Facilitating Undergrad Teamwork in ENG



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DESTINATION & ROUTE

Destination/Goals

- 1. Learn from one another
- 2. Acquire **foundational** tools/frameworks
- Route planning for ENG & yourself w/o burnout



Route

- 1. Introductions
- 2. Research
- 3. Facilitation Strategies
 - a. Designing, running, assessing
 - i. Team dynamics
 - ii. Accountability
- 4. Discussion and Work
- 5. Next steps





UC Irvine School of Humanities

MFA PROGRAMS IN WRITING







Center for Teaching & Learning







INTROS

- Name
- What you teach in ENG
- One thing you do for fun



RESEARCH OVERVIEW

Why team/group work?

Human connection is the basis upon which learning takes place. Relationships are essential because there is no learning without relationships. -<u>Randy Bass</u>





CHALLENGES

Classroom challenges. In your experience teaching, what gets in the way of these benefits?

One or two word answers!

Talk about solutions after.



"Let me interrupt your expertise with my confidence."



CHALLENGES: WORD CLOUD

Active poll

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Challenges to teamwork



SOLUTIONS & STRATEGIES

· LA S PCONFLICT RES. ACTS EXPECT. TSTUDY TWC · PERFORM. REVIEWS TEARLY + ASSESS SENSIT (ACCOUNT) DOCUMENTING AGILITY ROLES | ROTATE L> PROCESS/REFLECT · TASKING-UNIVERSE

SLACKERS, HITCHHIKERS, EXCLUSION

Wolf et al., (2016), American Society for Engineering Education.

n = 677 engineering students from 3 universities

	Slacker teammate	Limited learning	Domineering teammate	Excluded from main work	Any Problem
Females	78%	56%*	50%*	40%*	87%
Males	73%	40%	37%	25%	84%

* p < .01



STUDENT VOICES

"The alpha males feel that in order to show that they are smart they need to lead everything. That's really annoying. If someone were to lead the conversation in a way that still enabled others to contribute and feel included, I feel that's totally fine." (Alexandria) "This girl (Alexandria) I took no advice from. You can tell before [from reading her paper] she didn't understand the prompt, so for the most part her feedback is going to be garbage. She made a suggestion that everyone in the group disagreed with." (Jake)

"When grades [were] at stake, people are less PC, more blunt. I felt like I had to prove myself." (Robert)



SOLUTIONS: "CERTAIN CONDITIONS" CAVEAT

Cooperative Learning (5 conditions)

- 1. Positive interdependence (too hard)
- 2. Indiv. accountability (anti slacker)
- 3. Promotive interaction (task management, consensus)
- 4. Teamwork skills (e.g., comm) are taught explicitly
- 5. Students self-assess team functioning





FACILITATION STRATEGIES (i.e., how?!)

Form Teams

(no perfect way!)

Establish Guidelines

(including the why and learning goals)

Run Teams

(intra-group dynamics to promote cohesion; mitigate conflict)

Assess Performance/Product

(and give feedback)





FORM TEAMS

- Criterion-based/Heterogeneous (Stoddard and Pfeifer, 2018; Michaelsen et al., 2023)
- Purposefully equitable (Sullivan et al., 2018).
- 3. Transparency
 - a. fairness (Michaelsen et al., 2023).
 - b. the why (Winkelmes, 2023).

- 1. Selection
 - a. Students select*
 - b. Random
 - C. Instructor selects
- 2. Size: 3-5
- 3. Duration/Dissolving

Tools

- Forms for CL (Felder and Brent)
- <u>CATME: Team-Maker</u>
- <u>Formation Strategies</u> (Keating)

MAKE & EXPLAIN GUIDELINES

Team contracts/charters/agreements

- Stoddard & Pfeifer's <u>short contract</u>
- UM's long contract for ENG

Transparent Design. The why of teaming: skills and outcomes. More transparency \rightarrow better learning.

- a. Bio example: less to more transparent
- b. <u>Asset-mapping example assignment</u>



RUN TEAMS

Periodic Self-assessment for Teams

- a. Team Progress Reports/Memos (<u>examples here</u>)
- b. Stoddard & Pfiefer's processing activity

Assign roles (against task assignment bias)

a. Assign Roles: Facilitator, Lead Writer, Note-taker, Spokesperson, Timekeeper, Devil's advocate, Editor, Manager of Time/Materials, Practical thinker, Creative thinker.

Manage Conflict

- a. Defining conflict:
 - i. constructive vs destructive (Wolfe, 2010)
 - ii. <u>task conflict, relationship conflict, and process conflict</u> (Novick et al., 2022)
- b. Active listening (Felder and Brent, 2024)
- c. <u>Conflict management for Instructors</u> (Uni of Waterloo)
- d. BU's <u>Questrom Team Learning Group</u>



ASSESS TEAMWORK

Assessing Individual students

• AACU Rubric on Teamwork (formative vs summative)

Peer Rating & Grading (depends on the skills you're teaching)

- <u>UM-ENGIN</u> peer rating forms
- <u>CATME</u>: peer ratings related to project grades (<u>Kaufman et al., 2000</u>)
- <u>Grading Methods for Group Work</u> (Carnegie Mellon)



Caution: students who were excluded from tasks can receive lower grades!



Language for Growth in Teamwork

AACU's Rubric.

- Contributes to Team Meetings
- Facilitates Contribution of Team Members
- Individual Contributions Outside of Team Meetings

Fosters Constructive Team Climate

Responds to Conflict

	Capstone (advanced)	Benchmark (beginner)
Responds to conflict	Addresses destructive conflict directly and constructively, helping to manage/ resolve it in a way that strengthens overall team cohesiveness and future effectiveness.	Passively accepts alternate viewpoints/ ideas/opinions.
Facilitates the Contribution s of Team Members	Engages team members in ways that facilitate their contributions to meetings by both constructively building upon or synthesizing the contributions of others as well as noticing when someone is not participating and inviting them to engage.	Engages team members by taking turns and listening to others without interrupting.
	ciiyaye.	BOSTON

UNIVERSITY

ASSET-MAPPING: Pfeifer & Stoddard at WPI



WRITE-PAIR-SHARE (10:30)

- 1. Take five breaths to clear your head or get up and stretch.
- 2. Write for 90 seconds. Don't think—just write—to address one of these questions:
 - Which strategies are interesting to you? Why? What questions do you have?
 - What is one thing you might do to improve your student teams?
- 3. Groups of two. Discuss for 5 min.
- 4. Share about your discussion.



REFLECTIONS & NEXT STEPS

New table; intros and one thing you're thinking

- 1. Locate an assignment you use for student teams.
 - a. How does it incorporate cooperative learning criteria?
 - b. How transparent is it about the purpose of teamwork and student learning outcomes? How could you imp

Workshop Folder

- 2. How will students demonstrate their growth as team members?
 - a. Course level and curriculum level
- 3. How does teamwork overlap with other ENG skills or processes, e.g., creativity?
- 4. Further work and feedback





RESOURCES

Guides with Examples

- <u>Student Teams in the Engineering Classroom and</u> <u>Beyond</u> (UM CRLT-ENGIN)
- Asset-Mapping for Teaming (Pfeifer & Stoddard)
- Conflict Resolution Slides (Novick et al.)
- <u>Receiving and Giving Effective Feedback</u> (Uni of Waterloo)

General Resources

- <u>Cooperative learning</u> (Vanderbilt)
- <u>Structured Interactions (</u>UM CRLT-ENGIN)
- <u>Quick Strategies: Team Formation for ENG Undergrads</u> (BU)



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Collaborative Learning (Felder & Brent, 2024)

Positive interdependence. Team members must rely on one another to achieve the instructor's learning goals.

Individual accountability. All students in a team are held accountable for doing their share of the work and for mastering all the material covered in the assignments.

Promotive interaction. Although some of the assigned work may be parceled out and done individually, some is done interactively. In the interactions, team members provide one another with feedback, debate solution strategies and conclusions, and most importantly, teach and encourage one another.

Development and appropriate use of teamwork skills. The students are helped to develop the skills required for high-performance teamwork, such as communication, leadership, decision-making, time management, and conflict resolution.

Regular self-assessment of team functioning. The students set team goals and periodically assess their progress toward meeting the goals, identify what they are doing well and where they may be falling short, and decide on changes they will make to function more effectively in the future.



Student Learning Outcomes (EXTRA)

ENG EK 210 (Intro to design): Teamwork/Collaboration (TWC) CAS PY 211 and 212: Teamwork/Collaboration (TWC) ENG ME 310 (Instrumentation): Writing-Intensive Course (WIN) ENG EK 121 (Programming): Creativity/Innovation (CRI)



Group Work Video (EXTRA)





Student Learning Outcomes (EXTRA)

ABET: an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. (2025-26)

NACE Career Competency: Teamwork: Build and maintain collaborative relationships to work effectively toward common goals, while appreciating diverse viewpoints and shared responsibilities.

BU Hub: TWC: (1) As a result of explicit training in teamwork and sustained experiences of collaborating with others, students will be able to identify the characteristics of a well-functioning team.

(2) Students will demonstrate an ability to use the tools and strategies of working successfully with a group or team.

- assign and undertake roles and responsibilities amongst members of a team.
- give and receive feedback within their own team and to meaningfully process this and other feedback
- engage in group reflection that inspires collective ownership of results.



STUDENT RESISTANCE (EXTRA)

Students resistance = understandable!

Traditional individualism

- Traditional teaching vs active learning
- Negative previous experience with group work (anxiety, negative perception of student knowledge/authority)

Felder & Brent's "Sermon for Grumpy Campers"



More on contracts (EXTRA)

Team Contract: <u>Goals, Roles, Processes, Interactions</u> (from <u>BU's Questrom</u> <u>Team Learning group</u>).

Communication norms: "the texting trap" (H. Hutchinson; Strenger et al. 2020)

