

# Acknowledging and Working to Alleviate the Impact of Structural Inequities on Learning

## Summary of the Literature

Acknowledging and working to alleviate structural inequities on learning involves recognizing the different social and educational experiences of our students as individuals. Effective learning environments explicitly value student expression, contributions, knowledge, and experiences, with special attention to honoring the social reality of minoritized individuals and communities.

Alleviating structural inequities requires addressing issues of inequity and social justice openly and proactively in the classroom and curriculum. Including examples and materials from varied and marginalized voices in course curricula and explicitly valuing the diverse perspectives of students within the classroom create opportunities to actively engage with issues of inequity. Faculty can work with students to establish class norms and ground rules to ensure a respectful learning environment and to minimize patterns of marginalization that may arise in class discussions and/or group work. Any instances of disrespectful or discriminatory behavior should be addressed immediately.

Structural inequities in the learning environment can be alleviated by offering diverse and flexible learning activities/assessments and policies to engage students' varied interests and learning needs. Faculty can implement engaging activities (e.g., problem-based learning, service learning, and collaborative learning), develop flexible course policies (e.g., automatic extensions on late assignments, alternative grading practices like specifications grading or ungrading), and engage students in the development of course policies, learning activities, assessments, and assessment criteria. Additionally, all students benefit from frequent, constructive feedback and microaffirmations that are specific and focused on student growth, as well as support for the development of study skills.

Finally, efforts to acknowledge and alleviate structural inequities in learning requires on-going professional development by faculty and staff to build self-awareness of biases and potential barriers and to implement inclusive and culturally-responsive pedagogies. Regular feedback from students is a valuable tool in this process.

## Annotated Bibliography

### Counter-Hegemonic Science Education: Understanding the Effects of Coloniality and Proposing a Decolonial Pedagogy

Cassiani, Suzani. "Counter-hegemonic science education: understanding the effects of coloniality and proposing a decolonial pedagogy." *Cultural Studies of Science Education* 16.4 (2021): 1353-1360.

#### Keywords

- Science Education
- Science Teaching
- Curriculum

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- Transnationalization
- Coloniality Effects
- Decolonial Pedagogy

## Summary

The article discusses the impact of coloniality on science education and advocates for a decolonial approach to pedagogy. Suzani Cassiani critiques traditional science education, which often perpetuates Eurocentric knowledge and marginalizes local and indigenous perspectives. The paper emphasizes the importance of understanding the sociohistorical context of coloniality in shaping science curricula and calls for a shift towards counter-hegemonic discourses that address local issues and diverse epistemologies. By highlighting the effects of curriculum transnationalization and the historical legacy of colonialism, Cassiani argues for the integration of decolonial pedagogies that promote critical thinking and social justice in science education.

## Practical Actions Recommended

- 1. Incorporate Local and Indigenous Knowledge:**
  - Integrate local and indigenous knowledge systems into the science curriculum to provide a more inclusive and relevant education.
  - Example: Include traditional ecological knowledge in environmental science courses to highlight sustainable practices and cultural heritage.
- 2. Critical Examination of Curricular Content:**
  - Analyze and question the dominance of Eurocentric perspectives in the curriculum to foster a more balanced and inclusive approach to science education.
  - Example: Reevaluate textbooks and teaching materials to include diverse scientific contributions and perspectives from non-Western cultures.
- 3. Promote Social Justice and Equity:**
  - Address issues of social justice, such as poverty, racism, and environmental degradation, within the context of science education to make learning more relevant to students' lives.
  - Example: Develop projects and discussions around local environmental challenges and their social impacts, encouraging students to propose solutions.
- 4. Engage in Decolonial Pedagogies:**
  - Adopt teaching methods that challenge colonial legacies and promote critical thinking, creativity, and student agency.
  - Example: Use problem-based learning and community projects that allow students to explore and address local issues through scientific inquiry.
- 5. Support Diverse Learning Styles and Contexts:**
  - Create a learning environment that respects and supports the diverse cultural backgrounds and learning needs of all students.
  - Example: Offer flexible assessment methods and provide multiple ways for students to demonstrate their understanding and knowledge.
- 6. Foster Collaborative Learning:**

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- Encourage collaboration among students to build a sense of community and collective responsibility in addressing scientific and social issues.
  - Example: Organize group projects that require students to work together to investigate and solve real-world problems.
- 7. Reflect on Teaching Practices:**
- Continuously reflect on and adapt teaching practices to ensure they are inclusive, equitable, and responsive to the needs of all students.
  - Example: Participate in professional development workshops on culturally responsive and decolonial pedagogies.

## Constructive Criticism: The Role of Student-Faculty Interactions on African American and Hispanic Students' Educational Gains

Cole, Darnell. "Constructive criticism: The role of student-faculty interactions on African American and Hispanic students' educational gains." *Journal of College Student Development* 49.6 (2008): 587-605.

### Keywords

- Constructive criticism
- Student-faculty interactions
- Educational gains
- African American students
- Hispanic students
- Academic performance
- Educational satisfaction

### Summary

The article by Darnell Cole explores the impact of constructive criticism from faculty on the academic performance and educational satisfaction of African American and Hispanic college students. Using a longitudinal sample of 1,422 students, the study finds that faculty support and encouragement significantly improve both GPA and educational satisfaction for these minority groups. Constructive criticism, which includes positive feedback alongside critical remarks, was shown to foster a supportive learning environment, enhancing students' intellectual and academic development. The study highlights the importance of culturally sensitive feedback and supportive faculty-student interactions in promoting academic success and satisfaction among underrepresented students.

### Practical Actions Recommended

#### Enhancing Faculty-Student Interactions:

- 1. Timely and Specific Feedback:**
  - Provide immediate, specific feedback related to students' performance and skills.
  - Ensure feedback is actionable, offering clear strategies for improvement.
- 2. Balancing Positive and Negative Feedback:**
  - Combine critical feedback with positive reinforcement.
  - Focus on students' potential and progress, not just deficiencies.
- 3. Promoting Mastery Learning:**
  - Encourage a growth mindset by framing challenges as opportunities for

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- learning.
- Set high expectations while providing the support needed to meet them.

### **Culturally Responsive Teaching Practices:**

- 1. Affirming Student Belonging:**
  - Create an inclusive classroom environment where all students feel they belong.
  - Acknowledge and value diverse perspectives and experiences.
- 2. Providing Intellectual Challenge and Support:**
  - Challenge students with rigorous academic work.
  - Offer emotional and intellectual support to help them meet these challenges.
- 3. Developing Study Skills:**
  - Assist students in developing effective study habits and skills.
  - Provide resources and guidance tailored to individual student needs.

### **Faculty Development:**

- 1. Training in Constructive Criticism:**
  - Train faculty on how to provide constructive criticism that supports minority students.
  - Emphasize the importance of culturally sensitive feedback.
- 2. Encouraging Reflective Practice:**
  - Encourage faculty to reflect on their teaching practices and student interactions.
  - Foster a continuous improvement mindset among educators.
- 3. Building Relationships:**
  - Promote frequent, meaningful interactions between faculty and students.
  - Encourage faculty to act as mentors and role models, especially for underrepresented students.

## **Unlocking the Classroom Closet: Privileging the Marginalized Voices of Gay/Lesbian College Students**

DeSurra, Christopher J., and Kimberley A. Church. "Unlocking the Classroom Closet: Privileging the Marginalized Voices of Gay/Lesbian College Students." Paper presented at the Annual Meeting of the Speech Communication Association, New Orleans, LA, November 19-22, 1994.

### **Keywords**

- Gay/Lesbian Students
- Marginalization
- Classroom Environment
- Homophobia
- Teacher-Student Relationship
- Social Discrimination

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## Summary

The study explores the experiences of gay and lesbian college students regarding their sense of marginalization or alienation in classroom environments. Through individual interviews and focus groups at southern California universities, the research identifies characteristics of classroom settings that contribute to feelings of marginalization and the coping strategies students employ. The findings reveal that explicit marginalization involves direct homophobic comments or actions by instructors and peers, while implicit marginalization includes neglecting or avoiding gay/lesbian topics. In contrast, centralizing strategies involve both planned and unplanned inclusion of gay/lesbian perspectives. The study emphasizes the importance of creating inclusive classroom environments to support the well-being and academic success of gay and lesbian students.

## Practical Actions Recommended

1. **Acknowledge Gay/Lesbian Contributions:**
  - **Example:** Include discussions and examples of contributions by gay and lesbian individuals in relevant course content.
  - **Action:** Integrate materials and resources that highlight the historical and contemporary achievements of gay and lesbian figures in various fields.
2. **Create Inclusive Classroom Policies:**
  - **Example:** Establish classroom norms that explicitly condemn homophobic behavior and support inclusivity.
  - **Action:** Develop and communicate clear policies that prohibit discriminatory language and actions, ensuring a safe and respectful learning environment for all students.
3. **Respond Positively to Gay/Lesbian Topics:**
  - **Example:** Address gay/lesbian issues openly and positively when they arise in classroom discussions.
  - **Action:** Show openness and support when students bring up gay/lesbian-related topics, reinforcing that these perspectives are valued and respected.
4. **Provide Training for Instructors:**
  - **Example:** Offer professional development opportunities focused on diversity, equity, and inclusion, specifically addressing the needs of gay and lesbian students.
  - **Action:** Encourage instructors to participate in workshops and training sessions that equip them with the skills and knowledge to create inclusive and supportive classroom environments.
5. **Supportive Peer Interactions:**
  - **Example:** Facilitate group work and discussions that promote respectful peer interactions and support for gay/lesbian students.
  - **Action:** Encourage collaborative learning activities that foster a sense of community and belonging among students, ensuring that gay/lesbian students feel included and supported by their peers.
6. **Address Homophobic Comments and Behavior:**

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- **Example:** Immediately address and correct any homophobic comments or behavior observed in the classroom.
- **Action:** Take a proactive stance in addressing homophobia, providing education and corrective feedback to students who engage in discriminatory behavior.

## Rethinking the Course Syllabus: Considerations for Promoting Equity, Diversity, and Inclusion

Fuentes, M. A., Zelaya, D. G., & Madsen, J. W. (2020). Rethinking the Course Syllabus: Considerations for Promoting Equity, Diversity, and Inclusion. *Teaching of Psychology*, 48(1), 69-79. doi:10.1177/0098628320959979

### Keywords

- Equity
- Diversity
- Inclusion
- Multiculturalism
- Syllabus design

### Summary

The article by Fuentes, Zelaya, and Madsen (2020) explores the integration of equity, diversity, and inclusion (EDI) principles into course syllabi to foster an inclusive learning environment. The authors argue that the syllabus is a critical tool for communicating EDI values and setting the tone for the classroom. They offer practical recommendations for incorporating EDI into syllabi, such as engaging in reflexivity, adopting a diversity-centered approach, and including statements and objectives that emphasize diversity and inclusion. By rethinking traditional syllabus design, educators can create a more welcoming and supportive atmosphere that acknowledges and values the diverse backgrounds and experiences of all students.

### Practical Actions Recommended

1. **Engage in Reflexivity:**
  - **Self-awareness:** Reflect on how your own sociocultural background influences your teaching and approach to EDI.
    - Example: Share your background and commitment to EDI with students in the syllabus introduction.
2. **Adopt a Diversity-Centered Approach:**
  - **Infuse EDI throughout the Syllabus:** Integrate diversity-related topics, readings, and assignments throughout the course, not just in isolated sections.

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- Example: Include diverse perspectives in course readings and discussions consistently.
- 3. **Highlight Diversity in the Course Description:**
  - **Inclusive Course Descriptions:** Ensure the course description reflects a commitment to discussing diversity and intersectionality.
    - Example: Add a section in the syllabus that outlines how diversity will be addressed in the course.
- 4. **Develop Diversity-Centered Learning Objectives:**
  - **Specific Learning Goals:** Include learning objectives that focus on developing students' cultural competence and understanding of diversity.
    - Example: "Students will analyze how cultural backgrounds influence psychological theories and practices."
- 5. **Include a Diversity Statement:**
  - **Clear Commitment:** Write a statement that outlines your commitment to diversity, inclusion, and equity, and what students can expect in terms of classroom climate.
    - Example: "This course values diverse perspectives and aims to create an inclusive environment for all students."
- 6. **Decolonize the Syllabus:**
  - **Representation and Inclusivity:** Center authors from marginalized backgrounds and critically examine the historical and cultural context of course content.
    - Example: Include works by authors from underrepresented groups and discuss the context of these works.
- 7. **Foster a Family-Friendly Syllabus:**
  - **Support for Student Parents:** Include policies and statements that support students who are parents or caregivers.
    - Example: "Students with caregiving responsibilities are encouraged to communicate their needs for accommodations."
- 8. **Establish Ground Rules for Communication:**
  - **Promote Civil Discourse:** Develop guidelines for respectful and inclusive communication in the classroom.
    - Example: "We will respect all voices and perspectives, and address disagreements with empathy and openness."

## Equity-Minded Inquiry Series: Syllabus Review

Center for Urban Education. 2020. Equity-Minded Inquiry Series: Syllabus Review. Ed: Cheryl D. Ching. Rossier School of Education, University of Southern California.

### Keywords

- Equity-minded inquiry
- Syllabus review

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- Racial equity
- Higher education
- Teaching practices
- Reflective practice

## Summary

The "Equity-Minded Inquiry Series: Syllabus Review," edited by Cheryl D. Ching, PhD, presents a structured approach to reviewing course syllabi through an equity lens. This guide aims to promote racial and ethnic equity in teaching practices by encouraging faculty to reflect on and revise their syllabi. The review process focuses on assessing how syllabi address the needs of racially minoritized students, ensuring they are welcoming, demystifying college processes, creating partnerships between faculty and students, validating students' capabilities, representing diverse experiences, and deconstructing dominant norms. By adopting these equity-minded practices, faculty can foster more inclusive and supportive learning environments that recognize and address the systemic inequities in higher education.

## Practical Actions Recommended

- 1. Welcoming Students:**
  - Use language and tone that make students feel cared for and valued.
  - Include statements that convey sensitivity to students' entering skill levels and the challenges they might face.
  - Establish class norms for respectful discussions and include an anti-discrimination policy.
- 2. Demystifying College Processes:**
  - Provide clear, detailed information about the course, including objectives, instructor contact details, and grading schemes.
  - Write the syllabus in plain language and format it in a way that is easy for first-time college students to understand.
- 3. Creating Partnerships:**
  - Communicate a commitment to working with students to ensure their success.
  - State what students can expect from the instructor and what the instructor expects from students as learners.
  - Encourage feedback from students about teaching practices and be willing to adjust based on their input.
- 4. Validating Students' Abilities:**
  - Express a belief that all students can succeed regardless of their backgrounds.
  - Offer diverse types of assignments and assessments to allow students to demonstrate their learning in multiple ways.
- 5. Representing Diverse Experiences:**
  - Include readings, activities, and assignments that are culturally relevant and inclusive.



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- Ask students to draw on their experiential knowledge and address real-world problems affecting their communities.
- 6. Deconstructing Dominant Norms:**
- Include assignments that challenge students to examine their assumptions and the privileges associated with their race/ethnicity.
  - Promote critical examination of dominant social norms and inequities in major social institutions.

### Implementation Steps:

- 1. Conduct a Syllabus Review:**
  - Use the guide's checklist or coding approach to identify areas where the syllabus can be more equity-minded.
  - Reflect on the current syllabus and make notes on sections that need improvement.
- 2. Revise the Syllabus:**
  - Incorporate equity-minded practices identified during the review.
  - Ensure the revised syllabus is clear, welcoming, and supportive of all students.
- 3. Engage in Continuous Reflection:**
  - Regularly review and update the syllabus to maintain alignment with equity goals.
  - Collect and consider feedback from students about the syllabus and teaching practices.
- 4. Collaborate with Colleagues:**
  - Share the syllabus review process and findings with colleagues to promote broader institutional change.
  - Consider conducting joint workshops or discussions on equity-minded teaching practices.

By integrating these practices, educators can enhance their syllabi to better support the learning and success of all students, particularly those from racially minoritized groups, aligning with the principles of transparent and intentional design, fostering belonging, and promoting equitable access to education.

## Co-intentional Assessment: The Collaborative Path to Antiracist Pedagogy

Stommel, Jesse. (2024). Co-Intentional Assessment. In A. B. Inoue & K. DeMint Bailey (Eds.), *Narratives of Joy and Failure in Antiracist Assessment: Exploring Collaborative Writing Assessments* (pp. 213-223). The WAC Clearinghouse; University Press of Colorado.

### Keywords

- Antiracist assessment

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- Collaborative assessment
- Writing pedagogy
- Equity in education
- Co-intentionality

## Summary

In his afterword to "Narratives of Joy and Failure in Antiracist Assessment: Exploring Collaborative Writing Assessments," Jesse Stommel discusses the concept of co-intentional assessment as a critical practice for fostering antiracist pedagogy. Stommel argues that traditional assessment practices often reinforce systemic inequities and fail to account for the diverse cultural and social backgrounds of students. Co-intentional assessment, by contrast, involves students and educators collaboratively designing and implementing assessment practices, ensuring that these practices are equitable and inclusive. This approach emphasizes the importance of dialogue, mutual respect, and shared responsibility in the assessment process. Stommel advocates for a shift from hierarchical, instructor-centered assessment methods to a model that values student voices and experiences, aiming to create a more just and supportive educational environment.

## Practical Actions Recommended

- 1. Engage in Dialogue:**
  - Foster open and continuous conversations between students and educators about assessment goals and methods.
  - Encourage students to share their perspectives and experiences to shape the assessment process.
- 2. Collaborate on Assessment Design:**
  - Involve students in the creation of rubrics, criteria, and assessment tools to ensure they reflect diverse needs and contexts.
  - Use co-creation as a means to empower students and validate their input in the educational process.
- 3. Promote Mutual Respect:**
  - Establish a classroom culture where all voices are heard and respected, acknowledging the different backgrounds and strengths of each student.
  - Practice active listening and consider student feedback as a crucial component of the assessment process.
- 4. Implement Reflective Practices:**
  - Encourage both students and educators to reflect on the assessment process and its outcomes regularly.
  - Use reflective activities to identify areas for improvement and celebrate successes in making the assessment more equitable.
- 5. Share Responsibility:**
  - Distribute the responsibility of assessment among all classroom participants, reducing the hierarchical divide between students and educators.
  - Ensure that students understand their role in the assessment process and feel accountable for their learning and contributions.
- 6. Emphasize Equity and Inclusion:**

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- Design assessments that accommodate various learning styles, cultural backgrounds, and personal circumstances.
- Continuously assess and adjust practices to remove barriers and support all students effectively.

### 7. Create Flexible Assessment Structures:

- Allow for multiple pathways to demonstrate learning, offering students choices in how they are assessed.
- Adapt assessment methods to be responsive to the evolving needs and contexts of students.

By adopting these co-intentional assessment practices, educators can create a more inclusive and equitable learning environment that aligns with the principles of centering student learning, transparent and intentional design, fostering belonging, and promoting equitable access to education.

## Reducing Inequality in Academic Success for Incoming College Students: A Randomized Trial of Growth Mindset and Belonging Interventions

Broda, Michael, John Yun, Barbara Schneider, David S. Yeager, Gregory M. Walton, Matthew Diemer. "Reducing inequality in academic success for incoming college students: A randomized trial of growth mindset and belonging interventions." *Journal of Research on Educational Effectiveness* 11.3 (2018): 317-338.

### Keywords

- Light-touch intervention
- Growth mindset
- Social belonging
- Postsecondary education
- Academic outcomes
- Underrepresented students
- Disadvantaged students

### Summary

The article investigates the effectiveness of light-touch psychological interventions, specifically growth mindset and social belonging interventions, on the academic success of underrepresented college students. Conducted at a large Midwestern public university, the study involved 7,686 incoming first-year students randomly assigned to either a growth mindset intervention, a social belonging intervention, or a control group. The growth mindset intervention significantly improved the GPA of Latino/a students, reducing the GPA gap between White and Latino/a students by 72%. However, the social belonging intervention did not show significant effects on academic outcomes for any student subgroup. The study highlights the potential of minimally invasive interventions to support the academic

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performance of disadvantaged students while also noting the complexity of implementing customized belonging interventions in diverse educational contexts.

## Practical Actions Recommended

### Growth Mindset Intervention:

- 1. Implement Educational Modules on Brain Plasticity:**
  - Introduce students to the concept that intelligence can grow with effort and practice.
  - Use short scientific articles and reflective exercises to reinforce the idea of a malleable intelligence.
- 2. Encourage Reflective Writing:**
  - Have students write about personal experiences where they adopted a growth mindset.
  - Ask students to provide advice to future students based on these experiences, reinforcing their understanding.
- 3. Provide Examples of Effort Leading to Success:**
  - Share stories and testimonials from upperclassmen or alumni who achieved success through perseverance and hard work.

### Social Belonging Intervention:

- 1. Share Upperclassmen Stories:**
  - Present incoming students with stories from diverse upperclassmen about overcoming initial challenges in college.
  - Ensure stories reflect a range of experiences and backgrounds to resonate with a diverse student body.
- 2. Facilitate Reflective Exercises:**
  - After reading these stories, ask students to reflect on their own feelings and write responses about their expectations and concerns.
  - Encourage students to relate the stories to their personal experiences and consider strategies for overcoming challenges.
- 3. Match Stories to Student Demographics:**
  - Customize the first story a student reads to match their identified gender and race/ethnicity to enhance relatability and impact.

### General Recommendations:

- 1. Monitor and Support Implementation:**
  - Ensure the interventions are integrated seamlessly into existing orientation programs without causing additional stress or workload for students.
- 2. Evaluate and Adjust:**
  - Continuously evaluate the effectiveness of these interventions and make necessary adjustments to better fit the specific context and needs of the student population.

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## 3. Foster an Inclusive Environment:

- Promote a campus culture that values diversity and inclusivity, supporting students from all backgrounds to feel they belong and can succeed.

## The Significance of Students: Can Increasing “Student Voice” in Schools Lead to Gains in Youth Development?

Mitra, Dana L. "The significance of students: Can increasing “student voice” in schools lead to gains in youth development?." *Teachers college record* 106.4 (2004): 651-688.

### Keywords

- Student Voice
- Youth Development
- Agency
- Belonging
- Competence
- School Reform
- Teacher-Student Relationships
- Educational Equity

### Summary

The article explores the impact of incorporating student voice in school decision-making on youth development. By grounding the study in a sociocultural perspective, Mitra investigates how student voice initiatives contribute to key developmental outcomes such as agency, belonging, and competence among students, particularly in low-income high schools. The research highlights that when students are actively involved in shaping school policies and practices, they develop greater self-confidence, establish meaningful relationships with adults and peers, and acquire new skills. The article underscores that the structure of student voice efforts and the nature of adult-student relationships are critical in determining the effectiveness of these initiatives.

### Practical Actions Recommended

#### 1. Increasing Student Agency

- **Articulating Opinions:** Encourage students to share their opinions and ensure their views are respected.
  - *Example:* Organize focus groups where students can discuss issues affecting their school experience.
- **Constructing New Roles:** Enable students to take on roles as change-makers within the school.
  - *Example:* Students collaborate with teachers to develop and implement new curriculum strategies.
- **Developing Leadership:** Foster leadership skills among students by involving them in school governance.
  - *Example:* Students participate in professional development sessions with teachers to provide feedback on teaching methods.

#### 2. Fostering a Sense of Belonging

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- **Building Relationships with Adults:** Create opportunities for students to develop supportive relationships with teachers and other adults.
    - *Example:* Assign mentors to students who can provide both academic and personal guidance.
  - **Improving Student-Teacher Interactions:** Promote mutual respect and understanding between students and teachers.
    - *Example:* Implement programs where students and teachers engage in activities outside the classroom to build rapport.
  - **Enhancing School Attachment:** Encourage students to become more involved in school activities and develop pride in their school.
    - *Example:* Students lead school tours or participate in public discussions about the school's reputation and culture.
3. **Developing Competence**
- **Critical Thinking:** Teach students to critique their environment and identify areas for improvement.
    - *Example:* Facilitate discussions on social justice and equity issues within the school context.
  - **Problem-Solving Skills:** Engage students in solving real-world problems and making decisions that affect their peers.
    - *Example:* Students develop and run a peer tutoring and translation program to assist fellow students.
  - **Public Speaking and Facilitation:** Provide opportunities for students to speak publicly and facilitate group discussions.
    - *Example:* Students present their findings and recommendations at school board meetings or educational conferences.

## International Service-Learning: Possibilities for Developing Intercultural Competence and Culturally Responsive Pedagogies

Wrench, Alison, Bec Neill, and Alexandra Diamond. "International service-learning: possibilities for developing intercultural competence and culturally responsive pedagogies." *Asia-Pacific Journal of Teacher Education* 50.2 (2022): 215-228.

### Keywords

- International Service-Learning
- Intercultural Competence
- Culturally Responsive Pedagogies
- Pre-Service Teachers
- Diversity in Education

### Summary

This article examines a New Colombo Plan (NCP) service-learning project designed to develop intercultural competence and culturally responsive pedagogies among pre-service teachers (PSTs) through a water safety/swimming program in a rural Fijian community. The project emphasized immersion in a culturally diverse environment to foster empathy and understanding of the lived realities of Indigenous Fijian and Indo-Fijian children. Findings indicate that this immersive experience was pivotal in building PSTs' cultural competence

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and their ability to apply culturally responsive teaching practices. The study underscores the importance of providing PSTs with opportunities to work within diverse communities to prepare them to meet the educational and cultural needs of all students effectively.

### Practical Actions Recommended

1. **Immersive Cultural Experiences:**
  - Engage pre-service teachers in service-learning projects in culturally diverse communities to foster empathy and cultural competence.
  - Example: Participating in community-based programs like the water safety/swimming initiative in Fiji to experience cultural immersion.
2. **Collaborative Community Engagement:**
  - Work closely with community leaders to design programs that address specific community needs and cultural protocols.
  - Example: Collaborating with Fijian community elders to plan the water safety program, including logistics and cultural considerations.
3. **Culturally Responsive Teaching Practices:**
  - Develop pedagogical approaches that connect learning activities to students' cultural backgrounds and real-life experiences.
  - Example: Using culturally relevant analogies and reference points in lessons, such as comparing floating techniques to coconuts or picking mangoes.
4. **Inclusive Communication Strategies:**
  - Use multilingual and embodied communication methods to ensure understanding and inclusivity in diverse classrooms.
  - Example: Providing instructions in both English and local dialects, using body language and demonstrations to reinforce learning.
5. **Building Trust and Mutual Respect:**
  - Foster open, respectful relationships with students by valuing their cultural knowledge and promoting mutual trust.
  - Example: Encouraging students to share their cultural practices and involving them in the learning process to build a supportive learning environment.
6. **Reflective Practice and Adaptability:**
  - Encourage pre-service teachers to reflect on their cultural assumptions and adapt their teaching methods to be more inclusive.
  - Example: Reflecting on experiences of discomfort and tension to gain deeper cultural insights and improve teaching practices.

### Reterritorialising Pedagogies of Listening: Bringing into Dialogue Culturally Responsive Pedagogies with Reggio Emilia Principles

Rigney, Lester-Irabinna, and Stephen Kelly. "Reterritorialising pedagogies of listening: Bringing into dialogue culturally responsive pedagogies with Reggio Emilia principles." *Discourse: Studies in the cultural politics of education* 44.1 (2023): 147-161.

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## Keywords

- Reterritorialising
- Culturally Responsive Pedagogies
- Indigenist Epistemologies
- Indigenous

## Summary

The article explores the intersection of culturally responsive pedagogies (CRP) and Reggio Emilia principles, addressing the urgent need for pedagogical approaches that respond to Australia's culturally diverse student population, especially Indigenous students. The authors argue for the reterritorialisation of Indigenous ways of being and knowing within educational contexts, proposing that integrating CRP with Reggio Emilia principles can create a decolonising educational framework. This integration emphasizes listening pedagogies that honor students' cultural strengths and promote relational and dialogic teaching. The paper concludes that reforming educational practices to connect curriculum with students' cultural identities can lead to significant improvements in educational equity and inclusion.

## Practical Actions Recommended

- 1. Integrate Culturally Responsive Pedagogies (CRP) with Reggio Emilia Principles:**
  - Develop a curriculum that combines CRP and Reggio Emilia approaches to enhance cultural responsiveness and democratic participation in education.
  - Example: Implementing projects that allow students to explore their cultural identities and share their experiences in a collaborative learning environment.
- 2. Promote Listening Pedagogies:**
  - Emphasize active listening as a core pedagogical practice to understand and respect students' cultural backgrounds and perspectives.
  - Example: Teachers actively engage in listening to students' stories and experiences, creating an inclusive classroom environment that values diverse voices.
- 3. Support Relational and Dialogic Teaching:**
  - Foster relationships and dialogue between teachers and students to build trust and mutual respect, facilitating a deeper understanding of cultural differences.
  - Example: Organize group discussions and activities that encourage students to express their thoughts and collaborate on problem-solving tasks.
- 4. Emphasize the Role of the Teacher as a Collaborator:**
  - Position teachers as partners in the learning process who work alongside students to co-construct knowledge and facilitate learning experiences.
  - Example: Teachers and students co-design learning activities that reflect students' cultural contexts and interests.
- 5. Create Sovereign Learning Spaces:**



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- Establish educational spaces that honor and integrate Indigenous and other cultural epistemologies, allowing students to see their cultural practices reflected in the curriculum.
  - Example: Incorporate Indigenous knowledge systems and community practices into the school curriculum through partnerships with local Indigenous leaders and elders.
- 6. Encourage Reflective Practice:**
- Promote ongoing reflection among educators on their teaching practices and their impact on culturally diverse students.
  - Example: Teachers regularly engage in professional development workshops focused on cultural competence and inclusive teaching strategies.

## Family Stories as Resources for a Decolonial Culturally Responsive Pedagogy

Hickey-Moody, Anna, and Christine Horn. "Family stories as resources for a decolonial culturally responsive pedagogy." *Discourse: Studies in the cultural politics of education* 43.5 (2022): 804-820.

### Keywords

- Decolonial Culturally Responsive Pedagogy
- Social and Emotional Learning
- Intercultural Education
- New Materialism
- Family Stories
- Experiential Knowledge

### Summary

The article by Anna Hickey-Moody and Christine Horn examines how family stories and community practices can be utilized to foster a decolonial, culturally responsive pedagogy. The authors argue that engaging with students' familial and lived experiences can transform traditional teaching practices by embedding cultural knowledge and social and emotional learning into the curriculum. They emphasize that this approach challenges persistent racism in educational settings and promotes a more inclusive and equitable learning environment. The study highlights the importance of recognizing and valuing the diverse backgrounds and experiences of students, suggesting that such an inclusive pedagogical approach can lead to a richer, more engaged educational experience for all students.

### Practical Actions Recommended

- 1. Engage with Family Stories:**
- Incorporate students' family narratives and cultural practices into the curriculum to enrich the learning experience and make it more relevant.
  - Example: Assign projects where students share family traditions and stories, creating a classroom tapestry of diverse cultural backgrounds.

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2. **Promote Social and Emotional Learning (SEL):**
  - Integrate SEL into everyday teaching practices to help students develop empathy, self-awareness, and interpersonal skills.
  - Example: Use group activities that encourage students to reflect on their emotions and build supportive relationships with peers.
3. **Implement Decolonial Pedagogies:**
  - Challenge colonial narratives in the curriculum by including multiple perspectives and valuing indigenous and marginalized voices.
  - Example: Introduce literature and historical accounts from a variety of cultural viewpoints, discussing their impact and significance.
4. **Foster Inclusive Classroom Environments:**
  - Create a classroom culture that values diversity and promotes equity, ensuring all students feel seen and respected.
  - Example: Develop classroom agreements that emphasize respect for all cultural backgrounds and encourage students to share their unique perspectives.
5. **Utilize Arts-Based Methods:**
  - Employ creative and arts-based approaches to allow students to express their identities and experiences in non-verbal ways.
  - Example: Organize art projects or performances that let students explore and communicate their cultural heritage and personal stories.
6. **Strength-Based Approach:**
  - Focus on students' strengths and cultural assets rather than deficits, highlighting their capabilities and potential.
  - Example: Recognize and celebrate students' bilingual abilities or cultural knowledge as valuable skills in the classroom.
7. **Reflective Practice for Educators:**
  - Encourage teachers to engage in continuous self-reflection and professional development to better understand and implement culturally responsive practices.
  - Example: Facilitate regular workshops and discussion groups for teachers to share experiences and strategies for inclusive teaching.

## Centering and Marginalization in Introductory University Physics Classrooms

Scherr, Rachel E., W. Tali Hairston, Sarah B. McKagan, Sophie Miller. 2023. Centering and Marginalization in Introductory University Physics Classrooms. *Frontiers in Education*. DOI: 10.3389/educ.2023.964699

### Keywords

- Physics
- Classroom and school-based research
- Situated learning and legitimate peripheral participation

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- Critical analyses
- Interaction analysis

## Summary

The study examines the dynamics of centering and marginalization in introductory physics classrooms using video analysis of small-group collaborative learning activities at three universities. Employing situated learning theory with a critical consciousness lens, the researchers found that students' ability to actively participate in sensemaking is often limited by their social positioning within the group. Central positions are not always determined by physics reasoning strength; instead, social relations, including racialized and gendered interactions, play a significant role. This study highlights how these social dynamics affect learning and suggests that physics education must address these inequities to promote inclusive learning environments.

## Practical Actions Recommended

- 1. Fostering Inclusive Participation**
  - **Example:** Actively encourage quieter or marginalized students to contribute by creating structured turn-taking in discussions.
  - **Action:** Implement protocols where every group member is required to share their thoughts during collaborative activities.
- 2. Critical Consciousness Training**
  - **Example:** Educate students and faculty about the impact of social identities on classroom dynamics.
  - **Action:** Conduct workshops on unconscious bias and its effects on group work to raise awareness and promote equity.
- 3. Equitable Group Structures**
  - **Example:** Rotate group roles regularly to prevent the same students from always taking central or peripheral positions.
  - **Action:** Design group tasks that require different skills and ensure all students have the opportunity to lead and participate fully.
- 4. Reflective Practices**
  - **Example:** Use reflective journals where students can express their feelings about their participation and group interactions.
  - **Action:** Incorporate regular reflection sessions where students discuss their experiences and identify barriers to equitable participation.
- 5. Facilitation Techniques**
  - **Example:** Train instructors in facilitation techniques that promote equitable participation.
  - **Action:** Develop faculty training programs focusing on strategies to manage group dynamics and ensure all voices are heard.
- 6. Monitoring and Feedback**
  - **Example:** Use video analysis to monitor group interactions and provide feedback to students.
  - **Action:** Regularly review group work recordings to identify patterns of marginalization and address them with the involved students.

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## Belonging, Success, Access, and Disruption: Physics Faculty Goals for Inclusive Learning Environments

Robertson, Amy D., W. Tali Hairston, Rachel E. Scherr. 2017. Belonging, Success, Access, and Disruption: Physics Faculty Goals for Inclusive Learning Environments. *FEMS Microbiology Letters* 364. DOI: 10.1093/femsle/fnx179

### Keywords

- Inclusive teaching
- Physics education
- Faculty development
- Systemic oppression
- Student success
- Marginalization

### Summary

The article "Belonging, Success, Access, and Disruption: Physics Faculty Goals for Inclusive Learning Environments" explores various goals of physics faculty in creating inclusive learning environments. Based on interviews with 18 faculty members, the study identifies four primary goals: ensuring all students feel welcome, facilitating student success, providing access to physics culture, and disrupting systemic oppression in the classroom. These goals reflect different understandings of inclusion, ranging from interpersonal actions that foster a welcoming environment to systemic changes that address structural inequities. The study emphasizes the importance of aligning faculty development with these diverse goals to promote meaningful and sustainable inclusion in physics education.

### Practical Actions Recommended

- 1. Creating a Welcoming Environment**
  - **Example:** Use inclusive language and ensure correct pronunciation of students' names.
  - **Action:** Adopt gender-neutral phrases such as "you all" instead of "you guys" and learn to pronounce all students' names correctly.
- 2. Supporting Student Success**
  - **Example:** Develop mentoring programs and provide personalized support.
  - **Action:** Implement structured mentoring programs where senior students guide junior students and offer advice on course selection and research advisor fit.
- 3. Providing Access to Physics Culture**
  - **Example:** Use shared experiences in teaching to bridge social capital gaps.
  - **Action:** Incorporate hands-on lab experiences and collaborative activities that do not assume prior knowledge or shared experiences outside the classroom.
- 4. Disrupting Systems of Oppression**

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- **Example:** Address microaggressions and promote equity in classroom interactions.
  - **Action:** Call out and address sexist or racist comments and behaviors in the classroom to create a safer and more inclusive environment.
5. **Transforming Physical and Social Environments**
- **Example:** Make study spaces more accessible and inviting to all students.
  - **Action:** Redesign physical study environments to be transparent and open, ensuring all students feel they belong and can access these resources.
6. **Encouraging Collaborative Learning**
- **Example:** Shift from competitive to collaborative consensus-building in classroom discussions.
  - **Action:** Emphasize collaborative sense-making and community-building in classroom activities rather than competitive argumentation.
7. **Promoting Intercultural Knowledge**
- **Example:** Use diverse examples and discussions in physics content.
  - **Action:** Include multicultural examples in teaching materials and engage students in discussions about who is represented in STEM fields and whose voices are heard in classroom interactions.

## Embedding Study Strategies in STEM Courses to Increase Retention and Success: A Quantitative Study

Abramyan, Ivetta, Maria Oehler, Lyn Noble, Christopher Lee, Amanda Sartor. 2024. Embedding Study Strategies in STEM Courses to Increase Retention and Success: A Quantitative Study. *Journal of College Science Teaching* 53(1): 44-50.

### Keywords

- Study strategies
- STEM education
- Student retention
- Academic success
- Time management
- Self-efficacy

### Summary

The study conducted by Abramyan et al. investigates the impact of embedding study strategies into introductory STEM courses to enhance student retention and success. An interdisciplinary team developed video modules on effective study techniques, which were integrated into selected STEM courses. A control group of students in comparable courses did not receive these modules. Data were collected over three semesters using pre- and post-tests, surveys, and institutional records. The findings revealed significant improvements in students' use of specific study strategies, such as flashcards, interleaving, spaced practice, and the Pomodoro Technique, among those exposed to the modules. However, there was no corresponding increase in overall academic success or retention rates. The study suggests that while students became more aware of effective study techniques, other

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factors may inhibit their full adoption and translation into academic performance improvements.

## Practical Actions Recommended

1. **Implement Study Strategies Modules:**
  - Integrate video tutorials on effective study techniques, such as flashcards, interleaving, spaced practice, and the Pomodoro Technique, into course curricula.
  - Ensure that these modules are embedded throughout the semester to reinforce learning.
2. **Promote Time Management:**
  - Encourage students to use calendars and to-do lists to organize academic and personal activities.
  - Teach students to manage their study time effectively, emphasizing the importance of avoiding procrastination.
3. **Foster Active Note-Taking:**
  - Instruct students on effective note-taking strategies during lectures and review sessions.
  - Provide tools and resources for students to quiz themselves using flashcards or self-created study guides.
4. **Address Self-Efficacy and Motivation:**
  - Discuss the importance of self-awareness in academic performance, helping students accurately assess their study habits and time management skills.
  - Encourage students to set realistic study goals and provide feedback on their progress.
5. **Utilize Mixed Methods for Assessment:**
  - Combine quantitative data from tests and surveys with qualitative feedback from focus groups or open-ended survey questions to gain a comprehensive understanding of students' experiences and challenges.
6. **Support Continuous Improvement:**
  - Regularly review and refine the study strategies modules based on student feedback and performance data.
  - Encourage faculty development in teaching study strategies and integrating them into course design.

By adopting these practices, educators can help students develop effective study habits, improve their academic performance, and increase retention rates in STEM courses.

## Mentorship, Mindset, and Learning Strategies: An Integrative Approach to Increasing Underrepresented Minority Student Retention in a STEM Undergraduate Program

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Lisberg, A., & Woods, B. (2018). Mentorship, Mindset, and Learning Strategies: An Integrative Approach to Increasing Underrepresented Minority Student Retention in a STEM Undergraduate Program. *Journal of STEM Education*, 19(3), 14-20.

## Keywords

- STEM education
- Underrepresented minority students
- Student retention
- Mentorship
- Growth mindset
- Learning strategies

## Summary

The article discusses a multifaceted approach to improve retention rates of underrepresented minority (URM) students in STEM disciplines at the University of Wisconsin-Whitewater (UWW). The authors emphasize that early academic challenges significantly impact retention, especially for URM students. The STEM Boot Camp (SBC) program was designed to address this by integrating faculty and peer mentorship, fostering a growth mindset, and teaching effective learning strategies. The program showed promising results, with SBC students demonstrating higher retention rates and academic success compared to their non-URM peers. The authors conclude that such integrative support mechanisms can effectively bridge the achievement gap in STEM education.

## Practical Actions Recommended

- 1. Peer and Faculty Mentorship:**
  - Implement structured mentorship programs pairing URM students with both peers and faculty to alleviate social pressures, enhance coping skills, and build professional networks.
  - Regularly evaluate the mentorship program's effectiveness by tracking student performance and engagement.
- 2. Familiarity with Programs and Faculty:**
  - Increase student awareness and utilization of existing support programs (e.g., office hours, academic support, student organizations) through proactive engagement and orientation sessions.
  - Create informal settings for students to interact with faculty, reducing intimidation and fostering a sense of belonging.
- 3. Growth Mindset and Alternate Lay Theory:**
  - Integrate growth mindset principles into the curriculum, emphasizing that intelligence can be developed and that setbacks are part of the learning process.
  - Present an alternate lay theory to new students, framing academic challenges as universal and surmountable, to encourage persistence and resilience.
- 4. Active Learning Techniques:**

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- Promote the use of active learning methods in the classroom to improve student engagement and academic performance.
  - Train students in creating and utilizing study aids like concept maps, enhancing their ability to organize and retain information.
5. **Early Intervention and Continuous Support:**
- Implement bridge programs such as the STEM Boot Camp to provide intensive support before and during the critical first year of college.
  - Offer continuous support throughout the academic year, including structured peer mentoring and regular faculty check-ins.

## Structure and Flexibility: Systemic and Explicit Assignment Extensions Foster an Inclusive Learning Environment

Ruesch, J. M., & Sarvary, M. A. (2024). Structure and flexibility: systemic and explicit assignment extensions foster an inclusive learning environment. *Frontiers in Education*, 9, 1324506. doi:10.3389/educ.2024.1324506

### Keywords

- Inclusive education
- Assignment extensions
- Universal Design for Learning
- Student retention
- Flexibility in deadlines
- Self-Determination Theory

### Summary

The article by Ruesch and Sarvary explores the implementation of an "Extension Without Penalty" (EWP) system in a large introductory biology course. The EWP system allows students to submit assignments by an extended deadline without penalty, thereby reducing stress and accommodating personal challenges such as illness or academic pressure. The study found that 78% of students used the EWP system, primarily reporting benefits in stress reduction, better handling of emergencies, and improved performance in other courses. There was no significant difference in final grades between students who used the EWP system and those who did not. The authors argue that this approach creates a more inclusive and equitable learning environment by removing biases and accommodating diverse student needs.

### Practical Actions Recommended

1. **Implement Explicit Extension Policies:**
  - **Clear Communication:** Clearly state the availability and conditions of the EWP system in the course syllabus.



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- Example: Include a statement like, "All assignments have ideal due dates and extension due dates, which can be used without penalty."
- 2. **Promote Understanding of Extension Use:**
  - **Inform Students:** Regularly remind students about the EWP system and its benefits to ensure they are aware of their options.
    - Example: Discuss the EWP system during the first class and before major assignments.
- 3. **Reduce Instructor Bias:**
  - **Systemic Application:** Apply the extension system universally to avoid biases in granting extensions.
    - Example: Automate the EWP deadlines in the learning management system to ensure consistent application.
- 4. **Support Student Mental Health:**
  - **Stress Reduction:** Use the EWP system to help reduce student stress and improve overall well-being.
    - Example: Share testimonials or data showing how the EWP system has helped previous students manage their workload better.
- 5. **Encourage Time Management:**
  - **Balancing Deadlines:** Offer both ideal and extension deadlines to help students develop better time management skills.
    - Example: Provide workshops or resources on time management and planning to complement the EWP system.
- 6. **Monitor and Adjust the System:**
  - **Feedback Collection:** Regularly collect student feedback on the EWP system to make necessary adjustments and improvements.
    - Example: Conduct mid-semester surveys to gather student perceptions and suggestions regarding the EWP system.
- 7. **Ensure Academic Rigor:**
  - **Maintain Standards:** Ensure that the EWP system does not compromise the academic standards and learning objectives of the course.
    - Example: Analyze assignment quality and student performance data to confirm that learning outcomes are met.
- 8. **Foster an Inclusive Environment:**
  - **Universal Design:** Align the EWP system with Universal Design for Learning (UDL) principles to cater to a diverse student body.
    - Example: Design assignments and assessments that are flexible and accessible to all students, considering various learning styles and needs.

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## Cultivating Inclusive Instructional and Research Environments in Ecology and Evolutionary Science

Emery, Nathan C., Ellen K. Bledsoe, Andrew O. Hasley, Carrie Diaz Eaton. 2021. Cultivating Inclusive Instructional and Research Environments in Ecology and Evolutionary Science. *Ecology and Evolution* 11(4): 1480-1491.

### Keywords

- Inclusivity
- Ecology
- Evolutionary science
- Universal Design for Learning (UDL)
- Diversity
- Equity

### Summary

The article by Emery et al. emphasizes the importance of creating inclusive environments in the fields of ecology and evolutionary science. It acknowledges the historical exclusion and biases within these disciplines and argues for the adoption of practices that promote diversity, equity, and inclusion. The authors propose a framework informed by inclusive pedagogy and Universal Design for Learning (UDL), which includes empathy, flexibility, and a growth mindset. They offer practical strategies for fostering inclusivity in the classroom, laboratory, and fieldwork settings. The study underscores the role of scientists and educators in driving structural changes and promoting a more inclusive academic culture.

### Practical Actions Recommended

- 1. Promote Empathy:**
  - Reflect on personal privilege and empathize with students' challenges.
  - Participate in implicit bias training and exercises to build cultural humility.
- 2. Maintain Flexibility:**
  - Be flexible in scheduling and accommodating students' diverse needs and responsibilities.
  - Incorporate student feedback into research and curricular design to improve inclusivity.
- 3. Adopt a Growth Mindset:**
  - Encourage the belief that intelligence and abilities can develop over time through effort and learning.
  - Foster a growth mindset in students and mentees to improve outcomes, especially for underserved groups.
- 4. Create Inclusive Classroom Environments:**
  - Use balanced groups for collaborative work to avoid marginalizing students.
  - Learn and use students' names and pronouns to build a positive classroom environment.

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- Develop a learner-focused syllabus with welcoming language and inclusive norms.
  - Increase representation of diverse scientists in course materials and topics.
- 5. Develop Inclusive Research Laboratories:**
- Actively recruit and select diverse candidates for research positions.
  - Model inclusive behaviors and provide quality mentorship to all lab members.
  - Establish clear social norms and a code of conduct to promote a safe and respectful environment.
- 6. Ensure Inclusive Fieldwork Practices:**
- Discuss field conditions and expectations openly to prepare students for challenges.
  - Create a field-specific code of conduct to reduce ambiguity about behavioral norms.
  - Address cost barriers by providing or facilitating access to necessary field gear.
  - Design flexible activities to accommodate a broad range of abilities and backgrounds.

By implementing these practices, educators and researchers can contribute to a more inclusive and supportive environment in ecology and evolutionary science, aligning with the guiding principles of centering student learning, promoting equity, and fostering belonging.

## Inclusive Teaching: What It Is and Why It Matters

Dewsbury, Bryan, Cynthia J. Brame. 2019. Inclusive Teaching: What It Is and Why It Matters. CBE—Life Sciences Education 18: fe2, 1-5.

### Keywords

- Inclusive teaching
- STEM education
- Student belonging
- Classroom climate
- Pedagogical practices
- Empathy

### Summary

Dewsbury and Brame's article presents a comprehensive guide to inclusive teaching practices, emphasizing the importance of fostering a supportive classroom environment that respects and values all students. The guide is designed to help STEM faculty develop self-awareness and empathy, which are crucial for creating inclusive learning spaces. The authors highlight that an inclusive classroom climate enhances student belonging and motivation, which are essential for academic success. The article also discusses the role of pedagogical choices in promoting inclusion and offers practical strategies for integrating student voices and leveraging campus networks to support diverse learners. By adopting

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these practices, educators can mitigate biases and create equitable educational experiences.

## Practical Actions Recommended

- 1. Develop Self-Awareness:**
  - Reflect on personal privileges and biases to understand how they impact teaching.
  - Engage in ongoing professional development and discussions about diversity and inclusion.
- 2. Cultivate Empathy:**
  - Build authentic relationships with students to understand their unique backgrounds and experiences.
  - Incorporate student feedback into teaching practices to ensure their voices are heard and valued.
- 3. Foster a Positive Classroom Climate:**
  - Establish norms of mutual respect and support to create a welcoming environment.
  - Use inclusive language and diverse examples in course materials to reflect the diversity of the student body.
- 4. Make Thoughtful Pedagogical Choices:**
  - Implement active learning strategies that engage all students and promote collaboration.
  - Design assessments that are fair and inclusive, considering the diverse needs and strengths of students.
- 5. Leverage Campus Networks:**
  - Collaborate with student support services and other campus resources to provide holistic support for students.
  - Encourage students to utilize available services and create connections between academic and co-curricular experiences.
- 6. Promote Student Belonging:**
  - Use strategies to reduce stereotype threat, such as highlighting diverse role models and creating an identity-safe environment.
  - Support the development of students' science identity through reflective assignments and discussions.
- 7. Continuous Improvement:**
  - Regularly assess and adjust teaching practices based on student feedback and learning outcomes.
  - Stay informed about the latest research and best practices in inclusive teaching.

By implementing these practices, educators can create inclusive learning environments that support the success and well-being of all students, aligning with the principles of centering student learning, fostering belonging, and promoting equitable access to education

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## The Influence of Microaffirmations on Undergraduate Persistence in Science Career Pathways

Estrada, Mica, Gerald R. Young, Jill Nagy, Emily J. Goldstein, Avi Ben-Zeev, Leticia Márquez-Magaña, Alegra Eroy-Reveles. 2019. The Influence of Microaffirmations on Undergraduate Persistence in Science Career Pathways. *CBE—Life Sciences Education* 18: 1-15.

### Keywords

- Micro Affirmations
- Persistence
- STEM education
- Undergraduate students
- Scientific self-efficacy
- Scientific identity

### Summary

The article by Estrada et al. investigates the role of microaffirmations in supporting undergraduate students' persistence in science-related career pathways. The study develops and validates a Microaffirmations Scale, demonstrating its two-factor structure, which includes affirmations related to individual and group identity. Through a longitudinal design spanning nine months, the research reveals that while microaffirmations alone do not directly predict persistence, they enhance students' scientific self-efficacy and identity. These elements, in turn, significantly boost students' intentions to persist in STEM fields. The study underscores the importance of creating supportive and inclusive academic environments that affirm students' identities and contributions, particularly for historically underrepresented (HU) students.

### Practical Actions Recommended

- 1. Develop and Use Microaffirmations:**
  - Incorporate subtle, positive affirmations in everyday interactions with students, recognizing both their individual efforts and contributions of their social identity groups.
  - Train faculty and staff to identify and practice microaffirmations to foster an inclusive academic environment.
- 2. Enhance Scientific Self-Efficacy:**
  - Provide opportunities for students to engage in hands-on, practical experiences that build confidence in their scientific abilities.
  - Offer constructive feedback and celebrate small successes to reinforce students' self-efficacy.
- 3. Support Scientific Identity Development:**
  - Encourage students to see themselves as part of the scientific community through mentorship, participation in research, and involvement in scientific organizations.

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- Highlight diverse role models and pathways in science to help students identify with the field.
- 4. **Create an Inclusive Classroom Climate:**
  - Foster an environment where all students feel valued and included, regardless of their background.
  - Address and mitigate stereotype threats by emphasizing a growth mindset and the value of diverse perspectives in scientific problem-solving.
- 5. **Promote Persistence Through Engagement:**
  - Engage students in meaningful, collaborative projects that connect their coursework to real-world scientific challenges.
  - Provide continuous support and guidance, particularly during critical transitions and challenging periods in students' academic journeys.
- 6. **Implement Ongoing Assessment and Feedback:**
  - Use tools like the Microaffirmations Scale to regularly assess the inclusivity of the academic environment and make necessary adjustments.
  - Collect and act on student feedback to continuously improve teaching practices and support mechanisms.

By adopting these practices, educators can create a more supportive and inclusive environment that enhances the persistence of all students, particularly those from historically underrepresented groups, in STEM career pathways.

## Moving Toward Equity: Experiences With Ungrading

Rapchak, Marcia, Africa S. Hands, Merinda Kaye Hensley. 2023. Moving Toward Equity: Experiences With Ungrading. *Journal of Education for Library and Information Science* 64(1): 90-98.

### Keywords

- Ungrading
- Equity
- Anti-racist pedagogy
- Library and information science education (LIS)
- Student autonomy
- Critical pedagogy

### Summary

The article by Rapchak, Hands, and Hensley explores the practice of ungrading within the context of library and information science (LIS) education, advocating for its adoption to create more equitable and inclusive learning environments. Ungrading challenges traditional grading systems, which often perpetuate inequities and reflect white, middle-class standards. The authors share their personal experiences with implementing ungrading, highlighting how this approach empowers students to take responsibility for their learning, fosters a more collaborative classroom dynamic, and encourages critical thinking and

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growth. They discuss various ungrading strategies, such as self-evaluation, metacognitive reflection, specifications grading, and contract grading, which prioritize student learning and development over numerical grades. The article argues that ungrading can dismantle power imbalances in the classroom and promote a more just and inclusive educational experience.

### Practical Actions Recommended

- 1. Implement Self-Evaluation and Reflection:**
  - Encourage students to evaluate their own work and reflect on their learning processes.
  - Use self-reflection assignments to help students identify their strengths, challenges, and areas for improvement.
- 2. Provide Qualitative Feedback:**
  - Replace grades with detailed qualitative feedback that guides student learning and development.
  - Focus feedback on encouraging growth, creativity, and critical thinking.
- 3. Adopt Specifications Grading:**
  - Outline clear, specific criteria for assignments that students must meet to achieve a "complete" status.
  - Allow students to revise and resubmit incomplete assignments based on feedback.
- 4. Use Contract Grading:**
  - Develop grading contracts that specify the requirements for each grade level, emphasizing effort and learning over performance.
  - Negotiate these contracts with students to align with their individual learning goals.
- 5. Foster a Collaborative Classroom Environment:**
  - Create a learning space where students and instructors work together as co-learners.
  - Encourage peer feedback and group work to build a sense of community and shared responsibility.
- 6. Promote Equity and Inclusion:**
  - Recognize and address the ways traditional grading can reinforce systemic inequities.
  - Implement ungrading practices that are flexible and considerate of students' diverse backgrounds and circumstances.
- 7. Gradual Implementation:**
  - Start with ungrading for low-stakes assignments or specific course components to ease the transition for both students and instructors.
  - Gradually expand ungrading practices as comfort and familiarity with the approach grow.

By adopting these ungrading practices, educators can create a more inclusive and equitable classroom environment that centers student learning, promotes transparency, and fosters a sense of belonging and autonomy among students.

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## Strategies for Integrating Student Supports and Academics

Dadgar, Mina, Thad Nodine, Kathy Reeves Bracco, Andrea Venezia. "Strategies for integrating student supports and academics." *New Directions for Community Colleges* 2014.167 (2014): 41-51.

### Keywords

- Student Support Services
- Academic Integration
- Community Colleges
- Student Success
- Academic Advising
- Tutoring
- Career Planning
- Educational Planning

### Summary

The article by Dadgar et al. examines strategies for integrating student support services with academic instruction in community colleges to enhance student success. The authors highlight that integrating these services—such as academic advising, tutoring, and career planning—within the classroom setting can improve student outcomes by providing a more cohesive and supportive learning environment. The study discusses various models and strategies implemented by colleges across the nation, including embedding advisors and tutors in classrooms, developing integrated student success centers, and using technology to connect support services with instruction. The article emphasizes that such integration helps expand access to support services, engages students more effectively, and reduces the stigma associated with seeking help.

### Practical Actions Recommended

1. **Embedding Support in Departments and Classes**
  - **Embedding Advisors in Departments:** Assign advisors to specific departments to foster familiarity with program requirements and create consistent support for students.
    - *Example:* Valencia College hired advisors for career/technical education programs to provide specialized advising.
  - **Embedding Advisors in Classrooms:** Incorporate advisors into courses, either through paired classes or by bringing career advisors directly into the classroom.
    - *Example:* Santa Barbara City College integrates career advisors into foundational courses to assist with education and career planning.
  - **Embedding Tutors in Classrooms:** Place tutors in high-risk classes or designate time for meeting with tutors outside of class to ensure students receive necessary support.
    - *Example:* Some developmental education courses include required tutoring sessions as part of class time.
2. **Offering Integrated Student Success Centers**
  - Develop centers that provide a range of coordinated supports integrated with classroom instruction, available to all students.
    - *Example:* Chaffey College organizes success centers by academic topic rather than developmental needs, reducing stigma and encouraging all students to seek help.



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## 3. Developing First-Year Experiences

- **Mandatory Orientation and Student Success Courses:** Offer structured support through mandatory orientation and success courses that provide advising, career planning, and study skills.
  - *Example:* Valencia College involves developmental education faculty in the assessment process to better prepare students and align support services with classroom instruction.

## 4. Using Technology to Connect Student Supports and Instruction

- Utilize technology for online orientation, degree planning, and early alert systems to offer individualized support.
  - *Example:* Implement technology-based degree audits complemented by in-person advising to ensure students receive comprehensive guidance.

## Implementation Recommendations

- **Start with Collaborative Programs:** Begin integration efforts with programs that have a history of collaboration, such as developmental education or first-year experiences.
- **Strengthen Campus Culture of Collaboration:** Involve faculty and staff in planning and decision-making processes to foster a culture of collaboration focused on student success.
- **Use Professional Development Effectively:** Provide extensive training and incentives for faculty and staff to understand their roles in supporting student learning and to deliver consistent, high-quality support services.

## Argumentative Writing Workshop for Conceptual Learning and Weekly Writing for Knowledge Application in Undergraduate Chemistry Laboratories

Gao, R., Lloyd-Weinstein, J., & Cardinal, J. (2024). Argumentative Writing Workshop for Conceptual Learning and Weekly Writing for Knowledge Application in Undergraduate Chemistry Laboratories. *Journal of College Science Teaching*, 53(2), 195-203. doi:10.1080/0047231X.2024.2316472

## Keywords

- Argumentative writing
- Conceptual learning
- Knowledge application
- Chemistry education
- Scientific argumentation
- Laboratory reports

## Summary

The article by Gao, Lloyd-Weinstein, and Cardinal discusses the implementation of an argumentative writing workshop aimed at improving conceptual learning and knowledge application in undergraduate chemistry laboratories. The workshop consists of four modules

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that guide students through identifying key components of arguments, selecting appropriate justifications, constructing justifications and conclusions, and analyzing experimental errors. The study demonstrated significant improvements in students' abilities to formulate scientific arguments, with performance scores rising from around 60% to over 90% in introductory chemistry labs. The workshop format, which can be adapted for online teaching or other science courses, emphasizes the importance of structured, reflective practice and frequent feedback in enhancing students' critical-thinking and communication skills.

### Practical Actions Recommended

- 1. Implement Argumentative Writing Workshops:**
  - **Structured Modules:** Develop a series of modules to guide students through the process of constructing scientific arguments.
    - Example: Use modules to help students identify evidence, justifications, and claims in their laboratory reports.
- 2. Provide Explicit Instruction on Scientific Argumentation:**
  - **Conceptual Training:** Offer detailed explanations of the components of scientific arguments and how they relate to different sections of a laboratory report.
    - Example: Explain the role of evidence in the Results section, justifications in the Discussion section, and claims in the Conclusions section.
- 3. Use Real-World Examples:**
  - **Practical Applications:** Incorporate examples from scientific literature or current events to illustrate the application of argumentative writing in real-world contexts.
    - Example: Analyze a scientific news article to identify and discuss its argumentative components.
- 4. Encourage Reflective Practice:**
  - **Revisions and Feedback:** Allow students to revise their laboratory reports based on instructor feedback to improve their argumentative writing skills.
    - Example: Provide detailed comments on early drafts and encourage resubmission of revised reports.
- 5. Facilitate Group Discussions:**
  - **Collaborative Learning:** Organize small group discussions to allow students to practice and refine their argumentative skills.
    - Example: Use cooperative learning activities where students critique and improve each other's arguments.
- 6. Develop Clear Grading Rubrics:**
  - **Consistent Evaluation:** Create grading rubrics that clearly outline the expectations for each section of the laboratory report and the criteria for successful arguments.
    - Example: Share rubrics with students at the beginning of the semester to guide their writing and revisions.
- 7. Integrate Weekly Writing Assignments:**

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- **Regular Practice:** Incorporate weekly laboratory report writing assignments to provide continuous opportunities for students to apply what they have learned.
  - Example: Assign weekly reports that require students to present evidence, construct justifications, and make claims based on their experimental results.
- 8. **Address Common Writing Challenges:**
  - **Focused Workshops:** Conduct additional workshops to address common issues in student writing, such as distinguishing between different sections of the report and providing appropriate justifications.
    - Example: Use examples of common errors and guide students through the process of correcting them.