Circuits Virtual Community of Practice

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Session 5: Teams

April 18th, 2013

Agenda

- Welcome and Learning Objectives ~ 5 mins
- Activity: Building and Using Teams ~ 30 mins
- Activity: Scaffolding – Critical Thinking ~ 30 mins
- Wrap-up & Plans for Session 6 ~ 5 mins

Session 5: Student Teams

In preparation for Session 5 (April 18th):

– Complete Team-Maker survey

– Read and prepare to discuss

- "Turning Student Groups into Effective Teams," Oakley et al, *if your last name starts with A-K.*
- "Student Teams in the Engineering Classroom and Beyond," Finelli et al, *if your last name starts with L-Z.*

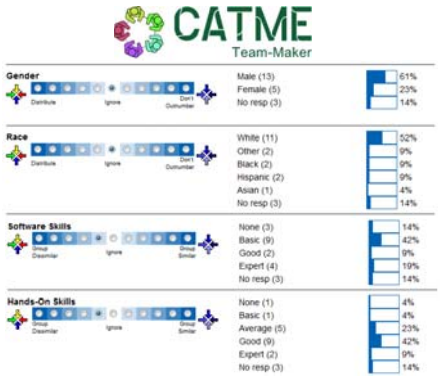
You are, of course, welcome to read both articles.

Session 5: Learning Objectives

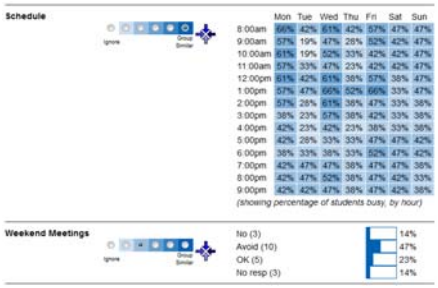
- Identify strategies for building and using productive teams
- Identify strategies for encouraging critical thinking
- Describe concrete applications of these strategies for the use of teams in a circuits course

Teams

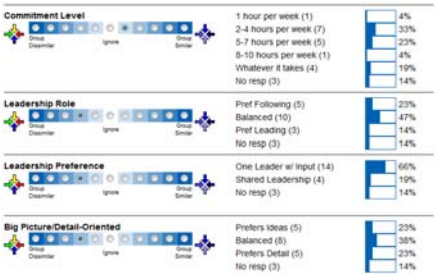
- Teams play a key role in nearly all types of active learning
- Before we begin to address specific active learning ideas, we will first consider the issue of teaming
- We will begin from the context of traditional application of teams in labs (experiments) and in design classes or in traditional classes with design activities (projects)



CATME Team-Maker



CATME Team-Maker



CATME Team-Maker

	Schedule	Other	Total
• **Team 1:**	4.33	-2.33	2.00
• **Team 2:**	1.64	0.53	2.17
• **Team 3:**	1.00	2.00	3.00
• **Team 4:**	-1.00	4.5	3.5
• **Team 5:**	-0.33	4.33	4.0

Separated : from the same university, no survey response

New Teams

- **Paul Furth**
- **Mohammed Habibi**
- **William Hageman**
- **Miguel Velez-Reyes**
- **Keith Holland**
- **Gloria Kim**
- **Joe Moening**
- **Zoulikha Mouffak**
- **Michael Cabral**
- **Aaron Ohta**
- **Stella Quinones**
- **Cecilia Townsend**
- **James Becker**
- **Michael Glazos**
- **Archie Holmes**
- **Frank Merat**
- **Yacob Astatke**
- **Melinda Holtzman**
- **Adrian Ieta**
- **Jack Mottley**
- **John Robertson**

Teams – Oakley *et al.*

- Forming Teams
  - Instructor vs. Self-Selected
  - Criteria: Diverse, but avoid isolating at-risk students
  - Collect Information
  - Dissolve & Reform (announce at beginning)
- Groups → Teams
  - Establish Expectations
    - Team Policies Statement
    - Team Expectations Agreement

Formal Training

Teams – Oakley *et al.*

- Peer Assessment
  - Team performance, develop skills, grade adjustment
  - % Contributions vs. Citizenship
  - Team member evaluation, peer ratings
    - Convert verbal ratings to numerical
- FAQ
  - What if some students object to teams?
  - What if students divide and conquer?
  - Can some students self select? (Sports teams?)
  - What if pairs are natural? (Labs?)
  - What if students do not use team well? (3B4ME?)

Teams – Finelli *et al.*

5 traits of effective teams*:

- *Positive interdependence*
- *Individual accountability*
- *Face-to-face interaction*
- *Interpersonal and small-group skills*
- *Assess team performance*

* *Johnson, Johnson, Smith (2007)*

Teams – Finelli *et al.*

- *Begin with simple, well-defined tasks, then increase their difficulty*
- *Define individual versus team accountability*
- *Develop assignments that require interdependence*
- *Form instructor-assigned, heterogeneous teams of three to five members*
- *Consider practical issues when forming teams*
- *Develop team contracts*
- *Use peer evaluations*


Peer Evaluation Form

Please write the names of all of your team members, INCLUDING YOURSELF, and rate the degree to which each member fulfilled his/her responsibilities in completing the team assignments. Use the following rating system:

Excellent	Consistently went above and beyond the call of duty, tutored teammates, carried more than his/her fair share of the load
Very good	Consistently did what he/she was supposed to do, was very well prepared and cooperative
Satisfactory	Usually did what he/she was supposed to do, was acceptably prepared and cooperative
Ordinary	Often did what he/she was supposed to do, was minimally prepared and cooperative
Marginal	Sometimes failed to show up or complete assignments, was rarely prepared
Deficient	Often failed to show up or complete assignments, was rarely prepared
Unsatisfactory	Consistently failed to show up or complete assignments, was unprepared
Superficial	Had practically no participation
No show	Had no participation at all

These ratings should reflect each individual's level of participation and effort and sense of responsibility, not his/her academic ability.

Name of team member	Rating

Your signature _____

Adapted from Kaufman, Felder, and Fuller (2000)

Activity

- Poll – Most of us have included short projects or other team-based tasks in our classes.
  - Have you used teams in your classes?
  - Were they self selected?
  - Did you use peer assessment?
- Teaming – In your breakout, share experiences you have had that relate to key issues raised in the two readings for today's session.

Scaffolding

Like its namesake in the construction industry, scaffolding in education is a temporary support mechanism. Students receive assistance early on to complete tasks, then as their proficiency increases, that support is gradually removed. In this fashion the student takes on more and more responsibility for their own learning.

http://serc.carleton.edu/NAGTWorkshops/webdesign/Scaffolding/index.html

Critical Thinking

- *Combat Physics*: A Model for Student Teams?
  - Practiced in big science
  - Most intense internally

- Insight Assessment
  - "Critical Thinking: What It Is & Why It Counts," Peter A. Facione

Critical Thinking

- Clarity
  - Example?
- Accuracy
  - Verify or test?
- Precision
  - Details, Be exact
- Relevance
  - How does it relate to the problem or issues?
- Depth
  - Difficulties, complexities?
- Breadth
  - Other points of view?
- Logic
  - Collectively make sense?
- Significance
  - Is this the most important problem or central idea?
- Fairness
  - Vested interests, bias?

"Elements and Standards" Online Learning Model

Activity

- Using the matrix from the Foundation for Critical Thinking as a guide, write some of the general questions in more specific terms for an activity in a circuits and electronics course.
- *What questions can we provide for our students so they can critically assess their answer to a problem, their design to a spec, etc? What were they to do and how do they know they have successfully done it?*
- Example Topics
  - Passive filters
  - Circuit analysis with loop and node equations
  - Practical integrators and differentiators

Session 6: Active Learning

- Arrange to meet/interact with your team online, by conference call, email exchange, blog postings, …
- Expand on the ideas developed during the breakout sessions today and develop a well-defined project activity for students in a typical circuits and electronics class.