsen burner,
  - Simulation
- Lack of face to face interaction
- Team work
  - Students don’t want to interact with groups
  - Hesitant to discuss online amongst each other
- Ability to present their work
  - Most prefer classroom environment – despite knowing that everyone can see them
- Not as informal
Downsides of Teaching Online

- Intensive preparation
- Difficult to write on the screen
- Lots of Admin work
  - Uploading / downloading
  - Keyboarding activities
  - Secretarial work
- Grading
  - Tablet PC – write on the homework
  - Go back and forth grading / regrading
Downsides of Teaching Online

• Industry perception (specially engineering)
  • Undergraduates: on-campus degree – personality development
  • Graduate students: open to online or on-campus

• Engineers are process / algorithm based learners
  • Not bullet points
  • They don’t need to see words / equations
  • They need to see it evolve
  • Figures, charts, flowcharts
  • Power point takes that away
  • Publishers jack up the prices
    • Instructor is bought into it
Downsides of Teaching Online

- Communication is intense
  - Things may not be as clear
  - Facilitating / administrating
  - Students may miss announcements
- Proctoring exams for undergraduate students
- Continuous online teaching can cause
  - Back pain
  - Eye problems
  - Arm and finger pain
- Little first hand feedback from students
Part 3: Professor Attitudes toward Online Learning – SPSU Survey

- Challenges
- Discipline specific issues/concerns/approaches
- Generalizations across disciplines
- Courses deemed most appropriate for online environment
- SPSU Faculty attitudes regarding online instruction
- Compiled via survey coordinated by RLC
- IRB Approved

*Survey in progress: Preliminary Results (Feb-Mar 2013) – using Google Form*
Survey of Faculty at SPSU

- Survey Questions: Campus email for request to participate
- Google Survey tool: Utilized to respond, acquire and process data (charts & graphs).
- [https://docs.google.com/forms/d/1Ggm3qsAVVBn53hEni2l-VUewhmGsFc7opRsB35B326c/viewform](https://docs.google.com/forms/d/1Ggm3qsAVVBn53hEni2l-VUewhmGsFc7opRsB35B326c/viewform)

- *Ask yourself these questions- take the survey…*
Survey Questions:

- **Key areas:**

- **Departments:** (courses taught, appropriate, not appropriate, percentages)

- **Instructor Attitudes:** (online learning, online teaching)

- **Instructor Specific information for online courses actually instruct:** (learning, techniques & outcomes)
Survey Questions: Department

• **Online Teaching** in your Department
• Please select the department(s) you are affiliated with:
• Based on your experience, what percentage of courses in your department do you deem appropriate for teaching entirely online?
• Based on your experience, what percentage of courses in your department do you deem appropriate for teaching as a hybrid/blended class?
• If there are any courses that you believe are unsuitable to be taught in an online environment, please select any of the reasons below.
Survey Questions: Attitudes

- Attitudes Toward Online Teaching/Learning
- What is your attitude towards student online learning?
- What is your attitude towards online teaching?
Survey Questions: Courses Teach

- Information on the Online Courses you Teach
- Could you give the title and course description of the course(s) that you teach online?
- The course(s) that you teach focuses on …
- What category of online teaching methods do you use in your class..
- Please list the online activities you conduct asynchronously.
- Please list the online activities you conduct synchronously.
- Have you put your class lectures online to allow for in-class learning/engaging activities?
- Do you believe that these classroom activities are enabling your students to achieve a higher degree of learning/higher degree of application?
- Please list the online learning activities/flipped classroom techniques that you believe are specific to your particular subject area
Courses Suitable for Online Instruction per SPSU faculty survey

- MGNT 6050
- MGNT 6040
- MGNT 4135
- MGNT 2201
- MGNT 3205
- MGNT 3500
- MGNT 4100
- MGNT 6010
- MGNT 6032
- MGNT 6034
- MGNT 6038
- Music & Art Appreciation
SPSU Survey: courses not deemed suitable for online

- Biometrics
- Introduction to Systems Engineering
- System Analysis and Design
- Engineering Economic Analysis
- System Development Workshop
- Operations Optimization
- Foundations of Graphics
- Applied Graphics
- Graphics in the Professions
- Professional Practices of Writing
- Visual Thinking
- Website Design
- Information Architecture
- Content Strategy
- English

- Dynamics
- Machine Design
- Advanced Engineering Materials
- Machine Dynamics & Vibrations
- Engineering Materials
- Systems Design
- Communication
- Performance Based-Drawing; Band
- MATH 2253
- ECET 3410, ECET 6301
- High Frequency Systems
- ECET 4820 Communication Networks and the Internet
- ECET 6302 Digital Communication Networks
- Technical Communication
Unsuitable Reason for Online Instruction

- Not feasible to teach laboratory component online
- Methods of assessment cannot be adapted to online environment
- Online environment does not provide necessary level of student engagement

*Survey in progress: Preliminary Results (Feb-Mar 2013) – using Google Form*
### Who Teaches online? SPSU Survey

#### Please select the department(s) you are affiliated with

<table>
<thead>
<tr>
<th>Department</th>
<th>Count</th>
<th>Percentage</th>
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<td>Construction Management</td>
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<tr>
<td>Computer Science and Software Engineering</td>
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<tr>
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<td>Systems and Mechanical</td>
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<td>9%</td>
</tr>
<tr>
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</tbody>
</table>
Other Feedback SPSU Survey

Based on your experience, what percentage of courses in your department do you deem appropriate for teaching entirely online?

- 77% of the faculty believe that 50% or fewer courses are appropriate for teaching entirely online.

Based on your experience, what percentage of courses in your department do you deem appropriate for teaching as a hybrid/blended class?

- 61% of the faculty believe that 50% or more of the courses are appropriate for teaching as hybrid/blended.
65% of the faculty are in favor or strongly in favor of student online learning.

68% of the faculty are in favor or strongly in favor of online teaching.
Other Feedback SPSU Survey

The course(s) that you teach focuses on ...

- mostly quantitative skills: 8 (30%)
- mostly qualitative skills: 9 (33%)
- an even mixture of both skill sets: 10 (37%)

What category of online teaching methods do you use in your class?

- Exclusively asynchronous: 12 (50%)
- Exclusively synchronous: 2 (8%)
- Both asynchronous and synchronous: 10 (42%)
- Exclusive... [2]
- Both async... [10]
Other Feedback SPSU Survey

Have you put your class lectures online to allow for in-class learning/engaging activities?

- Yes: 22 (71%)
- No: 9 (29%)

Do you believe that these classroom activities are enabling your students to achieve a higher degree of learning/higher degree of application?

- Yes: 20 (74%)
- No: 7 (26%)
Online Engineering Courses concerns:
Prof. John Sweigert Dept. Chair Mechanical Engineering

(levels of student learning and faculty effort)

“level of time-management and self-motivation required by on-line work”
Concerns

- Maturity Level
- Self-Motivation
- Accreditation
- Laboratory Work
- Industry Perspectives
What do Students Want?
“...hybrid courses work better than in-class courses, which work better than on-line”
More Solutions

- Remote labs
- Weekend labs
- Computer Simulations
Strength of Materials - Lab 1: Tensile test with extensometer

Current task: Approach machine with specimen

Current Specimen: Alum 0.5 IN.
Instruction: Press A,S,D,W,O,Z to <navigate> specimen, Navigate & <hold> SHIFT to <slow> specimen.

Tools:
- Zero
- Pause
- Current Data: (P = 0)
- Strain
- Stress

Created with Unity
Strength of Materials - Lab 1: Torsion test with Extensometer and Strain Gage

Quest: Generate Material
Active: 1
Mouse Position: (939.0, 459.0, 0.0)
In Place: False

Current Materials
Completed

0.25
Common Learning Activities across Disciplines
## Face to Face Classes: Comparison of active learning techniques across disciplines

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<th>Engineering</th>
<th>Mathematics</th>
<th>Languages</th>
<th>Arts</th>
<th>Law</th>
<th>Music</th>
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<td>Changing Seating arrangement</td>
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<td>Problem Solving / Writing</td>
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Hybrid/Online Classes: Comparison of active learning techniques across disciplines

- Online Lectures to allow for in-class engagement
- Discussion Posts
- Live Chats
- Wimba Sessions/Live Classrooms/Skype
- Quizzes
Particular to specific disciplines

- Music Appreciation: music examples

- Foundation of Graphics Courses
  Demonstration of Tools (software)

- Practices of Writing/Visual Thinking/Website Design/Information Architecture/Content Strategy
  Discussion on writing practices; editing exercises; document review; reflections
Part 4: Flipped Classroom Techniques and Learning Activities Used to enhance courses

- Activities incorporated into courses to enhance engagement
Flipping Content...What is it?

- This is where the lecture or teaching content is placed online through video/podcast/media outlet and where the actual learning is completed (usually at home and viewed by the student), outside of class.

- Classroom time is used for cooperative learning or project-based learning where students move beyond the knowledge-level mastery to analysis, synthesis, and evaluation. Rather than lecture during student contact time, teachers directly interact with individual students and student groups.
Flipping Content:

- Having viewed the content, students reflect on it and create questions that they have and/or students answer teacher-prepared questions to allow for student assessment.
- One technique is to have students create questions that they have about the content and post these questions online (Facebook or in a discussion post area). This permits the teacher to clarify content in the next face-to-face session and not have to re-teach all of the material. The students may be divided into groups to answer the questions.
- Another technique is to create an engaging classroom activity to allow for the content to be internalized and transferred (transference of knowledge) during the next face-to-face session.
Flipping Activity

• Example of a flipped lesson: Video: Classical 1: 16:10-20:00 & 27:06-30:05; 31:16

Active classroom activity:

• Students are grouped by majors (2-3 students) and sent on a field trip to their “major” building. They have to take pictures within their building that exemplify three Classical musical forms; email the pictures to the teacher with a brief explanation of how each picture represents the form.
“AB form: a machine that vends drinks and a machine that vends snacks.”

“The spiral upwards sections would be theme A, and the much smaller flat sections would be theme B.”
“We moved to the back of the room and noted that there were people playing two different games on the computers in the lab: Red Orchestra and Team Fortress 2. We convinced them to rearrange slightly to show off the last form. **ABBA Form.** They moved between computers and set them up in the order of TF2, Red Orchestra 2, TF2, Red Orchestra.”
Theme and Variations Form

“The yellow color of the leaves of the trees represents the centralized theme of the piece. The varying color of the leaves and the sizes of the trees represent the variation in the music. Despite the many variations, they all have the same theme (yellow).”
Rondo Form

“This photograph of tables and chairs represents the rondo theme by the chairs being theme A, the flat table is B, and the tilted table is C.”
Flipping Benefits

• Ready, Set, Launch: The flipped classroom videos should be a launching pad (that starts at home) for further probing or deeper discussions and collaborations occurring inside and outside the classroom.

• Classrooms become active, exciting, and engaging

• Increased collaboration is promoted between students

• Teacher becomes facilitator
Assessment

- Activities assigned to students after they watch the videos should not only assess students' grasp of the knowledge gained from watching the videos, but also assess whether they could apply that knowledge to solve other problems or questions.
- The activities should lead the students to think critically and solve problems as much as possible.
Part 5: SoTL Audience Survey

- Take 1 minute and think about how you might flip your content
- Take 2 minutes and tell a neighbor
- Take 3 minutes to share with us

- In what online courses might this activity work best?

- Are there any learning activities that are shared by different disciplines?
Student Reports & Evaluations:

- SoTL: “Responds to the need for continuous improvement resulting from reflection & inquiry”

- Research Project Comparison:

  - Fall 2012 vs Spring 2013
  - Groups of 7 students vs Groups of 4 students
  - One artist vs Two artists compared
  - Class time: no, vs Class time: yes,
  - Signed up individually vs Signed up in class after time to formulate groups
  - Time only outside of class vs Time in class to meet and conduct updates
Student reports & evaluations:

- “I think a group of 4 would be far more effective. They would still separate the workload but it would be easier to coordinate”
- “I believe that breaking up the parts does not take away from the learning process, since everyone has to study the same sources and subjects…”
- “I thought the groups made the project more manageable, and since we had to compile all of our information we still got to learn all of the same things in the end.”
- “I enjoyed this project. One of the more interesting research project I have done.”
Web Resources

• Top 20 tools for Web 2.0 Classrooms

http://web20guru.wikispaces.com/Web+2.0+Resources

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Top 20 Web 2.0 Must Haves for Every 21st Century Classroom

This has gone from 10 to 20 in less than a year. I have more, but wanted to share some of my favorites here!

1. Class Blogs - Wordpress, for Blogger
2. Class Wiki or Website - Wikispaces, Wetpaint, Webnode, Wix, Glogster, WikiMatrix - compare and contrast
3. Virtual or a Cloud Office - Docs, Google Docs, Office Live, Zoho, Thinkfree>
4. Online Classroom Environments/Networks/Forums - Wikispaces, Collaborize Classroom, Edmodo
5. Backchannels - tinychat, backnurse, coveritlive, todaystmeet
6. Audio Channel - Podcasts or recordings - evoca, podbean, gcast, odeo
7. The Tubes - Youtube EDU, Teacher Tube Kidstube - create a free account for uploading demonstrations
8. Private Videocast or TV Channel - Ustream, livestre, Youcastr
9. Online Assessment tools - Thatquiz, Rubrics - Tech4Learning
10. Online Grade book - Engrade
11. Online storage - file storage - Dropbox, Google, Office Live, Box.net, Adrive, 4shared, Flickr, Google Docs - for docs, pics and more
12. Social Learning - Facebook, Twitter, Youtube, P2PU
13. Open Learning - Khan Academy, Watch Know Learn
14. Global Learning Experiences - ePals, Classroom 2.0
15. QR Codes for Learning - Cool QRs for class - QRstuff, Creators - Kaywa, zxing, Readers - Percent Mobile
17. Get Published! - Mixbook, Lulu, Epubbud
18. RSS in Education - keep up with the latest news Google Reader, Google Alerts, Netflakes, Facebook, Twitter
19. Bookmarking for Bibs and More - Diigo, Bibme, Easybib, Purdue Owl
20. Annotation for All Resources - Diigo, Zotero, Yolink
Flipped Classroom or Flipped Out?
Professors Attitudes Towards Online Learning

The SoTL Commons
A Conference for the Scholarship of Teaching & Learning

March 27-29, 2013
Georgia Southern University
Savannah, Georgia, USA

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Research Learning Community (RLC)

End