ASEE AMERICAN SOCIETY FOR ENGINEERING EDUCATION

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WORKSHOP: Conflict Management for Undergraduate Engineering Students

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Jonathan Weaver-Rosen is an Instructional Assistant Professor in the Department of Mechanical Engineering at Texas A&M University since August 2021. His research has focused largely on design automation and methodologies – specifically parametric optimization and the design of morphing or otherwise adaptive systems. His passion for teaching lies in preparing future design engineers to properly utilize analysis tools and work effectively as part of a team.

Dr. Carlos R. Corleto P.E., Texas A&M University

BS, MS, PhD in Mechanical Engineering from Texas A&M University. Experience includes 20 years in industry as a lab director, technical manager and engineering advisor, 8 years of academic experience at the assistant and tenured associate professor level, 4.5 years as a professor of practice, Undergraduate Program Director of the J. M. Walker '66 Department of Mechanical Engineering since June 2022, and active industry consultant. Author and contributing author of 10 patents and multiple publications/presentations at technical and engineering education conferences. Areas of expertise and research interest include, Deformation & Failure Mechanisms, Materials Science, Fracture Mechanics, Process-Structure-Property Relationships, Finite Element Stress Analysis Modeling & Failure Analysis, ASME BPV Code Sec VIII Div. 1 & 2, API 579/ASME FFS-1 Code, Materials Testing and Engineering Education. Professionally registered engineer in the State of Texas (PE).

Dr. Joanna Tsenn, Texas A&M University

Joanna Tsenn is an Associate Professor of Instruction in the J. Mike Walker '66 Department of Mechanical Engineering at Texas A&M University. She earned her B.S. from the University of Texas at Austin and her Ph.D. from Texas A&M University. She coordinates the mechanical engineering senior capstone design program and teaches senior design lectures and studios. Her research interests include engineering education with an emphasis on capstone design and teamwork.

Mohammad Waqar Mohiuddin, Texas A&M University

Possesses a multidisciplinary background in Mechanical Engineering (BS and MS) and cardiovascular physiology (Ph.D.). Currently working as an Instructional Associate Professor in the J Mike Walker '66 Department of Mechanical Engineering at Texas A&M University. Areas of expertise and interest include biomedical and mechanical system design, electromechanical systems, computer-aided engineering analysis, and mathematical modeling of physiological systems. Before joining Texas A&M, worked in industry settings to develop various biomedical technologies, ranging from acute neonatal care to long-term space exploration.

Dr. Shadi Balawi, Texas A&M University

Dr. Balawi is an Instructional Associate Professor in the Mechanical Engineering department at Texas A&M. He teaches in the areas of materials, manufacturing, and design. His interests are in the areas of Engineering Design for Disciplinary STEM Educational Research, Team Formation and Team Skill Education. Dr. Balawi earned his PhD in Aerospace Engineering from University of Cincinnati with research focus on experimental design and testing of solids for honeycomb core materials.

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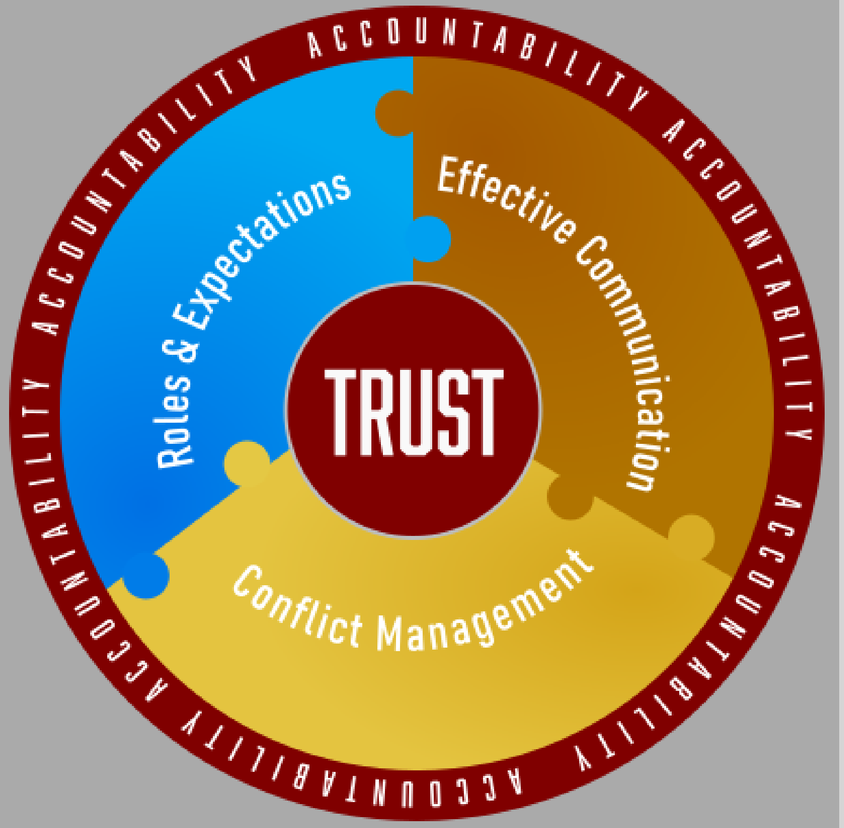
J. Mike Walker '66 Department of Mechanical Engineering



Review of Conflict Management Module

UNITES: Undergraduates Improving Teamwork Skills

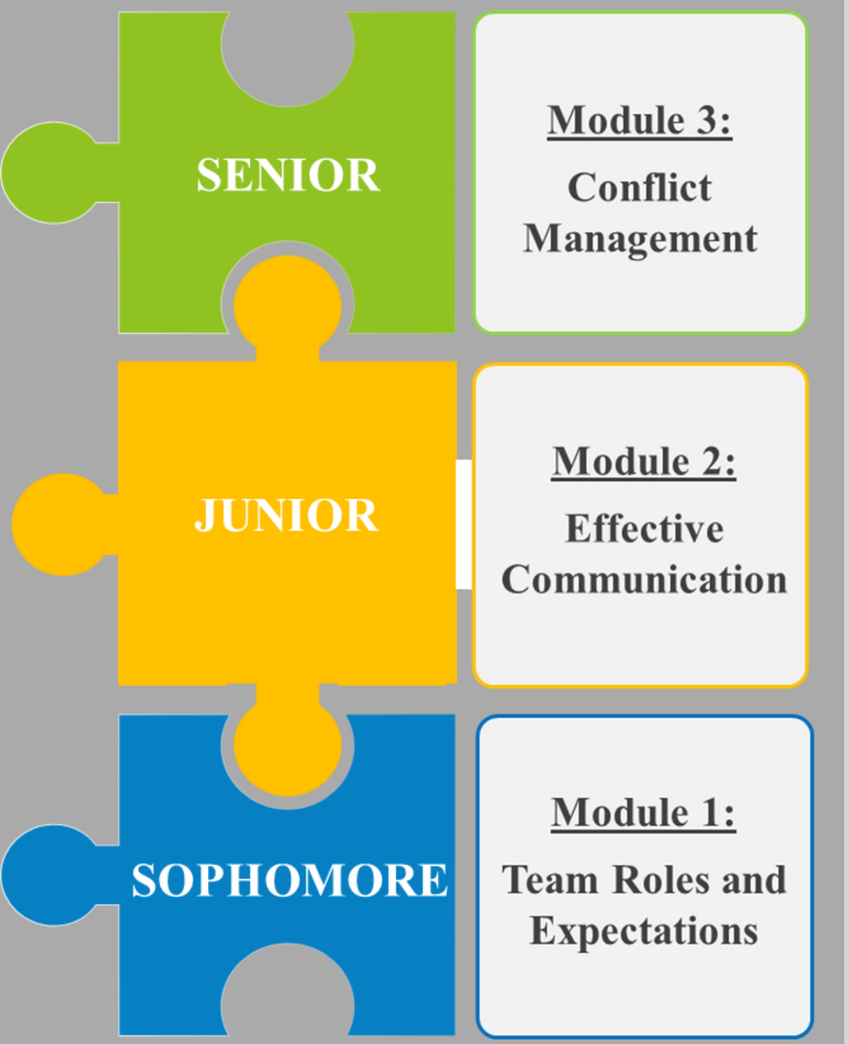
Shadi Balawi, Carlos Corleto, Waqar Mohiuddin,

Joanna Tsenn, and Jonathan Weaver-Rosen

Agenda

- **Introduction –** *UNITES*
- **Conflict Management**
  - *Roleplaying Activity*
  - *Review of Modules 1 & 2*
  - *TKI and Types of Conflict*
  - *Dutch Test*
- **Discussion and Feedback**

UNITES



- UNITES is a project started in 2021 as part of an NSF RED Grant in our department
  - *Empower our students with an effective teamwork skill set before they graduate.*
- Students are trained in their sophomore, junior and senior years
  - *One course is chosen each year*
  - *Team projects required in the courses*
- Training is delivered in three lecture modules
  1) *Team roles and expectations*
  2) *Effective communication*
  3) *Conflict management*

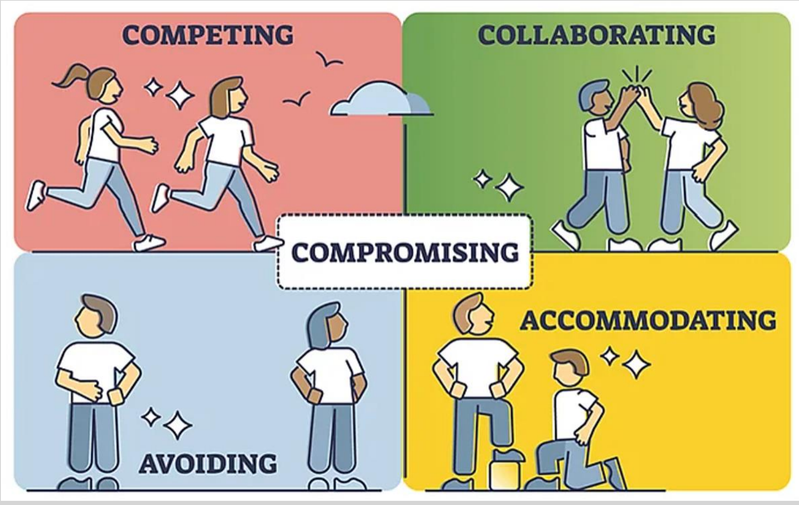
Module 1 – Sophomore Course

- Explains the necessity of forming teams to solve complex engineering problems.
- Elucidate the stages of team development (forming, storming, norming, and performing) to students.
- Highlights the challenges of the "storming" stage and the importance of understanding group dynamics.
- In-class activities include role-playing different team characters and creating a team charter for their project.
- Reflection activity

Team Charter Development

- "Lost at Sea" team building activity to highlight different communication styles and their impact.
- Effective team communication basics
  - *Emphasizes importance of effective team communication to maximize performance*
- "Working Styles Assessment" to understand their own style and that of teammates.
- Reflection on student experiences and how to apply what they learned to their team projects.

- Focuses on conflict management in projects
- Not all conflict is destructive, and it can lead to shared understanding and better ideas.
- Based on the Thomas-Kilmann Conflict Model to help identify unhealthy conflicts.
- Introduces the S.T.A.T.E. method for conflict resolution
  - *emphasizing understanding of different working styles and effective communication.*
- Discussion of expectation management, accountability and team charter.



Understanding and Managing Conflict

Implementation and Assessment at TAMU

	Semesters Taught	Instructors	Approx. Students
Module 1	Spring 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2024	5	1300
Module 2	Fall 2023, Spring 2024, Fall 2024	6	800
Module 3	Spring 2024, Fall 2024	2	110

- Baseline results were collected in the Fall of 2021 before implementing the modules.
- Mid- and post-project surveys have been completed for each module
- The survey information is being compared with the baseline to assess the efficacy of the module.
- Preliminary data and student feedback is very positive

Students’ Comments Were Focused On –

- Improved Goal Setting: The student plans to be more decisive and set goals early to boost productivity.
- Schedule Flexibility: They will loosen their grip on rigid schedules and deadlines to avoid frustration.
- Combating Procrastination: They aim to start work earlier and prioritize team considerations over personal delays, especially for difficult tasks.
- Enhanced Open-Mindedness: They will actively listen to team members' ideas and be receptive to different perspectives.
- Building Trust: They will strive to establish trust within the team through open communication and a collaborative approach.

Module 3

(as given to students)

Agenda

- Role Playing
- Reviews
- Thomas Kilmann Instrument
- Conflict Types
- STATE Method
- Activity

Role Playing Activity

- Each person will be given a different role to play as best as you can
- You have some creative freedom outside of the details given
- This is *not real*, so show us some dysfunction*!

  *No personal attacks
- The audience will debrief on what they could have done differently

Brief Thoughts

Module Reviews

Discussion

Have you developed a team charter?

How was it practically used?

Module Reviews

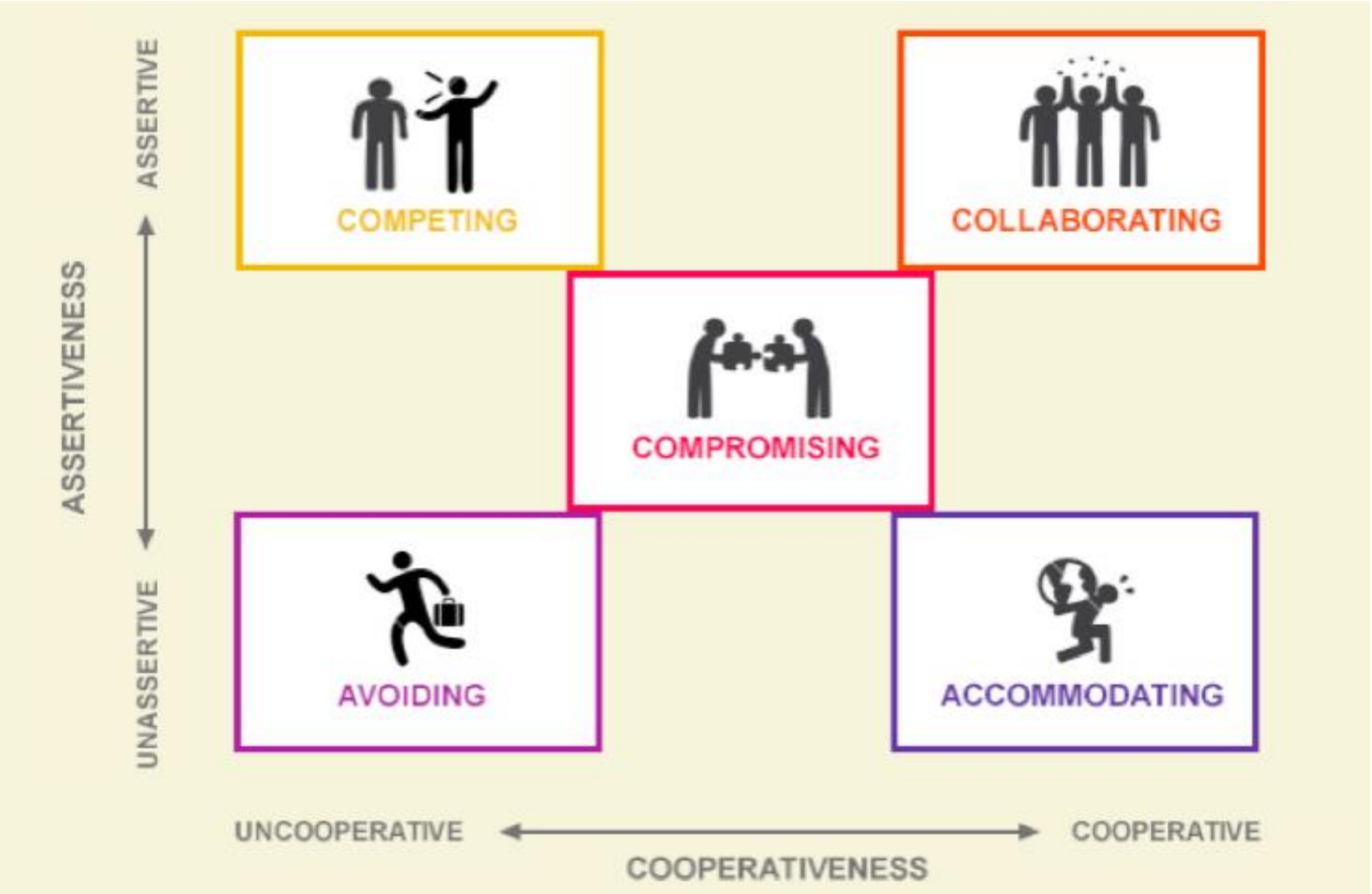
Have you seen the value of communication?

Will someone share an example?

Kahoot!

https://mspguide.org/2022/03/18/conflict-styles/

Thomas Kilmann Instrument



https://mspguide.org/2022/03/18/conflict-styles/

- There are several modes/approaches to conflict management
- While each approach can be useful in a different scenario, collaboration is typically seen as the best (albeit requiring the most effort)

Module 3 Video

Role Playing Debrief

- What were the sources of conflict?
- How can the team better manage their conflict?
- Is it realistic to resolve all conflicts?

Reflection

Each role playing activity will go differently, but some things to consider:

- Did Team member A ever really step up?
  - Maybe not. Conflict cannot always be ***resolved***, but we can ***manage*** it by reaching a shared understanding (e.g., low peer eval scores). In some cases, an instructor/manager may need to be involved.
- Did Team member D play a good facilitator if member B got too heated?
- Was the conflict between members B and C resolved through simple communication?

Dutch Test

- On the provided handout, indicate how well each of the following statements best describes you and calculate your scores
- You may consider a specific scenario (real or imagined) or take a general approach
- The focus here is on your behavior at work/school, not your personal life, family, etc.

When I have a conflict at work or school, I do the following:	
1.	I give in to the wishes of the other party.
2.	I try to realize a middle-of-the-road solution.
3.	I push my own point of view.
4.	I examine issues until I find a solution that really satisfies me and the other party.
5.	I avoid confrontation about our differences.
6.	I concur with the other party.
7.	I emphasize that we have to find a compromise solution.
8.	I search for gains.
9.	I stand for my own and other's goals and interests.
10.	I avoid differences of opinion as much as possible.
11.	I try to accommodate the other party.
12.	I insist that we both give in a little.
13.	I fight for a good outcome for myself.
14.	I examine ideas from both sides to find a mutually optimal solution.
15.	I try to make differences seem less severe.
16.	I adapt to the parties' goals and interests.
17.	I strive whenever possible toward a 50-50 compromise.
18.	I do everything to win.
19.	I work out a solution that serves my own and the other's interests as well as possible.
20.	I try to avoid a confrontation with the other.

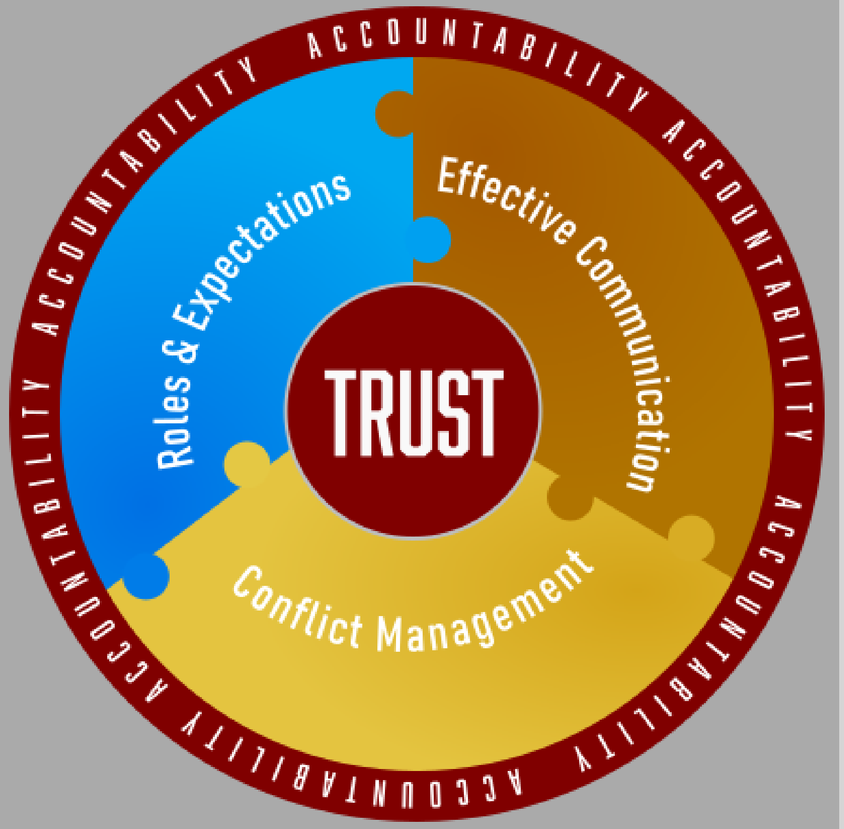
3 Identify 3 things that you learned, found interesting, or confirmed

2 Identify 2 questions that you still have

1 Identify 1 thing that you will implement or do differently

Go!

Discussion and Feedback



- What do you think of the approach we are taking to provide team training to our students?
- Are the activities helpful in accomplishing some awareness/training?
- Would you be interested in implementing some form of this training in your institution?
- What comments/questions do you have?

Acknowledgements

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MEEN faculty members who have helped to accommodate these modules into their courses

If you'd like to learn more

We invite you to share your feedback on today's workshop!

- Upcoming papers
  - *Under review*

- Our website: https://unites.engr.tamu.edu/
  - *Module slides*
  - *Workshop activities*
  - *Publications*