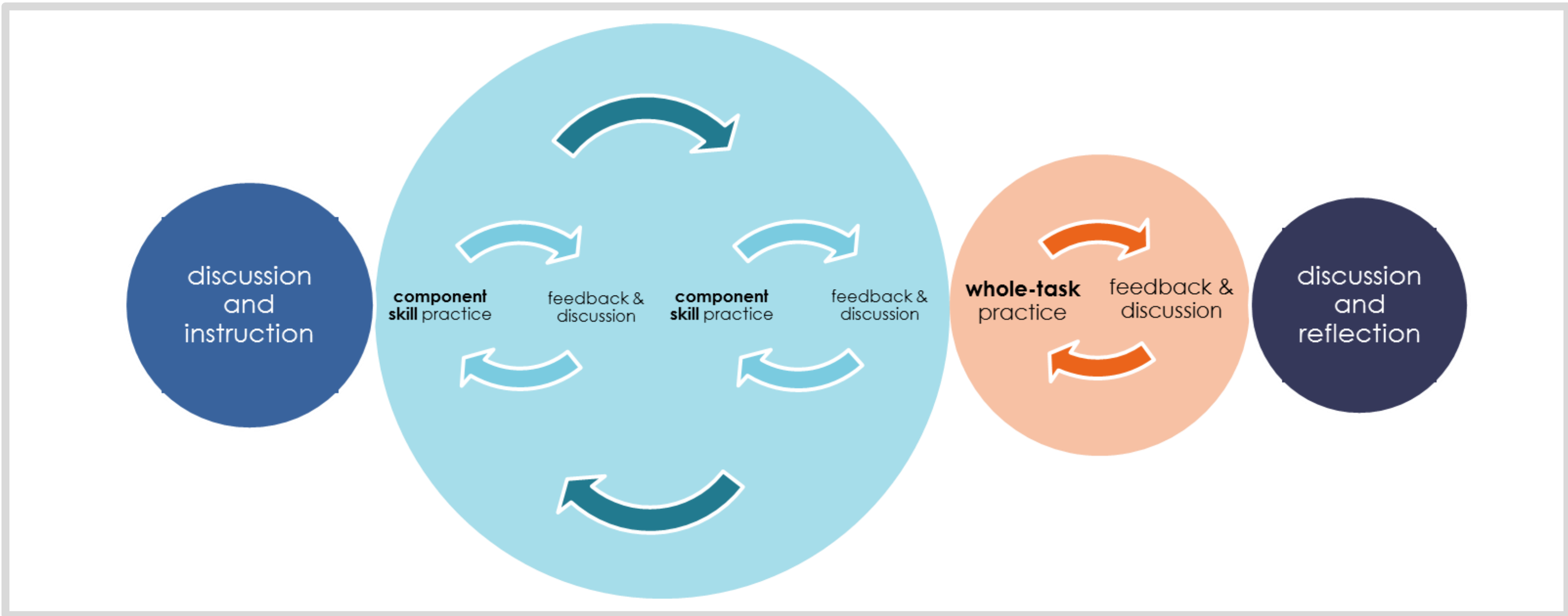


Instruction

Instructional Approach

- whole-part-whole to develop mastery
 - learn the component knowledge and skills for a domain, practice integrating them, and effectively apply them
- practice and feedback
 - linking concrete examples and experiences to abstract principles
 - temporarily constraining scope of task
 - scaffolding gradually reduced through semester
 - deliberate practice
- support transfer
 - diverse, realistic contexts
 - varying task length, varying context of scenario-based practice activities in class
 - connecting practice to principles
 - metacognitive activities



Sequence

- Skills build on each other
 - Communication foundational
 - Conflict arises during planning and collaborative work
 - Organizational and planning tasks depend on decision-making and problem-solving skills
 - Dividing tasks and handling accountability link to role issues
 - Reflection on whole-task
- Just-in-time instruction
 - course topics should be helpful for weeks-long projects

8	Practice defining task Practice long term planning/time management Whole Task: Start long-term group project	Goal 11: Can plan out timeline for a project. Goal 12: Plan and revise strategies for group work using knowledge of group dynamics.
9	Practice dividing and coordinating tasks/assigning roles Whole Task: Continue long-term group project	Goal 10: Divide work fairly and effectively.

Sample Activity

Your team is the Student Dormitory Council for next month and you have to plan an event for next month. You need to consider budget as well as what will appeal to students in the dorm. You have about \$200 for the event. What sort of event should you plan? Your group needs to pick an event.

Groups will be paired. Half of groups will observe first, half will observe second. In between, we'll have a brief discussion focusing on two questions:

- What are common problems with communication in groups?
- How can you help everyone communicate effectively?

Learners

College Students: Developmental Factors

- undergoing significant social and emotional development
- varying maturity levels
- relevant dimensions: managing and expressing emotions, tolerating differences, balancing self-interest and responsibility

Prior Knowledge

- experiential rather than explicit
- stronger planning and organizational skills
- weaker communication and conflict resolution skills
- misconceptions
 - accept that one or two members will always end up doing work
 - dislike for group work
 - used to taking leadership roles

Cultural Background

- Eastern vs. Western cultures: students from Western cultures likely have more individualistic perspective

Multiple Intelligences

- communication and conflict resolution goals
 - social and interpersonal intelligence
- planning/organization goals
 - sequential ordering, attention control, logical-mathematical thinking

Goals

Satisfying Standards

- External:** Michael Stevens' Teamwork KSA, Michigan Team System
- CMU:** Eberly Center guidelines on group work, Randy Pausch's tips for working successfully in a group
- Program:** Though not explicitly a goal for CMU undergrads, collaboration is important in every discipline at CMU.

Meaningful and Motivating

- course goals define meaningful, real-life applicable skills
- goals are valuable for learners
 - making friends with group work partners in classes
- planning/organizational skills and communication skills very practical



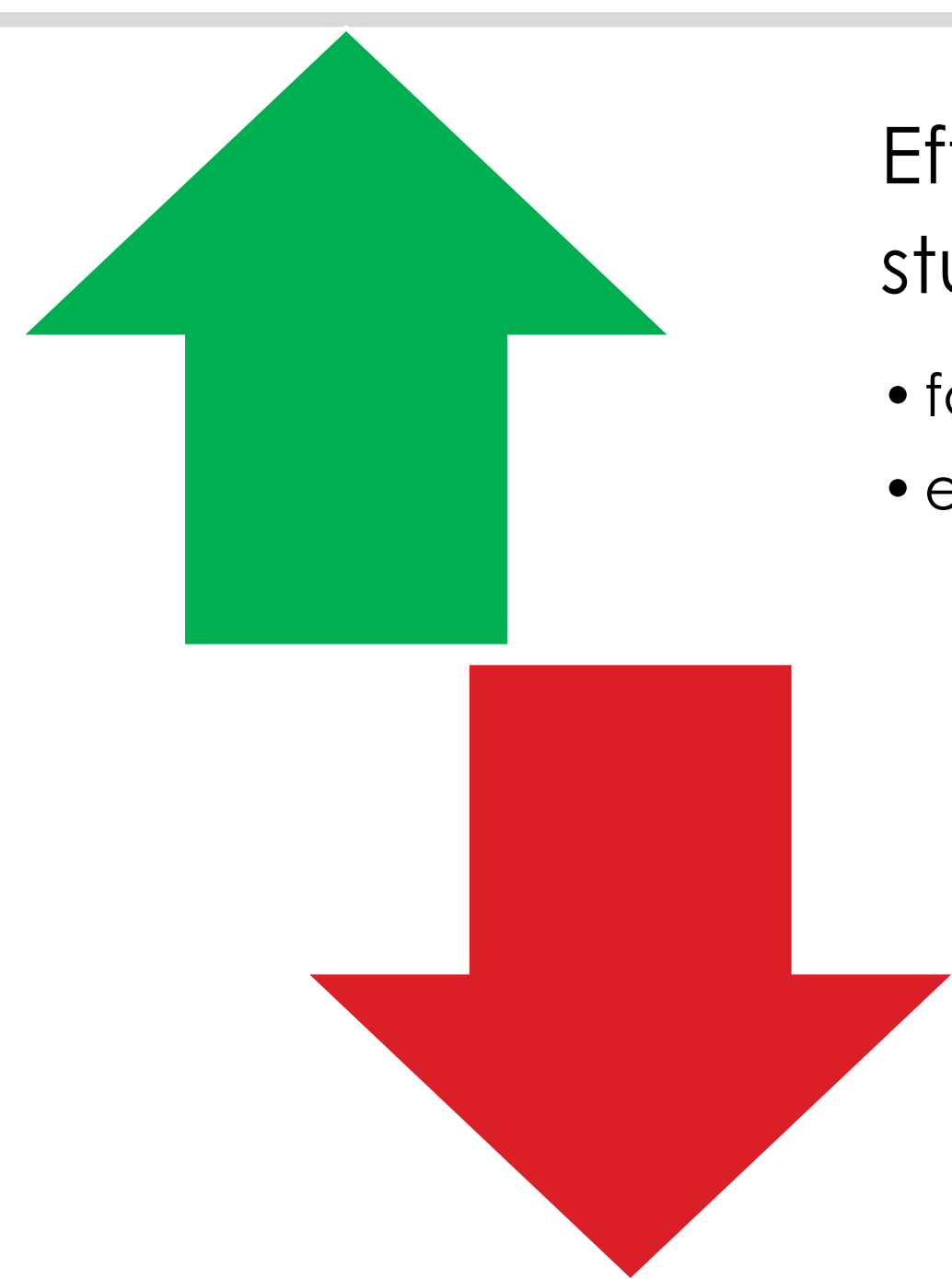
Goals for Interpersonal Skills and Communication Category

- Establish positive working relationships with their teammates.
- Communicate effectively with teammates.
- Facilitate communication within the group.**
- Organize logistics of communication and information sharing/collaboration.

Detailed Goal Specification for Facilitating Communication

- Facilitate communication within the group.**
 - 3.1. Know characteristics of open and supportive communication.
 - behavior or event oriented
 - what a person says matches what they feel
 - validate individuals
 - give everyone an equal opportunity to speak
 - ensure that topics are connected
 - 3.2. Recognize and interpret nonverbal communications of others.
 - 3.2.1. Know major types of nonverbal communication.
 - How they speak (e.g., pitch, tone)
 - Facial expressions, gestures, postures.
 - 3.3. Monitor communications between group members.
 - Notices who is speaking, who is listening, who seems engaged, who doesn't.
 - Notifies what is being said, whether it is effective or ineffective communication.
 - 3.4. Act to make communication in group more effective.
 - Asks questions to clarify what is being said.
 - Asks for others' opinions.
 - Gives honest, constructive feedback.
 - Expresses opinion honestly.
 - 3.5. Willing and able to give constructive criticism to other group members.

Context



Effective teamwork skills are essential for students' success

- for academic and extracurricular projects
- employers hire people who can "work well with others"

Teamwork skills are rarely explicitly taught

- by college, students have plenty of experience but still have not mastered teamwork skills
- not explicitly taught in academic courses
- most group dynamics courses more theory-based

Sink-or-swim

- standard approach to teaching teamwork
 - summative assessment only
 - teamwork is part of grade, but students get no feedback on how to improve
- this course takes a different approach

Student-taught course

- 3 units (1 credit)
 - 3 hours/week
 - One 2.5 hour class each week, little homework
- graded pass/fail
- relatively small time commitment

Carnegie Mellon Undergraduates

- ages 17-23
- all majors

Assessment

Assessment Approach

- Assessors
 - self-assessment
 - instructor assessment
 - peer assessment
 - teammates and other student observers
- Tasks
 - students work in teams during class
 - individual and team level assessments
 - students observe other teams, discuss case studies
 - self-assessment - reflection
- Scope of assessments
 - goal specific
 - whole-task
- Assess progress toward goals
 - weekly assessment on same comprehensive rubric should help students track progress
- Assessments focus instruction
 - assessment from focused practice activities in class guides discussion and further practice
- Assessments support learner motivation and metacognition
 - weekly assessment on same comprehensive rubric should help students track progress
 - rubrics give students a clear picture of what they need to do to perform well on tasks

Criteria	Beginning	Developing	Accomplished	Exemplary
Communication				
Establishes positive working relationships with teammates. (Goal 1)	Focuses on task to the exclusion of personal relationships.	Gets to know teammates at superficial level.	Gets to know teammates, including their interests and preferences.	Makes sure that all teammates know each other beyond a superficial level and have positive relationships.
Participates in formulation of ground rules at the beginning of a project. (Goal 9.1)	Does not understand the need for ground rules.	Listens while group creates ground rules, but does not actively help to write them.	Contributes ideas and gives feedback on most ground rules.	Tries to engage all members in creation of ground rules, get everyone's buy in. Makes sure there are ground rules for all necessary areas.
Communicates openly, supportively, and effectively with teammates (listening and speaking). (Goal 2)	Listens but does not send signals to show that they are listening or respond to speaker. May speak in ways that are unclear or unhelpful.	Sometimes practices active listening. Some of what they say is helpful, some is not.	Good listener most of the time. Asks helpful questions. Expresses opinion honestly and constructively.	Listens to every member's contributions attentively. Speaks clearly and their message is always clear and easy to understand.
Facilitates communication between teammates. (Goal 3)	Focuses on own opinions and objectives.	Expresses self in a way that promotes an open, honest atmosphere.	Expresses self in an appropriate way. Asks for others opinions, gives constructive feedback.	Expresses self well. Asks questions and gives constructive feedback. Connects and synthesizes ideas. Makes sure everyone knows what's going on.

Planning				
Helps to make plans to organize project. (Goal 11, incorporates Goal 9 and 10)	Rarely	Sometimes	Often	Always
Coordinates work with teammates. (Goal 9 and 10)	Rarely	Sometimes	Often	Always
Talks about division of work openly with group. (Goal 10.4)	Rarely	Sometimes	Often	Always

Research

What is the effect of targeted instruction on students' ability to work well in teams?

- Hypothesis:** Targeted Instruction will significantly improve students' teamwork ability

How does an intervention which targets students' teamwork skills affect students' ability to work well in teams and attitudes towards teamwork over time?

- Hypothesis:** Targeted instruction on teamwork skills will lead to improved performance for months and years after the intervention.

Subjects

- CMU freshmen from a mandatory introductory course that incorporates group projects

Random Assignment

- control group takes another 3-unit, skills focused course
- alternate design: offer course as a mini and counterbalance with another skills-focused course

Measures

- peer assessments
 - instructor and self-assessments check for convergent validity
 - background information and demographics for divergent validity
 - inter-rater reliability: some variation expected, some training provided for students

Threats

- maturity: other college experiences
- student reflections as manipulation check

