

[DIVERSITY ACROSS THE DISCIPLINES]

Infusing Diversity in the Sciences and Professional Disciplines

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When we lead curriculum transformation workshops around the country, we almost always encounter more participants from the liberal arts than from the sciences and professional disciplines. Faculty in English, history, sociology, anthropology, ethnic studies, and women's studies seem to see a natural affinity for diversity in their curricula. In contrast, faculty in the sciences and professional disciplines often perceive their work as limited to

gies, and uses of power that advantage and disadvantage particular groups.

Transforming the Disciplines

Like most social institutions, academic disciplines tend to reproduce themselves. Because most disciplines (with a few notable exceptions) have been constructed and maintained primarily by white, heterosexual, financially privileged males, they tend to reproduce themselves as white, heterosexual, financially

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technical skills and a certain canon of disciplinary knowledge. Nonetheless, myriad opportunities exist within these disciplines to attend to issues of difference, power, and privilege and to transform courses around matters of diversity, inclusion, and social justice.

Too often, faculty in the sciences and professional disciplines have not been encouraged in their own educational journeys to examine disciplinary content and pedagogical practices from perspectives attuned to difference and power. But once introduced to key concepts and given opportunity to apply them, these faculty members can find creative and exciting ways to modify their courses to be attentive to gender, race and ethnicity, social class, sexual identity, age, ability, and religion, as well as the social structures, ideolo-

privileged, and male—not simply in terms of their demographic representation, but also in terms of their analytical frameworks. Often the disciplines' very structures, as well as the ways they are taught, tend to marginalize women, people of color, and LGBT students. These students' concerns are rarely at the center of the curriculum because invisible norms have shaped the disciplines to exclude traditionally marginalized groups. A simple additive approach (for example, including readings by women, people of color, or LGBT authors) cannot address these larger structural issues.

To facilitate curriculum transformation in the sciences and professional disciplines, we help faculty identify and understand the ways the curriculum, rather than being objective and value-neutral, is socially constructed

and highly politicized. We often begin by encouraging faculty members to examine the subtle and invisible ways in which their disciplines reproduce themselves. We encourage them to consider a wide range of issues that affect their disciplinary work: the curriculum and the hidden curriculum, faculty composition, disciplinary methodology, professional values (overt and covert), professional societies, hiring policies and practices (including rewards, awards, tenure, merit, and promotion), funding, projects adopted, unasked questions and unexplored values, ideology, language, corporate relationships, and compartmentalization of one's knowledge or tasks.

Next, we ask faculty to think about knowledge production as a socially constructed process in which power, privilege, and difference shape and maintain the disciplines in their current forms. We ask such questions as:

- How is knowledge constructed in your discipline, and who controls its production and dissemination? Who has access to knowledge, and who doesn't?
- How do funding structures affect knowledge production in your discipline?
- Are some people systematically disadvantaged by the way knowledge in your discipline is constructed, produced, or taught?
- How is knowledge production in your discipline gendered or racialized? How is it connected to social class?
- How do these factors affect the questions asked in your discipline? Are there certain questions that are asked and certain questions that aren't?

As we discuss these questions, we introduce literature on key concepts related to systems of oppression and encourage faculty members to make connections between this literature and their disciplines. For example, when

we introduce the concepts of white privilege or heteronormativity, we ask faculty members to identify ways white privilege or heteronormativity operates in their disciplines. We also invite faculty members to think about how their disciplines would look (including the different questions they might ask and different processes they might use) if they centered on traditionally marginalized groups. What would business look like if women were at the center of the discipline? What would public health look like if LGBT people were at the center? What would engineering look like if people of color were at the center?

The goal of these questions is to encourage course transformation rather than simple addition of content. Merely adding a few readings or a unit about the concerns of traditionally marginalized people simply maintains those people's outsider status, and students quickly realize that the additions are of secondary importance to the "real" curriculum. Curriculum transformation, however, challenges the foundations and structures of disciplinary content and calls for the perspectives and concerns of traditionally marginalized people to be as central as those of the dominant group. Transformed courses are truly and fully inclusive of a broader range of knowledges and learning styles. These courses challenge notions of disciplines as fixed and objective bodies of knowledge that exist apart from the people who teach and learn and research.

Finally, we ask faculty to consider how they might restructure their disciplinary teaching to focus on issues of difference, power, privilege, and social justice. We ask faculty to imagine:

1. Teaching scientific and technical questions in their social context, asking: What is the historical context for the scientific development, research, or technology in question? What problems have arisen, and why?

How have these problems affected traditionally marginalized people?

2. Helping students become ethical thinkers by asking: How do my values inform the way I practice my discipline? What shared disciplinary values form the context for my work? How do issues of power, privilege, and difference inform my work? What are the potential unintended consequences of my work?
3. Teaching students to develop knowledge, technology, products, and policy that will meet social needs by encouraging students to ask: What problem is to be solved, and for whom? What are the proposed solution's ethical, societal, and global implications? Does the proposed solution further the cause of social justice, or does it contribute to injustice or suffering? How might my work challenge systems of power and privilege that disadvantage members of traditionally marginalized groups?

Prompted by these inquiries, several faculty members in the sciences and professional disciplines at Oregon State University have transformed courses to meet the university's Difference, Power, and Discrimination requirement, which the university implemented in the 1990s in response to student demand. Rather than create a single course, the university decided to transform multiple courses so students would see how power, privilege, and social inequality are relevant across disciplines. For example, a microbiology course, *Disease and Society*, examines the movement of disease at the microbial level in relation to issues of race, gender, and social class. A course in exercise and sport science, *Power and Privilege in Sport*, examines how the unequal distribution of resources across gender, race, social class, sexual identity, ability, and age plays out in sports. *Social Ethics in Engineering* asks students to apply concepts of systems of oppression as they consider their professional



Susan Shaw talks with Ron Adams, dean of Oregon State University's College of Engineering, before leading a workshop for College of Engineering faculty. Photo by Justin Smith for Oregon State University.

development as engineers. A geosciences course, *Environmental Justice*, explores the impact of environmental racism on people of color, and a fisheries and wildlife course, *Multicultural Perspectives on Natural Resources*, considers how diverse social values affect changes in the physical landscape and biodiversity in the American West.

Examples from Engineering and Veterinary Medicine

We recently conducted two workshops, one for engineering faculty and the other for veterinary medicine faculty. The two workshops shared a number of similar features, but each dealt specifically with issues unique to each discipline.

We began the engineering workshop by asking faculty members to think about engineering's potential and limits in addressing social problems. A primary focus was the issue of technology's unintended consequences. After introducing the concepts of power and privilege, we discussed the example of the Toyota Prius. Engineers designed the Prius to be extremely quiet—so quiet that it poses a danger to vision-impaired people, who cannot hear it. Vision-impaired people are now asking the automotive industry to design automobiles that

have minimum noise levels. Other unintended consequences include the impingement on Native American fishing rights caused by hydroelectric dams and the rampant consumerism driven by engineering's focus on creating new products. We also examined two case studies that faculty members can utilize to explore the complex issues of privilege, power, and difference in relation to engineering: the Manhattan Project and Hurricane Katrina.

In the veterinary medicine workshop, we began by discussing climate issues related to the discipline's changing demographics (women now outnumber men in veterinary medicine programs). As we moved on to discuss content, we

talked about animals' vulnerability in human society and asked how faculty members might assess animal-human relations in the context of power and privilege. We concluded by asking faculty members to imagine how they might help their students think about issues of difference, power, and privilege in light of a range of questions, including:

- What is poverty's impact on the practice of veterinary medicine?
- How do cultural and gender differences affect the practice of veterinary medicine?
- What role do veterinarians play in organizations that help humans, and do veterinarians have an obligation to work toward improving human conditions?
- What ties does veterinary medicine have to pharmaceutical companies?
- What role do veterinarians play in global development work, in disasters, and in wars?
- What role do veterinarians play in developing legislation about animal welfare issues?

In both workshops, challenging faculty members to apply concepts of systems of oppression specifically to their disciplines was key to encouraging curriculum transformation.

Challenges to Consider

Curriculum transformation is not a quick or easy process, and it often occurs in small increments. While we have made strides on our two campuses, we still see room for growth. At Oregon State University, we need to add more science, engineering, agriculture, forestry, business, and health and human sciences courses to our Difference, Power, and Discrimination offerings. Yet even as we encourage faculty to develop new courses, we see many faculty members integrating questions of difference, power, and privilege and transforming

parts of their existing courses. Although content-based accreditation requirements sometimes constrain faculty members in their efforts to transform a course, faculty are finding that they can raise questions of power and privilege, place problems in new contexts, and problematize the disciplines themselves while still meeting content guidelines.

As institutions move forward to begin the process of curriculum transformation, they must examine their reasons for embarking on change. Our experience indicates that the sciences and professional disciplines are usually more resistant to change than the liberal arts. Often, this resistance originates with institutions that have not fully embraced principles of curriculum transformation and may simply be looking to satisfy accrediting institutions by suggesting "good faith" efforts to embrace inclusion. Just as students can quickly recognize when a curriculum addition is of secondary importance to the "real" curriculum, so too can faculty recognize when schools do not fully embrace curriculum transformation throughout the curriculum. Hence institution-wide commitment to curriculum transformation in all disciplines is imperative. Academic disciplines, invested in existing power relations, will not change of their own accord.

An invitation to consider disciplinary content and pedagogical practices from a perspective informed by privilege, power, and difference is most compelling when the institution fully endorses it. The institution must offer monetary compensation, recognize faculty development in tenure and promotion decisions, and consider this transformative work as a component of faculty research obligations. Curriculum transformation requires the full support of the institution and the individual, particularly in the sciences and professional disciplines. ☐

Suggested Readings on Difference, Power, and Discrimination

- CUDD, ANN. 2006. *Analyzing oppression*. New York: Oxford University Press.
- FRYE, MARILYN. 1983. Oppression. In *The politics of reality*, 1-16. New York: Crossing Press.
- HILL COLLINS, PATRICIA. 2008. Toward a new vision: Race, class and gender as categories of analysis and connection. In *Women's voices, feminist visions: Classic and contemporary readings*, eds. S. M. Shaw and J. Lee, 57-65. New York: McGraw-Hill.
- LORDE, AUDRE. 1984. Age, race, class, and sex: Women redefining difference. In *Sister outsider*, 114-123. New York: Crossing Press.
- MCINTOSH, PEGGY. 2008. White privilege and male privilege. In *Women's voices, feminist visions: Classic and contemporary readings*, eds. S. M. Shaw and J. Lee, 78-85. New York: McGraw-Hill.
- PHARR, SUZANNE. 1988. The common elements of oppressions. In *Homophobia: A weapon of sexism*. Little Rock: The Women's Project.
- YAMATO, GLORIA. 2008. Something about the subject makes it hard to name. In *Women's voices, feminist visions: Classic and contemporary readings*, eds. S. M. Shaw and J. Lee, 86-88. New York: McGraw-Hill.

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