

CHAPTER 9

STEM FACULTY DEVELOPMENT FOR CREATING LEARNING ENVIRONMENTS THAT PROMOTE INCLUSIVE EXCELLENCE

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The Inclusive Excellence Teacher-Scholar Workshop (IETSW) was a year-long cohort program guiding faculty as they explored how to create inclusive spaces. With a foundation of faculty cultural competency (*who we are*), IETSW participants explored the content of their courses (*what we teach*), pedagogical approaches (*how we teach*), and evaluation paradigms (*how we assess*). We share IETSW materials and approaches, why cultural competency was a central element of the program, and why understanding racism was essential for developing inclusive practices. We highlight theory, barriers, and takeaways to help readers consider how to adapt IETSW in their institutions.

Keywords: Inclusive Classrooms, Equity-Minded, Faculty Development, Equity, Workshop, Faculty Cultural Competency, STEM

INTRODUCTION

The Inclusive Excellence Teacher-Scholar Workshop (IETSW), a faculty development model designed to help faculty build inclusive classrooms, was a year-long, cohort-based program developed on the understanding that academic spaces are not race-neutral, and that faculty can create more equitable environments for learning when they understand how their practices impact students minoritized by institutions of higher education (IHEs). Rethinking equity in terms of institutional and faculty change rather than perceived student deficits was an essential assumption and strategy of the program with the goal of addressing equity gaps in IHEs. Bensimon and colleagues called this approach equity-mindedness (Center for Urban Education, 2021). The IETSW program goals included increasing faculty awareness, providing practice-based strategies, and supporting faculty to make equity-minded changes in their classrooms to create inclusive spaces. IETSW focused on how faculty can positively

Handbook of STEM Faculty Development, pages 95–107.

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impact student experiences and covered mainstays of academia, including the syllabus, classroom participation, course content, and grading and assessment strategies.

Topics Grouped into Four Categories

The IETSW topics were organized into four categories. With a foundation of faculty cultural competency (*who we are*), IETSW participants explored the content of their courses (*what we teach*), pedagogical approaches (*how we teach*), and evaluation paradigms (*how we assess*) (Table 9.1). Given the complexity of teaching, some topics fit more than one category, but paying explicit attention to the categories helped us balance and build on our content through the workshop series instead of defaulting the focus to the more accessible category of *how we teach*.

By emphasizing the necessity for individual cultural competence, we positioned IETSW differently than many pedagogical interventions. That many faculty consider IHEs and STEM content culture- and race-free informed the development of sessions where we actively challenged these notions. With workshops relating to equity, race and racism, bias, microaggressions, privilege, and dominant narratives within IHEs and STEM, IETSW asked participants to confront their biases and stereotypes. Throughout the program, we acknowledged and normalized individual biases, engaged in reflective discussions, and encouraged participants to understand their biases to better support students historically minoritized by IHEs. By better understanding bias in their own experiences, faculty began to understand and appreciate the importance of how their students experience bias. These necessary and important reflections were critical to understanding the need for implementing equity-minded practices. To that end, IETSW emphasized faculty members' personal growth, which is monitored by the evaluation throughout the project. One faculty member's reflection summarized this,

the (University) culture has changed, and I think it is time that I shift my thinking too. This course has helped me change that perspective but in a good way. Instead of feeling like I have to change because I am being forced to change, I feel like I am changing my thoughts and perspective because I am understanding it better (IETSW participant).

MODEL STRUCTURE

General Structure of the IETSW Program

IETSW was a year-long, cohort-based program designed to provide 36 hours of workshops plus four to seven hours of engagement between each workshop. The program began with two full-day workshops. Then faculty participated in eight two-hour workshops during the fall and spring, and two, three-hour workshops as a semester wrap-up. Each workshop contained several 50-minute sessions (see Table 9.1 for session topics). Participants were assigned pre-session work, such as readings and videos. After each workshop, participants completed implementation activities that required further engagement with a given topic, and/or classroom implementation (Figure 9.1).

We had three basic session types. Session types were determined by what happens in the session as compared to the pre- and post- sessions (Figure 9.1) and describe how participants engaged with the content (Tables 9.1 and 9.2).

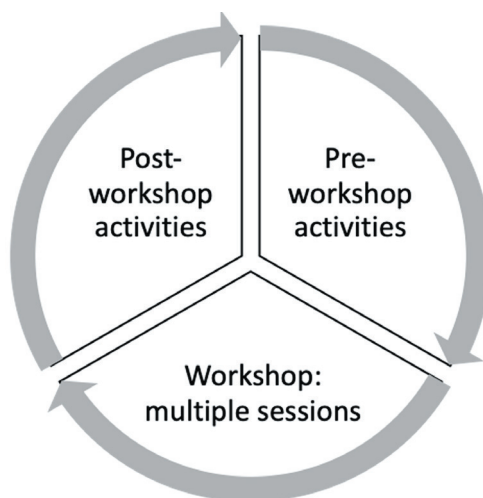


FIGURE 9.1. Workshop Structure

Initial engagement sessions were used when the topic was challenging, and participants needed group processing time to make sense of the content. Once participants interacted with the basic ideas in the session, they had opportunities through the implementation activity to extend their engagement with the content, often through readings. Our racial oppression session was an initial engagement session.

Extending engagement sessions were the most common session type and were used when the content was easily accessible through readings, watching videos, or other activities. Participants were assigned pre-session work; in the session itself, we deepened the engagement. This session type supported participants to take action in their classroom through the post-session implementation activities. Our implicit bias and microaggressions sessions were examples of extending engagement sessions.

Initial engagement and implementation sessions integrated the implementation and the initial engagement. Sessions incorporated an introduction to a concept and worktime to implement the topic. Our syllabus and disaggregating data sessions were initial engagement and implementation sessions.

THEORETICAL PERSPECTIVES

Recognizing that shifts in systemic racism do not occur gradually or unintentionally, we used critical race theory (CRT, Bell, 1992) to frame our work. Ladson-Billings and Tate (1995) applied CRT to education, noting inequity cannot be fixed by increasing diversity alone but rather through working to change how race has been built into the system. IHEs have focused on increasing the diversity of students attending our institutions for decades, yet we have not realized equitable outcomes for students of color and other students marginalized by STEM.

Our work was grounded in two more theories: Teacher-Centered Systemic Reform (TCSR) which describes the many aspects of a faculty's work, and Transformational Learning (TL) which describes the characteristics of learning that results in long-lasting change. TCSR, as a theoretical framework and perspective (Woodbury & Gess-Newsome, 2002), provided a holistic approach to engage with participants through faculty development. TCSR considers personal factors (demographics, experience, preparation), contextual factors (social, department, and classroom contexts), and the general context of reform (teacher thinking, content, and practice). Birt and colleagues (2019) augmented TCSR to include agency (Archer, 2007) as a critical and necessary component to change. IETSW was grounded in transformative learning theory (Mezirow, 1978), which requires faculty to acknowledge their current thinking and points of view (Wiessner & Mezirow, 2000), undertake a critical exploration of alternative views, and ultimately, decide to make change. For transformation to bring about change, faculty must challenge existing assumptions by considering new information and cannot just be presented with the desired change (Apps, 1994; Gravett, 2004). When it occurs, transformation is lasting and durable (Courtenay et al., 1998) when coupled with intentionally focused action (MacLeod et al., 2003). In the text that follows, we indicate what frameworks apply to specific session questions by putting in parenthesis the abbreviations for the framework, CRT, TCSR, and TL.

MODEL STRUCTURE

The theoretical frameworks scaffolded the structure of IETSW. First, the complex nature of transformational change for creating inclusive classrooms suggested that a multidimensional approach to the design of sessions, workshops, topics, and the sessions would be more effective than a single strategy (Apps, 1994; Gravett, 2004; Wiessner & Mezirow, 2000). Second, the intensive two-day workshops (Table 9.1) grounded the participants in the nature of the challenge ahead by looking at disaggregated data to understand the inequitable outcomes for students in their classes, programs, and the university and in what it means to engage in an equity-minded approach to their instruction (TL, CRT).

Second, to support ongoing engagement for the participants, we held ten workshops throughout the academic year; participants came together monthly to learn what it means to engage in equity-minded instruction and engaged outside the workshops with pre- and post-workshop activities (TL, TCSR). Pre-workshop activities included reading articles, watching videos, or surveys to prepare for the next workshop. Generally, the participants spent two to three hours on pre-workshop activities per workshop. After each workshop, participants engaged in implementation activities to deepen their understanding of the workshop topics by reading more on the topic and/or implementing some aspect of what they've learned in their instruction. These activities take at least two hours, which may involve planning instruction. Over 90% of the participants completed the pre- and post-workshop activities.

Finally, the implementation aspect was often a small action research project where participants planned an intervention, collected data about the impact, and reflected on what they learned. We emphasized the learning opportunities embedded in these projects, not whether the implementation was successful, supporting participants to take small steps, not big ones. To support the shared journey, participants shared their projects and reflections with the group at a workshop or through a discussion board.

The theoretical perspectives were reflected in the processes participants engaged in within a session, workshop, and the IETSW series. At each level, participants moved through the process cycle (Figure 9.2). At the session level, activities were designed to engage participants in surfacing and critically examining their assumptions, implementing changes to practice, and

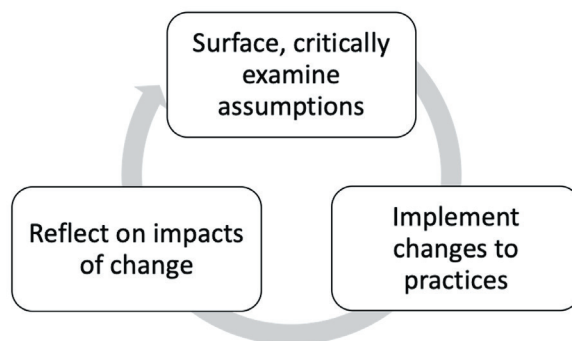


FIGURE 9.2. Process Participants Experience

reflecting on those changes. Each time participants began the cycle, they brought with them their learning and experiences with each previous cycle.

To surface participants' assumptions about a topic, we engaged participants in an alternative interpretation of a practice or experience regarding that topic (TL) through new information or a vignette of the experiences of students of color. In both cases, the alternative interpretation supported participants to surface and critically examine their assumptions. The second element supported participants to decide to change (TL). To provide experiences that supported participants to experiment with and understand what that change might look like, we asked them to implement small changes to their practice. As the change we were hoping to see might be in their beliefs, teaching practices, or content, the implementation activities ranged from extending their engagement with alternative views to reflecting on impacts for practice to implementing a change in their classroom practice. The range of activities addressed the four elements of TCSR in the service of building participants' agency. The third element of the cycle required participants to understand the impacts of a change they implemented. We asked them to engage in several data-focused strategies. In one strategy, they looked at disaggregated data for an assignment they gave, their unit, or their college to see the differential impacts on students of color (CRT). In another, they gathered and reflected on information from their students, often through an exit ticket or a survey, about their experiences which often offered an alternative interpretation to the participants about a teaching practice (TL). For some assignments, the primary data were their reflection on their experiences and what they've learned from those experiences (TCSR).

While we designed this structure to use with STEM faculty, the structures themselves were not STEM specific. Below, we highlight the structure of the IETSW two-day workshops (*how we begin*) and a workshop in each of the four categories (*who we are*, *how we teach*, *what we teach*, and *how we assess*). The examples provided highlight the three session types (*initial engagement*, *extending engagement*, and *initial engagement and implementation*). For each, we describe the content of the session, why we chose the topic, how the topic ties back to the theoretical frameworks, the type of session it represents, and why it is an example of the specific category. We end each example with participant responses. Finally, we briefly examine our approach to evaluating the IETSW program and provide takeaways to support readers to consider how they might adapt our work to their settings.

How We Begin

IETSW participants began their journey with a two-day workshop (Table 9.1) designed to provide a foundation for developing equity-mindedness. Because confronting institutional racism and inequities requires individual reflection, personal growth, vulnerability, and accountability, we spent time creating a community and developing a brave space to explore equity. We did this by collectively establishing general norms for interactions and ways to hold ourselves accountable. We introduced courageous norms (Singleton & Linton, 2006), which encouraged participants to stay engaged, experience discomfort, speak their truth, and expect and accept non-closure. Together, we explored which norms might be challenging and which may be easier to embrace. During these conversations, we normalized expectations for attending to emotional and intellectual reactions. Other approaches included icebreakers and providing lunch which offered opportunities to have informal conversations and develop relationships.

We discussed the syllabus extensively during the two-day intensive workshop because it is a mainstay in academia (for example, Bain, 2004; Filene, 2005; Lieberg, 2008) and an important tool for creating equitable classrooms. Our syllabus workshops are grounded in the extensive research and ideas of the Syllabus Review Guide for Equity-Minded Practice (Center for Urban Education, 2018), augmented with our ideas and experiences (Fisher & Keenan, 2020). As we progressed through the workshop, each participant worked on a syllabus for an existing course; together, we explored ways the syllabus can dem-

TABLE 9.1. Overview of IETSW Session Topics, Categories, and Types

IETSW Session Topic	Category	Session Type
Two-Day Workshop		
Introduction to Equity	Who we are	Initial engagement
Equity-Mindedness and Language	Who we are	Initial engagement
Disaggregating University Data	Who we are	Initial engagement and implementation
Equity Syllabus	How we teach	Initial engagement and implementation
Race	Who we are	Extending engagement
Racism	Who we are	Extending engagement
Academic Year Sessions		
Implicit Bias	Who we are	Extending engagement
Classroom Interactions	How we teach	Initial engagement
Intercultural Conflict Styles	How we teach	Initial engagement
Culturally Responsive Teaching--Caring For, High Expectations, Grace, Blame Cycle	How we teach	Initial engagement
Respect	How we teach	Extending engagement
Collaborative Learning	How we teach	Extending engagement
Using Disaggregated Data	How we assess	Initial engagement and implementation
Equity in Grading	How we assess	Extending engagement
White Privilege	Who we are	Extending engagement
Dominant Narratives	What we teach	Extending engagement
Pronouns	Who we are	Extending engagement
Deconstructing	What we teach	Extending engagement
Microaggressions	Who we are	Initial engagement and implementation
Metacognition	How we teach	Initial engagement
Racial Oppression	Who we are	Extending engagement
Choice	How we teach	Initial engagement
Social Justice	What we teach	Initial engagement
Departmental Change	Who we are	Extending engagement
Being an Ally	Who we are	Initial engagement and implementation

TABLE 9.2. Three Session Types

Pre-Session	Session	Post-Session
Initial engagement	Initial engagement	Extending engagement Implementation
	Extending engagement	Implementation
	Initial engagement and implementation	Extending engagement
		Continued implementation

onstrate equity for students. We applied three lenses: academic success with attention to explicitly demystifying jargon and structure; academic care with attention to language and tone, supporting and normalizing struggle; and policies and connections which addressed relevance and deconstructing the experience of White¹ students as the norm.

We used the topic of demystifying the policies, processes, and approaches of higher education, which positively impacts student success, to exemplify the equity-minded syllabus process. First, we attended to language and culture. In academia, we use terminology, acronyms, and other jargon that are easy to understand if you know them or have been exposed to them before. We asked participants to circle in their working syllabus the academic jargon used but with which their students might lack familiarity. For example, our campus abbreviates Thursdays to R. In this context, we discussed our expectation that students

¹ We choose to capitalize White to draw attention to White as an American racial identity that influences the lives of all Americans, even if many White people do not realize it.

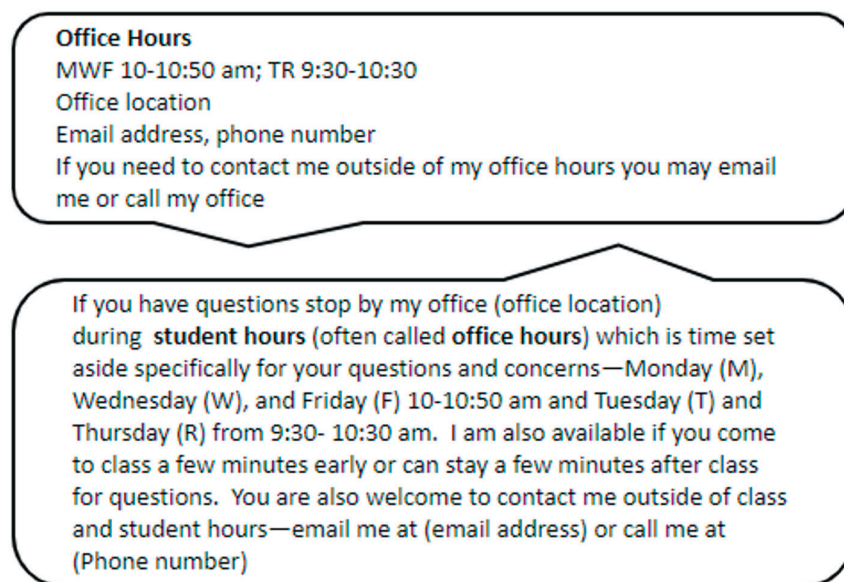


FIGURE 9.3. Traditional and Equity-Minded Approaches to Office (Student) Hours

understand office hours as time for them to get additional support and explored why we hand out the syllabus with the assumption that students understand what it is for and what information it contains to help them. Participants explored the learning objectives with this question in mind: did you explain how they are useful for the course? Participants were rarely at a loss for examples and had a plethora of ideas for change.

After demystifying jargon, we discussed the importance of providing and clearly presenting the information students need to complete the course. We think of it as providing not only the how but emphasizing the why, which demystifies the information, so it is accessible to all. Demystifying can be as simple as expanding sections of the syllabus that provide students with basic information. Office hours are a good example. Rather than simply listing office hours and contact information, we encouraged participants to provide additional details, in a friendly tone, to highlight the relevance of the information (for example, Figure 9.3). Calling your office hours student hours not only demystifies the reason we hold office hours, it recenters the time on the student.

We began our collective exploration of developing a more inclusive classroom with the syllabus because it is ubiquitous in IHE and often not thought deeply about. IETSW participants shared that they had not historically considered their students' perspective of the syllabus, which, interestingly, they recognized as going against their pedagogical practices.

The syllabus workshop was an initial engagement and implementation session; during the workshop, participants engaged with the concepts, made changes to their syllabus, and planned additional changes using a workbook that provided examples and prompts to facilitate this process. Continued implementation occurred post-session and was the focus for reflection and implementation. Making changes to the syllabus has tangible outcomes; the changes have immediate positive impacts on the student experience as it shifts the syllabus from a contract to a guide for understanding the course norms and a roadmap for how to be successful in the course. Once participants made changes to the syllabus for one course, they usually moved forward with similar changes for other courses. The revised syllabi were formatted differently; they were so visually unique from many traditional syllabi that participants' colleagues are often intrigued about the changes, offering an entry point for peer learning. Finally, this work was an entry point for deeper reflection of privilege, dominant narratives, common biases, and other topics important for the development of a deeper understanding of institutional racism.

Who We Are

The topics in the *who we are* category focused on questions such as

- What are our implicit biases, and how do they impact our classrooms? (CRT, TCSR)
- What are the dominant narratives about success in STEM, particularly with respect to minoritized students, and how do we challenge them? (CRT, TL)

The *who* of *who we are* varied. It can be *who we are* as individuals, who our students are, *who we are* as a university, or *who we are* as STEM faculty. The *who* of the racial oppression session is students of color in STEM classrooms. We chose this topic because it is challenging for White people to see racial oppression. The session goal was to support primarily White faculty to gain insight into the lived experiences of students minoritized by STEM by building their skills to recognize and analyze racial oppression as it plays out in the classroom. The session was based on a vignette in McGee and Martin (2011), who provided quotes from students to illustrate how students “emulated behaviors deemed as highly acceptable in White middle-class Academic culture” (p. 1369) and feel “additional pressure to hyper-accentuate certain characteristics that were valued by their mostly White teachers and peers” (p. 1369). In the following quote, a Black student explained why they engaged in “excessive nodding” to show that they understand the lesson (even when they do not):

[In my mathematics class] sometimes it seems like they are watching me to make sure I get it or that I belong. It’s like they are waiting for me to [#%\$] up. So I just nod no matter what.... Then at an inconspicuous hour I go find the TA [teaching assistant]. (McGee & Martin, 2011, p. 1370)

Some participants’ initial responses to the vignette were “oh, that is terrible” and “I hope that isn’t happening in my classroom.” To engage participants more deeply in understanding this situation, they analyzed the vignette using the prompts in Table 9.3 which supported them to view the vignette not as an isolated incident with this student, but as an expression of racism and oppression. After the analysis, participants discussed the vignette and used the same analysis prompts to counteract oppression by reflecting on and analyzing other situations involving racial oppression.

As an initial engagement session, the initial engagement was in the session with further engagement through a post-workshop implementation activity. Exploring this topic together provided opportunities for discussion and questions and a collective effort to understand what racial oppression looks like in STEM classrooms. After this introduction, faculty explored the topic further through focused readings on racial oppression in IHE and in STEM.

Participant responses to this topic included developing a sense of the scope of the way racial oppression plays out in classrooms and of their growth with respect to racial oppression as reflected in these comments: “Even behaviors that we see as positive indicators could be problematic.” and

I feel as though I am getting better at seeing things from a different perspective and questioning my own initial thoughts. I am satisfied that I am growing, but I am feeling discontent for the ways in which I still need to grow (IETSW participant)

Like many reactions to sessions introducing ways to think about racism, our participants expressed an awareness of the need for personal and professional growth.

How We Teach

The topics in the *how we teach* category focus on questions such as

- Whose voices are heard in our classrooms? (CRT, TCSR)
- How do we offer student choice? (TCSR)

How we teach sessions focused on exploring the instructional methods we use and how we create relationships with students and supportive classroom cultures because they provide the foundation for creating a classroom climate in which equitable learning is more likely to occur. These practices are particularly important to consider for students whose cultural background differs from the instructor.

The grace in teaching and reframing session addressed this focus. Before the session, participants read “The Lesson of Grace in Teaching” (Su, 2014), a piece written by a university math professor. Su posits, “Your accomplishments are NOT what make

TABLE 9.3. Analysis Prompts

Interpret the situation	In your own words, write two sentences that interpret an aspect of this scenario from the Black student’s point of view.
Identify the burden	Identify and write about two burdens this situation places on Black students that White students do not generally experience.
Describe the situation as a matter of racial justice	Using the language of racial justice at https://www.aecf.org/blog/racial-justice-definitions , write two sentences that describe this situation
Name the problem	Write two sentences about the racial justice problem represented in this situation
Identify solutions	Read sample solutions and explain why a solution addresses the issues in the scenario

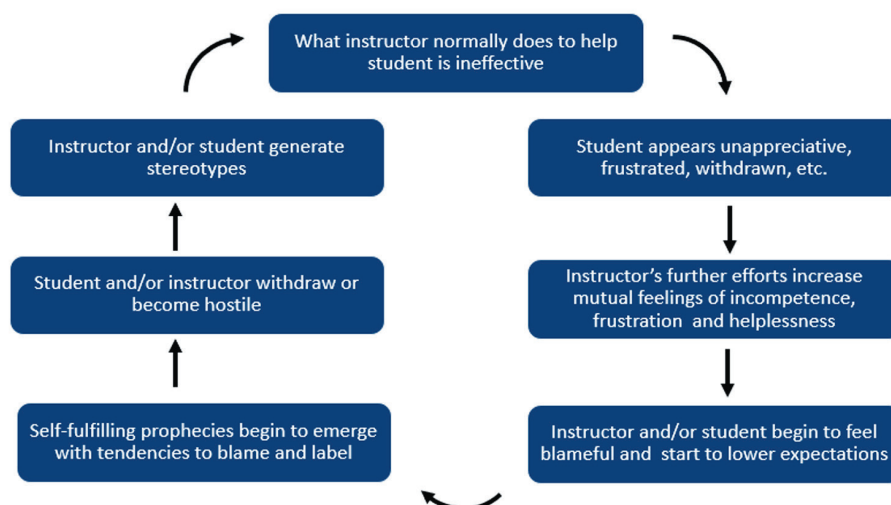


FIGURE 9.4. The Blame Cycle (Ginsberg & Wlodkowski, 2009, p.85)

you a worthy human being. You learn this lesson when someone shows you Grace: good things you didn't earn or deserve, but you're getting them anyway" (para. 17). Participants discussed how they have or could show grace in the classroom through their interactions with students.

Next, we introduced the blame cycle (Wlodkowski & Ginsberg, 1995, p. 85), which illustrates how frustration and blame often escalate between student and faculty (Figure 9.4). The blame cycle often begins when an instructor interprets a student's behavior through a deficit lens and responds in a way that blames the student. Participants reflected and discussed examples of the blame cycle in academic environments before we introduced reframing as a strategy that uses grace to break the blame cycle. Reframing is formulating a positive alternative interpretation of the behavior that fits the facts and is plausible, and then acting on this new interpretation (Ginsberg & Wlodkowski, 2009). After introducing specific steps to utilize reframing and a scenario (Table 9.4), participants practiced reframing.

This session was in the *how we teach* category because participants explored actions related to teaching and interacting with students. By introducing reframing, we supported participants to recognize the way they approach students and the assumptions they make when interpreting student behavior. While reframing supports all students, when there is a cultural disconnect between the student's and the faculty's background, faculty often interpret student behaviors through their own cultural lens and do not recognize the student's cultural lens might be different.

This *extending engagement* session built from the participants' reading and reflecting on Su's article (2014) before the workshop and continued in the session when we introduced and connected the blame cycle and reframing with grace. We chose this session type because the idea of grace in teaching is easily accessible and is something we want faculty to practice implementing in their instruction.

Participants responded positively to the notion of grace in teaching and reframing, with one participant stating, "I loved the readings you had us explore. They really got me thinking." A few participants mentioned how these concepts were really helpful in the context of adjusting to COVID, "The amount of engagement and the content was very appropriate -- care and grace are things I needed to reflect on at this point in a challenging semester."

What We Teach

The topics in *what we teach* focused on course content questions such as

TABLE 9.4. Reframing Scenario Prompts

Present Student Behavior	Example: A student consistently comes 5–10 minutes late to class
Small Group Discussion	What is your current interpretation of the behavior? What could be some positive alternative interpretations? How might your actions change because of these new interpretations?
Full Group Discussion	How did you experience reframing?
Homework Activity	Try out the reframing method in response to student behavior in your classes. Reflect and report on how it went.

1. Equitable Teaching Practices
2. Authentic, Challenging Social and Content Question or Concern
3. Social and Content Understanding
4. Social and Content Investigation
5. Social and Content Reflection
6. Action and Public Product

FIGURE 9.5. Social Justice Framework (Berry, III et al., 2020), p. 249)

- Who is represented in the course curriculum? (CRT, TCSR)
- To what extent is Whiteness deconstructed? (CRT, TL, TCSR)

Representing was an opportunity to see how Whiteness is embedded in course content. To support faculty to look at the course content from a critical perspective, *what we teach* asked them to bring a critical eye to their curriculum, particularly as it relates to the White, patriarchal, Eurocentric canon for a content area. The social justice session was an example of a *what we teach* topic.

The focus of the social justice session was the question, “how do I infuse social justice into my content area?” and introduced participants to a Social Justice Lesson Framework developed by Berry et al. (2020) as a structure for infusing social justice. The framework has six components, and the session focused on the content taught, components 2–5 (Figure 9.5). Components one and six, respectively, address how to teach in a socially just way and personal social justice outcomes. The framework provided an answer to typical participant responses, “how do I get started?” and “how do I do this?” The session supported participants to explore potential authentic, challenging questions relevant to their courses. The participants worked, in small groups, with the structure and examples outlined in Table 9.5 to develop potential questions they could explore in their courses.

For some disciplines such as environmental studies or nursing, participants easily identified content or social justice questions. But identifying questions for some content, such as abstract algebra or cell physiology, was more challenging. In this situation, we encouraged participants to explore critical questions about their discipline, as highlighted in the last row of Table 9.5. For all questions and investigations, thinking about the relationship between social justice and some aspect of the content or a discipline tended to deepen students’ understanding of both by exploring them in tandem. During the session, we asked participants to expand their ideas using aspects of the framework.

The initial engagement happened before the session when participants read a description of social justice (Human Rights Careers, 2021). We chose an extending engagement session because the pre-session and in-session activities support participants to lay the groundwork for the time-intensive work of developing social justice content after the session.

Participant responses included wanting more time to think through incorporating social justice into their classrooms and more examples of questions on which to base a social justice lesson. They realized that “there are small things I can do in each of my classes to move social justice forward” and appreciated the “encouragement to include more social justice in my classroom.” Several participants wanted to better understand “how to facilitate social justice class discussion of current events.” Wanting support to lead challenging discussions was a common theme in many workshop reflections.

How We Assess

The topics in *how we assess* focused on questions such as

TABLE 9.5. Social Justice Framework, Getting Started

Nature of the Question	Nature of the Investigation	Examples
Content	Through a social justice lens	What does a week of nutritious meals look like for a 6-year-old child? Explore this question if (1) the primary way to access food is through SNAP, and/or (2) the family lives in a food desert
Social Justice	Through a content lens	Who typically lives in redlined areas, and what is the impact of redlining on the air quality and health of residents? Apply our analysis of air quality on census map data to identify what areas are more or less likely to have poor air quality and health impacts
Discipline	Through a social justice lens	Who writes the textbooks? Who is represented in your curriculum/field? How are they represented: authentically, in a nuanced way, or through stereotypes? In what ways does your discipline encourage a binary view of the world? What are the dominant narratives in your field?

Fish 1: 3 pounds	Fish 6: 2 pounds
Fish 2: 3 pounds	Fish 7: 2 pounds
Fish 3: 3 pounds	Fish 8: 2 pounds
Fish 4: 3 pounds	Fish 9: Not Caught
Fish 5: 2 pounds	Fish 10: Not Caught

Based on our data, what is the average weight of the then fish in the pond?

A. 2.25 pounds
 B. 2.0 pounds
 C. I am unable to give an average because I haven't caught and weighed all of the fish

FIGURE 9.6. Mathematically Accurate Grading: The Case of the Ten Fish (Feldman, 2018, p. 76)

- How do our grading policies impact student success? (CRT, TCSR)
- How can we use disaggregated data to understand inequities? (CRT, TL, TCSR)

The fourth element of our workshop series was *how we assess* student learning. Participants explored how their assessment philosophy aligned with their assessment practices, the need to disaggregate data to understand inequities, and how as educators, we advantage or disadvantage particular groups of students. In addition, participants investigated their assessment and grading schema, the importance of feedback, allowing for mistakes (because mistakes are an essential part of learning), building a case against the 1–100 grading system, and the negative impact of the zero (Reeves, 2004)

The case against the zero session began with a thought exercise proposed by Feldman (2018), the case of the ten fish (Figure 9.6). Participants reflected on whether to only use the weight of the fish caught, average in two zeros for the two uncaught fish (the standard approach to assessment in IHE) or decide they have insufficient information to form a conclusion. In small groups, the participants reflected on the zero-grading system and the elements of the author's arguments related to the 0–100 percentage scale, which they found compelling and gave them pause. This workshop ended with a call to action to explore how they might implement minimum grading in their courses. Participant responses varied; one participant immediately (mid-semester) changed to a minimum grading scale, while others struggled with the concept of “providing” points (50%) if nothing was turned in.

As with other extending engagement workshops, participants engaged with the topic prior to the workshop so we extended the engagement within the session and encouraged implementation post-workshop. Before the session, participants read Chapter Seven: Practices That Are Mathematically Accurate (Feldman, 2018). They found the extended background provided by Feldman helpful in understanding the impacts of a zero, the flaws associated with the 0–100 grading system, and the benefits of minimum grading ($F = 50\text{--}59\%$). Participants were “excited to reconsider [their] assessment and grading, but they “want to think more about what [they] implement now as well as changes for future.” Participants reflected that the materials made them “think a lot about how I do what I do....”

RESULTS

Program Impacts

Of the 40 faculty from four cohorts who are in or have completed the program, 85% were White, 68% identified as women, and 28% considered themselves first-generation. Ninety percent of the participants completed the program. Participants taught across STEM disciplines and the applied health sciences. We worked closely with an evaluation team to understand how program participants were progressing towards being equity-minded and to inform IETSW practices. The evaluation plan was based on the principle of utilization-focused evaluation while embracing the participant's perspectives (House, 1980; Patton, 2008) and focused on how participating faculty changed their perspectives and teaching practices.

The evaluation data suggested that the IETSW program positively impacted participants' knowledge, awareness, and practices as they worked toward building more inclusive classrooms. While the impacts did not often manifest as large immediate shifts in practice, they reflected incremental and continual change. The small changes were important indicators of how partici-

pants' beliefs and practices evolved and were foundational to a long-term commitment to diversity and inclusion, which follows the logic of the TCSR and the TL frameworks.

Because of the complexity of the change process, the evaluators analyzed multiple data sources to build a deep understanding of the IETSW impacts. Here, we focus on the impacts on *who we are* and *how we teach*, two of the four topic categories we addressed in the workshops, and provide three examples of data sources used; reflection assignments and syllabi were artifacts generated by the participants as part of their work for the workshops. The evaluators developed the equity-minded survey.

Evaluating Who We Are

Through the evaluation, we sought to surface the impacts that IETSW provided participants to understand equity and its language and practices for an inclusive classroom. We gained insight into the participants' perceptions of the *who* in *who we are* through the reflection assignments they wrote for each workshop and the equity-minded survey they completed before and after IETSW. The reflection assignments, while designed as a personal and professional learning activity for participants, taken as a whole, were a rich data source for understanding how participants' perceptions of *who we are* changed as they worked towards building an equity mindset. The reflection assignments analysis, as formative assessment, provided insight into challenges and successes participants experienced throughout IETSW, which informed us about what was working and what needed to be modified. For example, participants noted that the participation in IETSW resulted in more positive and empathetic relationships with their students but that they often struggled in confronting biases or microaggressions. Learning about these struggles led us to add role modeling to address challenging classroom moments in some sessions.

The evaluators developed an Equity-Minded Survey (Kersey, Reinsvold, Keenan, & Parrish, 2022) that provided pre/post information about the extent to which participants developed positive dispositions toward equity practices over the course of IETSW. The survey, based on the framework by Bensimon et al. (2016), addressed specific knowledge about equity and uses of equity-minded language and practices. Results showed faculty had an improved understanding of equity and equity-minded practices regarding language, awareness of students' cultural experiences, and confidence to explain the consequences of racism. We were encouraged that these results indicated that participants recognized their responsibility to eliminate inequity in their instructional practices and that how they structured class time and assessments impacted the students marginalized by STEM.

Evaluating How We Teach

While faculty were generally enthusiastic about redesigning their syllabi to be more equity-minded, we were curious about how their enthusiasm played out in the syllabi they gave their students. Because the redesigned course syllabus was the most concrete deliverable impacting students, the evaluators compared the original and redesigned syllabi from an equity-minded perspective. To assess the extent to which the syllabi were equity-minded, the evaluators used the *Syllabus Review Guide for Equity-Minded Practice* (Center for Urban Education, 2018) to develop the *Equity-minded Syllabus Rubric* (Kersey, Reinsvold, & Keenan, 2022). The rubric rated to what extent faculty addressed academic success, academic care, and policies and connection. The analysis compared original and revised syllabi scores which showed improvements towards equity-minded syllabi. Improvements were mainly due to changes that encouraged students to seek help, provided a familiar language, used an inviting format, and normalized struggle. We did not see changes in policies and connection, and we used this feedback to enhance the connection materials and increase the focus on representation and deconstructing in the syllabus workshops. The results suggested the participants, through their syllabus, put into practice the knowledge of equity-minded practices and inclusion they were exposed to in the IETSW program.

Bringing It All Together

Equity-minded change requires introspection, the willingness to integrate new ideas and perspectives, and a willingness for faculty participants to confront their own biases and socialization (TL, TCSR). To challenge faculty assumptions and motivate change, we designed the curriculum to address these requirements multiple times throughout the series, with each progressive touchpoint building on participants' previous experiences in the program. For example, we introduced White privilege during the initial two-day workshop as we discussed an equity-minded syllabus; connected the concepts introduced in that workshop to our discussion on bias and socialization; deepened the engagement when we discussed dominant narratives in STEM; and actionized the work in the session focusing on social justice. By scheduling more challenging discussions later in the workshop series (Table 9.1), participants benefited from the knowledge they built during prior engagement with the topic. Having multiple opportunities to grapple with the material has the potential to challenge existing assumptions and lead to sustained changes in practice (TL).

Barriers

Throughout the five years we have been developing, refining, and offering these workshops, we have encountered three challenging barriers and identified some strategies to address them. First, making the roles race plays in IHEs and STEM accessible and how it impacts students in STEM were challenging. Strategies we used were to use IHE examples, use content examples related to the disciplinary expertise in the room, and provide additional resources for those who want to explore further. Second, our participants were almost exclusively White. To avoid asking the few participants of color to speak for their race, we used readings, videos, and activities developed by people of color. Finally, our biggest challenge was bringing the student voice into the room, which is important because it makes the impacts of race real to our participants. Our strategy here was to use vignettes about student experiences.

CONCLUSIONS

We learned much about how to do this work with faculty over the last five years. Our big takeaways, for those who want to adapt our activities or create their own, are aligned with our theoretical perspectives. First, from experience and TL theory (Apps, 1994; Gravett, 2004), change depends on surfacing and challenging assumptions participants have about the role of race in IHEs and learning. Second, from CRT (Bell, 1992), we have learned to focus explicitly on race, even when it is uncomfortable to do so. To include other identities, allowed faculty to avoid race. Third, to increase the likelihood that teacher-centered reform happened, we focused on small but impactful changes in practice; post-activities played a crucial role in supporting participants to implement change. Finally, when designing sessions around small, impactful changes, we learned to avoid the temptation to teach a theory. Instead, we applied theory to the context; participants wanted to know what to try with their students.

The IETSW program was successful because participants were willing to engage with the program content throughout an academic year. So, we conclude the chapter with a quote from a participant who reflected on the impact of IETSW on their cultural awareness and their teaching practices

I feel that the most lasting change for me is related to increased awareness. I was blindly unaware before of the extent of struggles that can face students who don't fit the same mold as everyone else, whether they be transfer students, single parents, or underrepresented minorities...Also, the realization of the extent of the impact of race on everyday aspects of our lives has changed me forever. (IETSW participant)

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For additional information about IETSW visit: go.unco.edu/STEM-IEC.

Author Note

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