ASEE Best Practices

• SDSU has had a Teaching Learning Center for >15 years, with a part of their work providing presentations by SDSU faculty on their educational innovations & practice
  – Not attended well by College of Engineering faculty

• Several American Society of Engineering Education (ASEE) members expressed a desire to begin a dialogue on teaching, directly relevant to engineering
ASEE Best Practices

- Best Practices Committee
  - Began discussion in Fall 2010

- Innovation with Impact: Creating a Culture for Scholarly and Systematic Innovation in Engineering Education
  - Six-year study, paper published in 2012 by the ASEE Foundation

- Engineering education innovation is about designing effective learning environments. It requires, at the least, engineering and education expertise working in continual cycles of educational practice and research.
Innovation with Impact

– *Recommendation 5*—Raise awareness of the proven principles and effective practices of teaching, learning, and educational innovation, and raise awareness of the scholarship of engineering education.

*The Innovation Cycle of Educational Practice and Research*

Adapted from Booth, Colomb, and Williams, 2008
• The purpose of this group is to:
  – Organize engineering education-related presentations to assist College of Engineering (COE) faculty in learning about best practices in teaching and learning
  – Provide a forum or platform for our own faculty who are engaged in Scholarship of Teaching and Learning, SoTL, to present their findings locally
  – Provide presentations/workshops to help faculty become better informed of what it takes to participate and be fully engaged in SoTL
The goal is to have 2-3 sessions per semester
The sessions are one hour long, with food and drink provided
Attendance is approx. 15 – 20 College of Engineering faculty each session over the last 2½ years
ASEE Best Practices

Initial Survey

- Please fill out the survey, to see how you compare to the College of Engineering faculty
ASEE Best Practices

Initial Survey Results

• Program: - all COE Departments, 51/100 faculty responded

• Appointment:
  - Adjunct: 6%
  - Teaching Assistant: 14%
  - Term: 31%
  - Tenure-Track: 22%
  - Tenure: 26%

• Number of years teaching:
  - 0-5: 40%
  - 6-10: 13%
  - 11-15: 13%
  - 16 or more: 34%
ASEE Best Practices

Initial Survey Results

- What forms of faculty development activities would you like to see? (Rank in order of your preference)

<table>
<thead>
<tr>
<th>Activity</th>
<th>1st Choice</th>
<th>2nd</th>
<th>3rd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentations</td>
<td>40%</td>
<td>38%</td>
<td>22%</td>
</tr>
<tr>
<td>Workshops</td>
<td>44%</td>
<td>31%</td>
<td>24%</td>
</tr>
<tr>
<td>Informal Discussions</td>
<td>16%</td>
<td>31%</td>
<td>53%</td>
</tr>
</tbody>
</table>
Initial Survey Results

• What would be the ideal time for you to offer such faculty development activities? (select all that apply):
  – M-F – no specific day, morning, over lunch – 40-45%, afternoon
• What is the ideal length for a faculty development activity?
  
  Half day  4%
  Two hours  37%
  One hour  59%
• How often would you like to see these activities?
  
  Four per semester (once a month)  37%
  Two per semester  43%
  One per semester  20%
ASEE Best Practices

Initial Survey Results

- Please select topics that interest you (multiple responses)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Student Engagement</td>
<td>51%</td>
</tr>
<tr>
<td>Student Motivation</td>
<td>45%</td>
</tr>
<tr>
<td>Active Learning</td>
<td>43%</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>39%</td>
</tr>
<tr>
<td>Creative Problem Solving Techniques in Engineering</td>
<td>35%</td>
</tr>
<tr>
<td>Curriculum Development</td>
<td>33%</td>
</tr>
<tr>
<td>Distance Learning</td>
<td>31%</td>
</tr>
<tr>
<td>How to Build Effective Rubrics</td>
<td>31%</td>
</tr>
<tr>
<td>Course/Class Management</td>
<td>29%</td>
</tr>
<tr>
<td>SDSU Website Profile &amp; Professional WebPages</td>
<td>29%</td>
</tr>
<tr>
<td>Learning Styles</td>
<td>27%</td>
</tr>
</tbody>
</table>
Initial Survey Results

• Please select topics that interest you (multiple responses)

  Student Retention 27%
  Current examples in the COE of SoTL 27%
  Teaching Large Classes 25%
  Developing course assignments that measure specific ABET Student Learning Outcomes 24%
  Student Mentoring 22%
  Assessment and Evaluation 20%
  What is Scholarship of Teaching and Learning? (SoTL) 20%
  Peer Observation for Teaching Assessment 18%
  Cooperative and Collaborative Learning 16%
  Senior Design, issues and benefits 16%
Initial Survey Results

- What direct instruction from the SDSU Instruction Design Services (IDS) on AL Cloud Applications would interest you?

<table>
<thead>
<tr>
<th>Application</th>
<th>Interest (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D2L implementation of online courses</td>
<td>33%</td>
</tr>
<tr>
<td>Hybrid courses</td>
<td>31%</td>
</tr>
<tr>
<td>Camtasia – record lectures and screen capture</td>
<td>31%</td>
</tr>
<tr>
<td>Elluminate - real-time web conferencing</td>
<td>31%</td>
</tr>
<tr>
<td>MS Window Movie Maker – Streaming videos</td>
<td>22%</td>
</tr>
<tr>
<td>Impatica – voice PowerPoint presentations</td>
<td>20%</td>
</tr>
<tr>
<td>Question Pro – in-depth online surveys</td>
<td>20%</td>
</tr>
<tr>
<td>Streaming Media Servers</td>
<td>16%</td>
</tr>
<tr>
<td>Live@edu - student collaboration tools</td>
<td>14%</td>
</tr>
</tbody>
</table>
Session Topics

Spring 2011

• Teaching On-line
  – 2 faculty presentations

• Engaging students in the classroom

• Engineering Education research in your classroom/lab – summary of presentations for ASEE Regional/Annual Meetings
  – 3 faculty presentations

ASEE Best Practices
Session Topics

2011-12

• Problem-Based Cooperative Learning, a summary of a two-day workshop presented at SDSU in Summer 2011 by Karl Smith, Univ. of Minnesota
• Embedded Assessment: Quality Control vs. Quality Assurance
• Use of Rubrics in Assessment
• Discussion of College of Engineering collaborative project proposals for the Academic and Scholarly Excellence fund
  – 2 sessions
ASEE Best Practices

Session Topics

2012-2013

• Active Learning

• Academic Quality and Rigor - The College of Engineering portion of the campus-wide discussion.
  – Grading
  – What is Rigor and Quality? (x2)
2012-13 Discussions on Academic Quality & Rigor - notes

• Who are the Customers of our teaching?
  – Graduate school
  – Employer (Advisory Board)
    • Many employers – many different requirements
    – Students themselves

• Department vs. College standards
  – Should be separate

• Accreditation Body, are they the answer?
  – They can’t look at everything
2012-13 Discussions on Academic Quality & Rigor - notes

• Are we teaching the students what they need to know when they graduate?
  – Body of Knowledge
  – What do students need to know to do in the next class in the curriculum?

• Grading – Bell Curve
  – Some faculty follow closely – always A’s and F’s
  – Majority – use it, but don’t necessarily always give F’s
  – Junior-senior courses harder to use
  – Projects – use pre-set standards
2012-13 Discussions on Academic Quality & Rigor - notes

• What is Rigor?
  – Faculty member, who formerly worked in industry: Would like to train students that he tried to hire (hired 150 – 200 over many years) when he worked in industry, students who displayed high standards of work and academic performance (His firm had 3.7 min GPA requirements)
  – How hard do you grade?
  – The more learning possibilities, the better
  – It’s the student’s responsibility to learn
  – Depth vs Quantity
  – Rigor is separate from grading
  – Helping students learn how to think
2012-13 Discussions on Academic Quality & Rigor - notes

• What is Rigor?
  – Assessment can drive quality
    • “What Gets Measured is What Gets Improved” – National Academy of Engineering 2009
  – Not just “grading harder”
  – Depends on workload and setting expectations
  – Academic honesty of student’s work – following the student code
  – Demanding deep knowledge
  – Being able to do critical thinking – beyond just using a formula
  – Depends on student motivation and interest in learning
Questions?
Thank You