Facilitating Cooperative Learning in Student Workgroups

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Activity #1

- Obtain a handout – see your group # at the top.
- Sit with your group.
- Solve the problem on the handout.
- Turn in your solution.
Activity #1 - Debrief

- Do you all feel confident about the work you submitted?
- Do you (individually) feel confident about your knowledge of the material?
- How would you describe the collaboration among group members?
Workshop Overview

- Cooperative Learning
  - Benefits
  - Implementation Challenges

- Innovative Solution
  - Strategic use of whiteboards
  - Supported by instructional methods

- Implementation
  - Course Design
  - Activity Design
  - Environment
  - Instructional Supports

- Take Aways
  - Lessons Learned
  - Recommendations
Statistics Course Background

- Algebra-based introductory statistics course
  (descriptive statistics, probability, inferential statistics)
- 35 students, generally 10 or more are D/HH
- Wide variety of majors, year levels, mathematical backgrounds, and communication preferences
- Support for D/HH students includes notetaker, 2 ASL interpreters, sometimes live captioning
- Short lecture followed by activities in student work groups
- Mixed groups of four students – male/female, hearing/DHH, majors, year levels
- Group work includes skill practice, problem solving and concept discovery
Cooperative Learning

- Small groups work together on a structured activity
- Students active and engaged
- More advanced students assist less advanced
- Students practice speaking the language of the discipline
Communication Challenges Impacting Cooperative Learning

When students in a group have mixed hearing statuses
- D/HH students may all rely on notetaker's notes - not available until after class.
- Students may not understand each other's speech / signing
- Interpreters may not be readily available to aid in-group communication*
- Students often prefer direct communication with their peers
- Communication and task completion often slower for mixed groups

Not all group members participate
Not all group members understand
Innovation Overview

- Communication Tool = Whiteboards
- Instructional Support
  - Classroom Environment
  - Activity Design
  - Group Dynamics
  - Learning by Example
Universal Design Principals

• Equitable use
• Flexibility in use
• Simple and intuitive
• Perceptible information
• Tolerance for error
• Low physical effort
• Size and space for approach and use

Center for Universal Design at North Carolina State University
Designing Course to Support Cooperative Learning

- Plan, Plan, and Plan More....
  - Each class meeting designed as “unit”
- Goal for Instructor: Say, Write, and Do Less in Class
- Let Students “Discover” Concepts for Themselves
- Include Questions that Require Student Reflection
- Be Flexible!
  - Assignment too long? Make last page extra credit or homework.
- Review & Revise... Repeat
Designing Activities for Cooperative Learning

• One worksheet per group
• Written instructions within the assignment to use the whiteboard to jot ideas, draw pictures, etc.
• "Checkpoints" for understanding
• The whiteboards provide
  o Space for written communication and showing work
  o Place to post assignment
Environment for Cooperative Learning

- Whiteboards – large enough for multiple people to use at the same time
- Many different color markers, magnets
- Space in front of each whiteboard to accommodate group members
- Move chairs away from whiteboards
- Set expectations
  - Everyone is expected to use the whiteboard
- Explain reasoning
  - This strategy has been shown to be effective for all students
Model Behavior from Instructor

When lecturing or assisting student groups

- Ensure line of sight
- Wait after writing on the board before speaking
- Provide explanation of modelled behavior
Education on D/HH experience

• **Video**

• **Instructions**
  o You are a student in this class
  o There will be a quiz on this material

• **Debrief**
  o How do you feel about your ability to pass the quiz?
  o Was it difficult to learn this way?
  o What were you feeling as you watched the video?
  o How does this experience relate to your group work?
Expectations for Group Behavior

- Rotate roles
  - Leader
  - Recorder
  - Timekeeper
  - Checker
- Each group must establish ground rules
  - i.e. minimal sitting during group work
- Everyone Must Participate!
  - Being wrong is better than being quiet.
Continuous Improvement of Group Dynamics

- Feedback is one of the best ways for students and instructors to improve their work

**Students received:**
- Daily oral feedback from instructor & other students
- Mid-term written feedback from students
- Mid-term group activity on group improvements

**Instructor received:**
- Daily feedback from students & classroom observers
- End-of-term written feedback from students
- Periodic feedback from observers
Activity #2

- Obtain Handout.
- Read Instructions.
- Solve the problem with your group.
Activity #2 - Debrief

- Do you all feel confident about the work you submitted?
- Do you (individually) feel confident about your knowledge of the material?
- How would you compare the collaboration for Activity #2 with that of Activity #1?
Evaluation Methods: Field Observations

- Students are engaged!
  - Classroom energy is very high.
- Students became more comfortable working with their groups over time.
- Interpreters were rarely used for intra-group communication.
- Role of the instructor has changed:
  - Provide clarity, find “sticking point”
  - Facilitator for group dynamics
I liked how we help each other and get work done quickly when we are standing because it keeps us focused... Also we bonded together to be good friends and help each other. They could explain when we are confused and make examples on the whiteboard if someone is confused. (HoH student)

The whiteboard was an excellent tool for communication. I have a hard time listening to the hearing member as they recite the answer from the calculator so they would write down on the board for me. When I was a report the others would work ahead of me while I copied it down. As the same time I was also checking if their work was correct. That helped to bring up questions and allowed the discussions to ensue. (Deaf student)

Sometimes the board had us all facing the same way which made talking a little awkward. When this started to happen we would usually step away from the board a little and form a circle to discuss. After we had a plan we would move back to the board. (Hearing student)
What We've Learned About Whiteboards

- Assist with communication and participation
- Students are more engaged when standing
- Universal Design Potential: Hearing students, ESL students, also benefit
- Inclusive of students who prefer to participate in a non-vocal way
- When whiteboards are around, people use them!
Recommendations for Instructors

• Set expectations (e.g. What is the leader supposed to do?)
• Model behavior
  o Collaboration
  o Asking questions
  o Making mistakes
  o Communication
• Let students take responsibility for their group work AND group dynamics
  o Provide opportunities for reflection, feedback, and changes (learning cycles)
Recommendations for Instructors

• Motivate students to work together
  o Explain strategies (when groups write on the board, everyone can see the work, including the instructor, and correct mistakes, direct discussion, etc.)
  o Point out good practices – the groups that consistently use the whiteboard, that are standing, are getting better grades on their assignments
  o Consider giving bonus points for good collaborative practices
Whiteboard Options

- **Wall-Mounted Whiteboard 40x72”**
  - Luxor Magnetic Whiteboard, $140 delivered (Webstaurant.com)

- **Whiteboard Paint**
  - Sherwin Williams Dry Erase Coating, $35 for 40x72” area

- **Portable Whiteboard 40x72”**
  - Luxor Reversible Magnetic Whiteboard, $210 delivered (Webstaurant.com)

- **Self Stick Dry Erase Rolls**
  - GoWrite! 24”x10’, $25 (Amazon.com)