# Small Group Mentoring

## A Summary

# Topics

- Motivation/Supporting Evidence
- Practical Considerations
- Expectations
- Mentor responsibilities
- Critical and Creative Thinking
- Assessment of students (grades)
- Student self-assessment

# Motivation

- Group projects promote active learning. Students see the actual problem solving process (P1, P6)
- Differing viewpoints spawn critical thinking (P5)
- Students have more responsibilities including participation, attendance, preparation, admitting confusion, teaching, and learning from peers (P5)
- Ability to work in teams is essential to career success. Group work builds skills in teamwork, communication, etc.(P1, P5, P8)

# Supporting Evidence

- Peer learning groups learn at least as much as lectured students (Davidson data, 1990)
- Peer teaching and learning improve students' understanding (Benware & Deci data, 1984)
- Group work improves long-term memory of class concepts (P1, P3, P8)
- Students report increased confidence in their education via enhanced student-student, student-instructor interaction (critical for freshman student retention (Astin data, 1990))
- Students rate peer learning courses highly (P6)

# Practical Considerations

- Optimal group size is 4
- Suggestions for selection of group composition
  - Students prefer picking their own teams (P2)
  - Teachers should ensure, however, that skills are spread evenly (adjusting student-chosen teams as need be) (P1, P6)
- Team members should take turns in different roles:  facilitator, recorder, presenter, writer, etc. (P1, P6)

# Practical Considerations

- Individual accountability (how to minimize "freeloading")
  - Have students report on individual assign-ments and teach others (P6)
  - Have students keep a journal of what they and/or others have done (P3, P9)
  - Give students concrete detailed written tasks (P3)

# Practical Considerations

- Encourage cooperative, not competitive, behavior (P6)
- Team-building exercises (P1)
- Various discussion techniques (for project work, group-structure setup, and evaluation)
  - Brainstorming (P9)
  - Think-pair-share (P1, P9)
  - Roundtable (P1, P9)
  - Presentations (P9)

# Expectations

- Notify students of group and class expectations
  - What group work will provide (see motivation section, firmer grasp of material, how group work is fair in terms of grading, etc.) (P6)
  - "Group-work skills": Interpersonal, group management, inquiry, conflict, and presentation skills (P6)
  - Project and poster expectations (P5)

# Expectations

- Have students develop their own expectations
  - Have students identify group and individual responsibilities and group advantages and disadvantages (P8)
  - Have them periodically process what their team needs to start, stop, and continue doing (P8)

# Mentor Responsibilities

- Mentors are facilitators not lecturers (P1, P6)
- Keep it simple (P3, P6)
- Listen carefully and be available (P5)
- Appraise their efforts; give constructive feedback (P3)
- Have reasonable expectations taking into account student background (P5)
- Ensure behavior is not disruptive to student or group tasks (P5, P9)

# Mentor Responsibilities

- Project guidance (P3, P6)
  - Break down and prioritize segments of project
  - Provide written instructions; err on being too explicit
  - Emphasize the most important concepts (P3, P5)
  - Monitor time (P3)

# Types of thinking encouraged by group work

- **Critical thinking (P8)**
  - Present science in wider social, economic, and applied problems
  - Present science as not simply a series of right answers
- **Creative thinking (P4)**
  - Make creativity a stated requirement
  - Provide support structure for risk-taking/creative thinking
  - Iterate individual reflection and group discussion

# Assessment

- Different assessment types: (P7)
  - Objective to Subjective
  - Atomistic (e.g. multiple choice), analytic (e.g. rubric), holistic (e.g. overall score), general
  - Self, peer, collaborative, instructor grading
- Different types of grading encourage desired thinking
  - Group thinking—emphasize participation of all (P3)
  - Creative thinking—subjective end product evaluations (Chamorro-Premuzic) (P4)

# Student self-assessment

- Periodic distribution of notecards to assess group and individual progress (P3)
- Self-evaluation after every meeting (P3)
  - What went well
  - What students know
  - What to improve

# Presentations

- P1-Mark Robertson-Tessi, "Cooperative Learning"
- P2-Rebecca Vandiver, "Lessons from the best and worst student team experiences: How a teacher can make the difference", 9/18/06
- P3-Jared Barber, "Classroom-Based Exercises", 10/2/06
- P4-Serina Diniega, "Creativity among individuals and groups", 10/2/06
- P5-Rebecca Vandiver, "Effective mentoring", 10/9/06
- P6-Jared Barber, "Peer learning groups", 10/23/06
- P7-Serina Diniega, "Student assessment in problem-based learning", 10/23/06
- P8-Rebecca Vandiver, "Getting students to work together", 10/30/06
- P9-Serina Diniega, "Discussion Techniques", 11/06/06

# Citations

- Astin, AW. *What Matters in College: Four Critical Years Revisited.* San Francisco: Jossey-Bass, 1992.

- Benware, CA, Deci, EL. "Quality of Learning with an Active Versus Passive Motivational Set." *American Educational Research Journal,* 1984, *21,* 755-765.

- Davidson, N. *Cooperative Learning in Mathematics: A Handbook for Teachers.* Menlo Park, CA: Addison Wesley.