Inclusive Pedagogy in the Civil, Environmental and Architectural Engineering (CEAE) Department

Prepared by the CEAE Justice, Equity, Diversity, and Inclusion (JEDI) Committee

Last updated April 19, 2023

Questions, comments, or concerns? Please contact ceae-jedi@colorado.edu

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Department Survey Results

CU Boulder conducted a [campus culture survey in Fall 2021](#). The CEAE JEDI Committee compiled a list of highlights and areas of concern from this survey which can be viewed [here](#). To further understand feedback from the department, in Fall 2022, the committee sent CEAE students and faculty a follow-up survey (with free response prompts) focusing on inclusive excellence in the classroom and beyond. Key results from this survey and brainstorming ideas based on this feedback are [highlighted here](#). In response to these results, the committee decided to focus efforts in community building, inclusive pedagogy, and providing resources for the CEAE community to further engage in DEI work.

Results at a Glance

Fall 2021 Campus Culture Survey Results

Highlights
- Staff feel a sense of belonging
- Faculty take pride in working for department
- Students feel sense of academic challenge and faculty support
- Most students would choose a CU experience again

Areas of concern
- Sense of community/belonging for faculty and students
- Maintaining respectful environments and addressing concerns/problematic behaviors
- Students have trouble making connections with peers in classes and finding mentors
- Many staff, faculty, and students seriously considered leaving CU

Fall 2022 Inclusive Excellence Survey Results

Filled out by 13 students, 13 faculty

Classroom-related themes
- Use group work to promote belonging and support
- Use preferred names and pronouns
- Incorporate diverse perspectives into curriculum
- General best practices: listen, recognize opinions, be responsive to questions, ask students for feedback and respond effectively, understand and accept differing backgrounds/opinions, ask how students are doing, dialogue versus only lecturing, office hours, offer resources for multiple learning types

Other themes
- Provide opportunities for faculty community building through social events
- Build faculty relationships across groups
- Provide accountability for poor behavior
- Provide training on inclusive excellence topics

- Host community events for students

Inclusive Pedagogy

Center for Teaching and Learning (CTL) Resources

We highly recommend current and prospective instructors utilize resources from the [CTL](#). Offerings include, but are not limited to:

- [Events](#) on topics such as "What Inclusive Instructors Do"
- Free, individualized, and confidential [teaching consultations](#)
- [Programs and services](#) such as [micro-credentials in teaching](#), [graduate student and postdoc teaching certificates](#), and the [inclusive community of practice](#).
- [Inclusive teaching resources](#)

What Inclusive Instructors Do

Notes from "What Inclusive Instructors Do"
Presentation by Tracie Addy, PhD, Author of "What Inclusive Instructors Do" and Associate Dean of Teaching & Learning, Director of CITLS, Lafayette College
February 27, 2023

View full presentation [here](#).

What is Inclusive Teaching?

Instructional practices that are equitable and promote a sense of belonging for diverse learners. Such strategies demonstrate that students matter. Belonging and mattering are fundamental needs for humans.

Mindset of Inclusive Instructors
- Know that understanding who learners are is critical to institution
  - Use ["Who's In Class" form](#) to gather info on students in a course.
- Recognize student diversity as an asset
  - Move away from deficit model and see strengths instead
  - Examples: Encourage student questions, teach to different learning styles, use diverse voices in curriculum/highlight diverse contributions
- Aware of critical importance of affirming student identities
- Take ownership over fostering inclusion
  - Inclusive instructors feel it's an essential part of their job
- Know inclusivity principles are important in course design (not an afterthought)
- Recognize the importance of intentionality with inclusivity
- Endeavor to teach to the whole student

- Think beyond content but rather about all aspects students bring to a course

Some inclusive teaching ideas from CU community:
- Pre-lecture, no-stakes polls to assess student understanding of new concepts
- Noting binary language in texts
- Provide assignment choices (projects that can be completed in different ways, choice in submission modalities)
- Encourage students to write and speak in their own voice
- Give students opportunity to retake exams
- Pair and share or small groups that consult and then share out
- Co-creating learning objectives, ground rules
- Mid-semester feedback
- Seek feedback from students during homework help sessions

What do inclusive instructors do?

- Use principles of inclusive course design
  - Design the course with every student in mind
  - Review and revise syllabus with perspective diversity of mind
    - Are there voices that can be added or swapped to increase representation and perspectives on the topic?
  - Use transparent assignment design using TiLT method
  - Universal design as principle of course content being accessible to max number of students
  - Syllabi that provide connections to non-academic life
- Give students tools for success. Examples:
  - Write syllabus section on how to get help and what office hours mean
  - Get continuous feedback, do pre and post assessment, regular formative assessments
  - Use small group work
- Intentionally create welcoming classrooms. Examples:
  - Provide welcoming statements for online classes
  - Provide resources for technical difficulties
  - Share course ground rules for discussion
  - Consider when/where other perspectives are being excluded
  - Find gaps in communication
  - Emphasize preferred names
  - Call on students of color and women as often as white men
  - Use captioning when showing video clips
  - Make sure language used is clear and explain terms explicitly
- Employ foundational inclusive teaching concepts and practices. Examples:
  - Learning activities are aligned with course and module learning outcomes
  - Structure assignments with benchmarks and recursive feedback

- - Active learning and lecture mix
    - Use paired discussions
    - Use short assignments for practice (not graded)
  - Engage inclusively with students. Examples:
    - Use pre semester surveys, ask about goals
    - Do activities throughout semester to find out more about students (i.e. to figure out career interests, how their experiences inform their interests)
  - Acquire feedback from their learners. Examples:
    - Have availability after class and during office hours with invitation that students can provide feedback about learning environment and share issues of access and accommodation
    - Seek mid-quarter feedback

Observing and Visualizing Inclusive Teaching

Protocol for Advancing Inclusive Teaching Efforts (PAITE) Classroom Observation Feedback
- Prior knowledge assessment
- Diverse examples
  - Diversity in people, situations, perspectives, ideas
- Diverse visuals or media
  - Videos, articles, simulations, images, etc.
- Relationship building
  - Provide time for student-student and instructor-student informal conversation for relationship building
- Community standards
  - Hold community accountable to inclusive learning environment
- Equitable participation
  - Majority of students engaging
- Active learning
  - Strategies that engage student with material and think about what they're doing

Inclusive Teaching Visualization Project
- Go to Inclusiveteachingvisualization.com
- Watch vignettes, such as this clip of a STEM class, and reflect on inclusive teaching practices shown (also noted on website)

Rewards and Benefits of Inclusive Instruction

Dr. Addy discussed positive feedback from Lafayette College's Inclusive Instructor Academy. This is a one-semester initiative. Faculty come in with goals, get feedback along the way, get different tools, and

have student partners provide feedback. Instructors participating got feedback from students in their classes such as:

- Students' perception of instructor's interest and support of them has grown
- Appreciation of thoughtful approach
- Expectations were better understood
- Appreciation of the more self-paced nature of a course, chance to hear from others in class, and knowing STEM isn't just for white men
- Enjoyment of assignments, clear that instructor cares

Suggestions for Advancing Inclusion

Department level:
- Recruitment and retention of diverse faculty
- Department-level initiatives (e.g. curriculum revision, student mentorship programs for majors, etc.)
- Data-driven approaches
- Performing assessments that measure impact
- Student supports

Institutional level:
- Professional development
- Resources and incentives
- More opportunities for discussion
- Administrative commitment
- Faculty commitment

Accessibility in STEM

Notes from "Accessibility in STEM"
Presentation by Parker McDonnell, Cory McKague, Jesse Rush, and Tatsuya Akiba
February 23, 2023

Hidden Curriculum

Hidden curriculum refers to the implicit academic, social, and cultural messages, unwritten rules and unspoken expectations, and unofficial norms, behaviors and values of the dominant culture-context in which teaching and learning is situated.

Examples: In some universities, doing homework in groups is cheating whereas this is encouraged at others. Interrupting the lecture to ask questions is unacceptable in certain institutions. Responsibilities of TAs and LAs and how they interact with students differs between classes and schools.

How to make things less hidden:

Make things overly explicit. Examples:
- How do you want students to approach you?
- Do you want students to collaborate with others?
- Explain things in more than one way (draw diagram, explain in words, explain using math, make lecture notes/recordings available)

Explain things in more than one way. Examples:
- Draw diagram
- Explain in words
- Explain using math
- Make lecture notes/recordings available

Provide Structure. Examples:
- During group work, given students roles and clear instructions
- Share how to be successful in class - how are they being graded?
- Explain purpose of office hours - do you want them to come with questions? Can they just come hang out and chat?

Note from CEAE department: Based on feedback from students, please make it clear if the grade students see on your Canvas course is weighted or unweighted. If this isn't explicitly stated, students may be very surprised to receive a grade significantly different from what is on Canvas based on weighting.

Techniques to make class more accessible
- Introduce accessibility/access needs to your students
  - Consider having students write out notecards with pronouns and any access needs
  - Give examples of different needs
  - Check in throughout the semester
  - Be transparent about how students can work with Disability Services if needing accommodations
- Be flexible
- Do a MIX of assessments
  - Not just timed exams and quizzes
  - Include short term/long term projects, writing assignments, oral presentations
- Use group work as well as individual work
  - For group work, consider letting students pick their own groups
- Clarify expectations

- Use formative assessment techniques
  - Beginning of semester/mid-semester surveys (ask about course structure, comfort level with concepts in class, anything they are excited or concerned about, individual needs)
  - Regular, anonymous feedback forms
  - Beginning and end of class
    - Warm-up questions, agenda, recap of previous lecture, etc.
    - Misconception check, one sentence summary, etc.
  - During class
    - Use pair and share, small group discussions
    - Questions to the class, clicker questions
- Use effective grading
  - Explain and review evaluation criteria in class
  - Consider using analytical rubric with explicit details
  - Give opportunities for students to correct errors
  - Consider using peer review format (i.e. proposals with panels made up of students)
  - Provide more structure and intermediate steps for long-term projects (proposal, different deadlines for methods, results, etc.)
- Provide effective feedback
  - Consider levels of error (lower order, higher order)
  - Consider direct vs indirect feedback
    - Direct: correcting error for student
    - Indirect: pointing out the mistake and allowing student to correct error
  - Give opportunities for students to correct indirect feedback
  - Consider allowing exam corrections for half credit

Universal Design Learning

Notes from Universal Design for Learning Community of Practice (UDLCoP)
From Karen Crouch, Instructional Design and Technology Consultant, ASSETT and Becky Rex, Instructional Designer, Learning Design Group and Brad Grabham, Instructional Designer, Learning Design Group
February 16, 2023

What is Universal Design Learning (UDL)?

UDL is a framework, created by CAST, to guide the design of learning experiences to proactively meet the needs of all learners. The framework assumes barriers to learning are based on the design of the environment, not in the student. UDL is based on brain science and evidence-based educational practices. It leverages digital technology.

Learn more about the UDL framework.

Variability

The way that each of us learns is unique as a fingerprint. The "average learner" is a myth. Design for variability means taking into account different brains and backgrounds.

UDL Guidelines

We encourage instructors to read through [UDL guidelines](#) from CAST which emphasize multiple means of engagement, representation, and action & expression.

Tips for first day

- General
  - Instructors are encouraged to read the [first-day tips](#) shared by CU's Center for Teaching and Learning (CTL).
- Names
  - Direct students to use [NameCoach](#). You can state that this helps instructors learn how to pronounce or avoid mispronouncing a student's name.
  - You can also share with students how to update their [preferred name](#).
- Pronouns
  - Instead of directly encouraging students to update their pronoun usage, you can remind students [why pronouns matter](#). Encouraging people to update their pronouns can feel pressuring as some may not be ready to share.
  - Instructors can model what they'd like to encourage from students. For example, you could introduce your pronouns in your email signature and on the course syllabus. During your introduction to the class, you could state pronouns, why you've stated this, and mention this helps minimize assumptions about anyone's gender in the class. You could then show students how they can participate, mentioning: "If you would like to share your pronouns, here's how…" Examples include sharing information about how students can [update their pronouns through Canvas and Buff Portal](#), and mentioning that pronouns can be shared in email signatures, course introductions, etc.
  - If a student does not specify pronouns, instructors are encouraged to use they/them pronouns as a default or refer to them by name in communication.
- Syllabus
  - Instructors can read the [syllabus design](#) guidance from the CTL. UCLA also has an [inclusive syllabus guide](#).
  - As shared in the academic instruction guidance, CU also has [required syllabus statements](#).
    - As the "Preferred Student Names and Pronouns" section of these statements doesn't have any hyperlinks, you can consider adding in more information for students. For example: *It is important for everyone in the*

course to feel welcome and represented, which includes striving for correct name pronunciations and using preferred pronouns. If you're comfortable, please use the [NameCoach](#) feature in Canvas to record the preferred pronunciation of your name. [Preferred pronouns](#) can be updated in Canvas using NameCoach and/or Buff Portal.

Mid-semester surveys

Resources from CEAE Department:

- [Classroom Survey Instructions and Question Bank](#)
- Example surveys created in Qualtrics. If you would like to get access to these surveys as a collaborator so you can make copies and use them directly, please reach out to ceae-jedi@colorado.edu.
  - [Example 1](#)
  - [Example 2](#)

Takeaways from "Mid-semester Check-ins and Re-energizing our Classes"
Presentation by Dr. Quatez Scott, Inclusive Pedagogy Lead, Center for Teaching and Learning
February 28, 2023

View full slides [here](#).

Mid-semester feedback matters because:

- CEAE has heard the following feedback from some students:
  - It's not helpful for them to only provide feedback at the end of a class through FCQs.
  - The FCQ questions can feel generic, irrelevant, and impersonal.
  - Students may question if instructors will do anything with the FCQ feedback as they rarely hear back about how that data was used/addressed.
  - If an instructor does decide to address the feedback, this only helps future classes and not the current group of students.
  - Students don't feel heard if there's not a clear way to share feedback with the instructor throughout the semester.
- Mid-semester feedback/check-ins help instructors show students they care about their learning. Engaging in practices in which you are gathering data from students to assess where they are in learning and how you are doing as an instructor is a great example of an inclusive teaching practice.
- Mid-semester check-ins give students more ownership in their learning and can improve academic outcomes.
- This tool allows teachers to make changes before the class is over while there's more time to do so.
- "We are often less effective at capturing the small details if we reflect only at the end of each semester." Hogan & Sathy 2022

General tips:

- It's helpful to give students opportunities to provide qualitative feedback. Many students only have opportunities to provide quantitative feedback during their time at college.
- Try to collect feedback from 25% or more of your students. Think of ways to incentivize students such as giving participation points.
- Incorporate feedback loop. Clarify and review this with your students.
- Don't put pressure on yourself. In addition to tools described below, you can solicit feedback from students during office hours. Many students are not directly asked by the instructor about how a course is going for them. Office hours are a great time to ask!
- Give yourself grace and don't take it personally
- There is space to share with students if feedback is infeasible. If you get feedback to change something that's infeasible, you can thank the student for bringing that to your attention. You can describe that it's infeasible by talking through it. For example: Letting them know that this isn't possible with the time leftover in the class but that it sounds like a good idea for the future.

Feedback tools:

- Polling (consider tools like Poll Everywhere)
  - Example question: Were there aspects of the assignment that confused you?
- Ask for thumbs up/thumbs down
  - Mention that if someone puts a thumbs down, they can send you an email or go to office hours to share more
- Add questions to end of assignments
  - Example questions: What areas of this assignment/project/module were not helpful or helpful? Please share why.
- Distribute anonymous surveys, emphasizing data is only going to be used to help the instructor build the learner experience.
- Focus group discussions can be helpful for larger classes. Teachers can divide students into groups and ask for one member in each group to serve as a scribe. Collect feedback afterwards.
  - Example questions: In what ways did the instructor demonstrate they care about your learning? How could this class climate be made more inclusive?
  - If sensitive questions are being asked, you can first mention something like: Feelings may arise, and students don't have to share if they are not comfortable. If students would like to share in a more private setting, they are welcome to email you or see you after class to discuss 1:1. We should remember to respect opinions. There's a learning opportunity to view how others experience the course.
- Have students write essays on feedback/reflections
- Have students provide video reflections

- ○ Example: Can ask students to provide video feedback on what they learned that's been helpful, what they've been challenged with, how they navigated those challenges.

After collecting feedback

Take time to explore feedback and ask critical questions such as:
- What themes can I identify from the data collected?
- What are the biggest strengths and challenges of this course?
- How can I work with students to minimize the biggest challenges?

Based on feedback from CEAE students, instructors are also encouraged to consider sharing themes of feedback in class and if/how they will be addressed.

Additional Resources

For more resources, see our [Get Involved section](#) on the CEAE inclusive excellence webpage.