

Designing for “More”: Writing’s Knowledge and Epistemologically Inclusive Teaching

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Drawing on data from alumni who have participated in a year-long faculty learning seminar, this article describes how working from writing’s professional knowledge can facilitate faculty from other disciplines to create “more” epistemologically inclusive teaching.

Introduction

Writing professionals understand that the focus of our discipline—working with people to study writing—leads to conversations about teaching that extend well beyond writing per se. That’s because writing is “never just writing” (Adler-Kassner). Instead, it is two things: the representation of knowledge-making in specific contexts, what we might think of as *writing as noun*, and a process that can be used to explore those contexts and practices, what we might think of as *writing as verb*. This latter perspective is reflected in Sandra Tarabochia’s assertion that WAC/WID facilitators can and should act as “designers” with faculty colleagues outside of our discipline, understanding that we can facilitate “investigation[s] of the process of change as an experience of learning” (72). This investigation, Tarabochia asserts, involves collaborative activity that contributes to faculty members’ understandings of their own and others’ experiences with meaning-making within the specific context of their own disciplines, especially as they occur through writing. (72–73).

This article reports on a study of faculty participants in a seminar that is grounded in this notion of writing’s professional knowledge. Labeled neither “WAC” nor “WID,” the seminar is based on the idea that writing is never just writing but is instead a product (writing as noun) and a process (writing as verb) integrally related to epistemologies and identities. These include disciplinary epistemologies and identities in which faculty participate by virtue of their membership in academic disciplines. They also include the epistemologies and identities that students bring to those disciplines, especially introductory courses designed to introduce them *to* those disciplines. The analysis here comes from research that investigates the question: is the seminar “working”? The term *working* is shorthand for enactments of writing’s professional knowledge: engaging faculty in the study of knowledge and

knowledge-making practices in their disciplinary contexts, then working with them to take actions to make these practices more explicit, accessible, and inclusive. The presumption is that engaging faculty in examination of these epistemologies and identities is *sui generis*—it must accompany the development or refinement of writing or other teaching strategies intended to provide students opportunities for disciplinary participation, enactment of epistemologically inclusive teaching. This study (and ongoing work with faculty) suggest, then, that WAC and WID activity always necessarily extends well beyond writing.

The idea that writing's disciplinary knowledge can foster investigations of epistemologically inclusive teaching is reflected in a number of threshold concepts: "writing provides a representation of ideologies and identities" (Villanueva); "writing is linked to identity" (Scott); "writing is performative" (Lunsford); or "disciplinary and professional identities are constructed through writing" (Estrem). This idea also builds on related theories beyond writing described throughout this study. When these theories are put into dialogue with one another, they provide ways to understand knowledge-making as an exchange between: (1) the epistemologies and identities of learners, and (2) the contexts in which learning takes place—courses created by faculty members with their own epistemologies and identities who operate within disciplinary contexts. For a process of exchange between learner and faculty/contextual epistemologies to occur, faculty members *must* make the knowledge-making practices (epistemologies and their enactments) visible and accessible for students. Writing is a representation of those practices; hence, examining the practices in relation to writing is crucial.

Especially important for this approach to considerations of epistemologically inclusive teaching are two frameworks for learning. The first is "threshold concepts" (Meyer and Land), concepts that shape the ways members of disciplines perceive, interpret, and communicate their worlds. The second is "ways of thinking and practicing" (Hounsell and Anderson), context-specific moves learners make within contexts that are bounded by threshold concepts. As learners (including faculty) develop expertise through an immersive process that is reflected in successful learning in these disciplines, the constituent elements of their expertise become more tacit, more difficult to understand as things that are not "natural" or "commonsensical." These constituent elements include, but are not limited to, the threshold concepts that form the basis for action-taking within disciplines (e.g., what questions are asked and not asked, what evidence or data is understood as appropriate, what methods for analysis are preferred; and of course how learning is represented, for example, in writing). When learners do not have access concepts, though, they are not able to participate in either practices or ontologies associated with them—and when this occurs, they are often unsuccessful. Research has shown that the struggles of students who do

not have this access, learners who are not what Joan Middendorf and David Pace refer to as “preeducated,” can be especially pronounced among underrepresented, low income, and first-generation students (3), and especially in STEM disciplines (e.g., Reigle-Crumb et al). The seminar discussed here seeks to address these issues by enabling faculty to develop a foundation for epistemologically inclusive teaching, and then to develop teaching strategies from that foundation.

Study Site and Background

Faculty included in this study are alumni of a yearlong seminar funded by a Title V grant from the US Department of Education. Institutions designated “Hispanic Serving” are eligible to apply for the funding; UC Santa Barbara was designated an HSI in 2014, and is also an AANAPISI (Asian American, Native American, Pacific Islander Serving Institution). Our student population is diverse. Institutional demographics point to a few characteristics: 30 percent are Chicana/Latina, 27 percent are Asian-Pacific Islander, 44 percent are first generation college students, and 40 percent are Pell grant eligible.

The emphasis in this seminar, as in the grant itself, is on creating affordances for faculty to build on their knowledge as they teach our diverse student population. The seminar’s goal is to enable faculty to develop a foundation for epistemologically inclusive teaching, and then to develop teaching strategies from that foundation. To achieve this goal faculty analyze disciplines, courses, and learning experiences—their own and their students’—through four knowledge domains, represented in figure 1.

The term *domain* draws on Peter Gärdenfors’ research into semantics and geography to refer to a space structured to contain related concepts (5). At the same time that they conduct this analysis, faculty develop pedagogical strategies to enact epistemologically inclusive teaching, situating them within one or more of these domains. The domains, which are illustrated extensively later in this study, are these:

- Disciplinary knowledge: knowledge-making practices within disciplines, that is, disciplinary epistemologies as represented in threshold concepts (Meyer and Land) and the ways in which those epistemologies are enacted (e.g., “ways of thinking and practicing” [Hounsell and Anderson]).
- Representational knowledge: ways that knowledge-making is represented, typically in writing
- Empathetic knowledge: understanding others’ identities and experiences; “forming and confirming” knowledge with others (Campelia)
- Learning knowledge: knowledge about how learning occurs—over time, with practice and feedback (e.g., Bransford et al; National Research Council).

Together, domains and teaching strategies constitute a “conceptual space,” “a [correlated] collection of one or more domains” (Gärdenfors, 26).

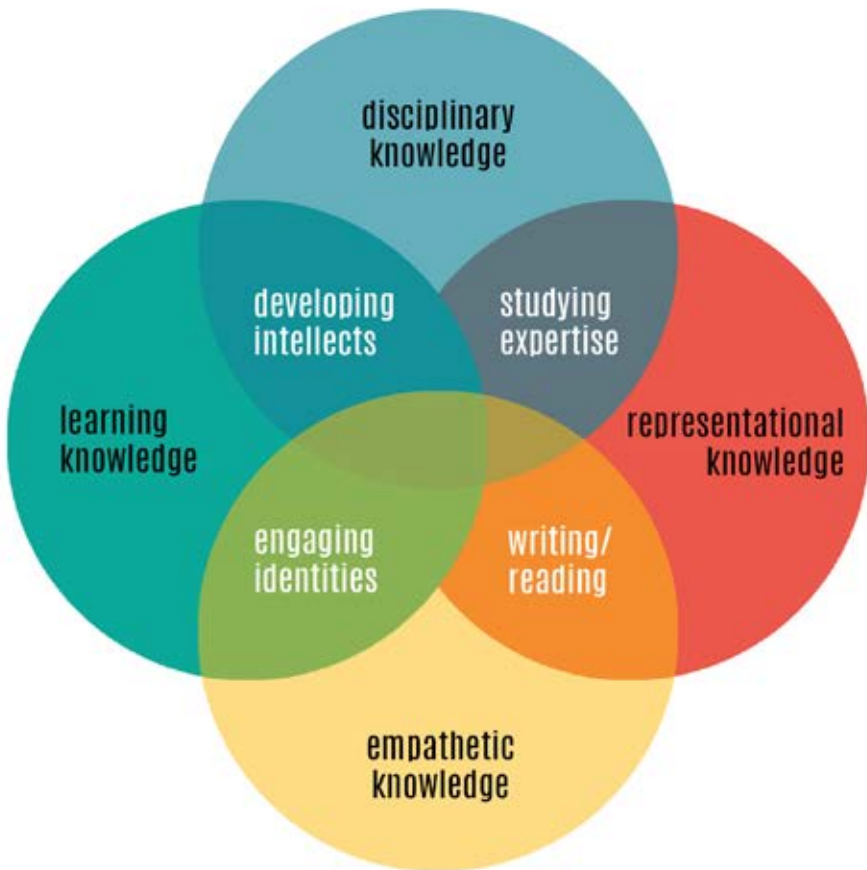


Figure 1: Knowledge domains and pedagogical activity model. Figure created by the author.¹

1. This visual, made by my brilliant colleague Madeleine Sorapure, emerged from the analysis of this study, as well data from earlier studies (e.g., Adler-Kassner and Majewski; Wardle and Adler-Kassner). While I have always said that its goal (or outcome) was to foster epistemologically inclusive teaching, when the seminar began in 2015 I could not have represented the pathways to this goal in the ways I do in this description, nor in the visual. This representation has emerged in collaboration with faculty in the seminar. As I have sought to understand the seminar’s effects (by interviewing and having focus groups with them), I also have shared the findings with them; they have helped to name some of these findings and distill them into visualizations like the one here.

What Working Means: “More” Epistemologically Inclusive Teaching

As above, the intent of this seminar is for faculty to structure pedagogical activities intended to facilitate learning through one or more of the knowledge domains outlined above, creating what Gärdenfors calls a correlated collection. The question that I sought to address in this study was whether the seminar was doing this, that is, whether and how faculty were designing pedagogical activities enacted through one or more domains. If they were doing so, the study then examined how that was occurring and where faculty saw the impacts—in their classes, with students, in departments, and/or beyond (i.e., to policies or approaches).

The data collected show how faculty are creating these collections by intentionally structuring teaching through the four domains: making disciplinary knowledge explicit and accessible, making expectations for composed knowledge (aka writing) visible and connecting those to disciplinary knowledge, enacting empathetic knowledge by creating structures to understand students’ perspectives and experiences, and taking into account what we know about learning in the process of creating courses. The data also show that how faculty do this, that is, how they structure these activities through knowledge domains in order to create epistemologically inclusive teaching, depends on the faculty members and their individual disciplines.

Faculty members’ efforts to create epistemologically inclusive teaching can be understood as falling into two broad categories. For some faculty, inclusive teaching means making these domains explicit so that students can more readily access the knowledge and associated practices of the disciplines. Extending recent work by Ann Pendelton-Jullian and John Seely Brown, I refer to this process as working “in the world,” that is, helping students learn to create things *within* the structures of disciplines. Working “in the world” contains elements of WAC pioneer Barbara Walvoord’s notion of “micro-level actions,” collaborating with faculty individually or through their departments, “chang[ing] individual teacher behavior by persuasion” (62–63). For others, inclusive teaching means beginning to dismantle some of the structures of their discipline, analogous to Pendelton-Jullian and Seely Brown’s idea of working “on the world.” Here, they say, people design “structures and practices . . . that shap[e] contexts themselves through actions taken and things designed (Pendelton-Jullian and Brown, 162). Inclusive teaching as working “on the world” addresses issues that Walvoord labeled “macro”—questions about relationships between structures, like curriculum, and institutional cultures. This idea of inclusive teaching also resembles some of the activity called for by stage two WAC advocates like Mahala and Swilky and addresses concerns raised by Susan McLeod that as WAC was institutionalized it would become “homogeniz[ed]” or “bland,” focusing on “merely” adding writing to existing courses rather than leveraging writing’s role in teaching and learning to “bring about changes” (343).

As a person committed to epistemologically inclusive and socially just teaching, I of course have my own preferences for how I would *like* faculty in the seminar to approach their thinking about and actions associated with this teaching. At the same time (parallel to, part of, and sometimes in conflict with that preference), I recognize that disciplines have distinctive characteristics and ways of making meaning—and those associated with my/our discipline cannot take precedence over those of another's. However, I can draw on extant research into analyses of meaning-making within disciplines to better understand faculty members' approaches (an act that, in fact, contributes to my own development of empathetic knowledge). Researchers have long studied disciplinary epistemologies and meaning-making practices (e.g., Becher and Trowler; Donald; Poole). Becher and Trowler, for instance, provide four broad categories to situate these approaches:

- “hard-pure,” disciplines like physics where knowledge is considered to be “cumulative, atomistic, concerned with universals, quantities, simplification”; knowledge is “impersonal and value free,” and there is “clear consensus over significant questions to address”;
- “soft-pure,” disciplines like history where knowledge is “reiterative, holistic, concerned with particulars, qualities, complications, personal, and value-laden; where there are “disputes over criteria for knowledge verification . . . and a lack of consensus over significant questions to address”;
- “hard-applied,” disciplines like mechanical engineering or medicine, where knowledge is “purposive, pragmatic, concerned with mastery of the physical environment, where criteria for judgment are purposive and functional”; and
- “soft-applied,” disciplines like education or law, where knowledge is “functional, utilitarian, concerned with enhancement of practice, and often results in protocols or procedures (Becher and Trowler 36).

Especially at the level of introductory courses, the experience of faculty in our seminar who belong to disciplines that fall within the “hard-pure” or “hard-applied” category—generally those coming from STEM disciplines—have chosen to work “in the world,” making their disciplinary practices more explicit. This is in part because they perceive a greater degree of consensus around what “knowledge” means and how it is explored and developed. I should note that the seminar includes a number of readings (e.g., Prescod-Weinstein; Dewsbury; Chamany; Tanner) that invite faculty to consider an alternative perspective, that disciplinary knowledge is personal and associated with values and ideologies of disciplines. Faculty within “soft-pure” and “soft applied” disciplines—generally humanities and social science disciplines—have sometimes (but not always) chosen work “on the world,” exploring (and sometimes

challenging) disciplinary knowledge. Here, too, the seminar includes invitations for faculty to realize that even as they are committed to inclusive practice, they are in positions of epistemological authority that requires them to establish some boundaries around knowledge-making practices, and that those boundaries are (by virtue of their appointments as successful faculty members at a research university) inflected by the disciplinary ideologies in which they have been inculcated and in which they participate (see Wardle and Adler-Kassner for an extensive discussion of the ideologies of disciplinarity, boundaries, and threshold concepts).

As for students, these ideas can be “troublesome” (Meyer and Land) for faculty; in keeping with stage 4 approaches to WAC and the reality that for faculty (as for students) change takes time and practice, readings are included as invitations for thought, not requirements for change. For this reason, I operationalize “working” as engaging in the four knowledge domains outlined here to *create greater epistemological access and opportunity for students within the context of faculty members’ disciplines*—including their disciplinary (and personal) identities and practices—amidst the tensions of those disciplinary knowledge-making practices outlined above.

To study whether or how the seminar has enabled faculty members to create greater epistemological access within the context of their disciplines, graduate researcher Danny Katz and I facilitated two ripple effect mapping (REM) sessions (Chazdon et al.) for faculty who had participated during its first two years (2016–17 and 2017–18). REM provides a structure whereby evaluators design a loose framework for participants in change activities to discuss perceptions of “effects.” However, beyond providing the discussion framework and attempting to record the debrief from discussions, evaluators do not engage in participants’ discussions or debriefs. We provided faculty with a set of questions about (1) what they saw as takeaways from their participation and how and whether these connected to existing ideas; and (2) if they had takeaways, what they saw as effects from those takeaways, things that had happened to them, with students, to their teaching, etc. (Note that each path included a “no takeaways/no effects” option, i.e. faculty could say, “I had no takeaways/there have been no effects.” [See appendix A for REM protocols given to faculty.])

Faculty began by conducting “appreciative inquiry interviews” with each other in groups of two or three. These are interviews designed to elicit rich descriptions of experience through discussion. Following the appreciative inquiry interviews, teams create ripple effect maps, visual heuristics that they could use to structure an analysis of the rich descriptions they provided in conversation with each other. In our sessions, we described to the assembled groups the process and visual heuristic that we imagined for these maps. Danny [who served as the primary facilitator] provided

more detail about the REM process, explaining that we had derived five possible categories for “effects” based on our analysis of previous REM efforts:

- No effect: the seminar didn’t do anything for you
- Small effect (local, isolated, etc.): the seminar only had an effect on you, and maybe you haven’t enacted it in your class (but you intend to)
- Medium effect (local, community, etc.): you enacted something you learned from the seminar in a class you teach and it influenced others as well
- Large effect (department, policy, etc.): you enacted something you learned in the seminar and it’s spread to other faculty, your department, or overarching ways of thinking
- Unexpected effect: the seminar had some effect that doesn’t work with this linearized version of the ripple effect. Had some distal effect or unexpected effect.

Danny told participants that if these sorting structures didn’t work for them, they were free to use any that seemed more appropriate.

Following team mapping, groups looked across the maps and tried to create an all-session map. Each of our two REM sessions included two groups. The two groups in the first session reviewed one another’s maps; the two groups in the second session were able to look across the maps of groups from the previous session and their own. While there were differences in placement of some “effects” across the groups (i.e., some labeled effects as “small” while others called them “medium”), there was consistency in discussion of effects across all of the groups and their maps. These consistencies were indicated in individual group maps and the collective maps created by the four teams in group discussion after the appreciative inquiry interviews.

Ten seminar alumni (of the twenty-four who were part of the first two years) participated in REM sessions held in December 2018. All but one (Bruce) were teaching classes that enrolled between 90–300 students. The majority of the evidence in this analysis comes from those faculty. The REM participants include:

Bruce - graduate program in environmental science. Bruce was the only faculty member teaching courses with fewer than 90 students in the study group.

Mary - Psychological and Brain Science. Mary’s focus in the seminar was a research methods course.

John L. - Ecology, Evolutionary, and Marine Biology (EEMB). John’s focus was on two courses, biology of infectious disease and biology of non-infectious disease.

Drew- Probability and Statistics. Drew was focusing on the first required statistics course students take after declaring their majors.

Samantha (a pseudonym) - teaching a large course in her department that fulfilled the university's "writing requirement" (analogous to a WI requirement).

Walid – Communication. Walid was focusing on a social marketing course.

John H. – Economics. John H. was focusing on an intermediate macroeconomics course.

Three other faculty participated in this study; the recording device for their discussion failed so their voices are included only in analysis of the large-group discussion (which was recorded by several other devices):

Vanessa – Psychological and Brain Science. Vanessa was also focusing on a research methods course.

Kathy – Molecular, Cellular, and Developmental Biology. Kathy was focusing on an intermediate biology course.

Morgan – Chemistry. Morgan was focusing on organic chemistry lab courses.

To provide additional illustrations of the points raised by REM participants, the descriptions below also include data from in-depth individual interviews conducted in June–July 2016 with faculty who participated in the first year of the seminar. These participants include Kate, a faculty member in History; Rolf, a faculty member in molecular biology; and Dolly, a faculty member in communication. REM transcripts, as well as earlier data from faculty interviews, show how faculty perceive the seminar to be “working,” that is, leading them to create what they consider to be epistemologically inclusive teaching through the domains of disciplinary knowledge, representational knowledge, empathetic knowledge, and learning knowledge. To illustrate, I next define each domain in greater detail and provide excerpts from faculty interviews to show them in action.

Domain 1: Disciplinary Knowledge

Disciplinary knowledge refers to knowledge-making practices within disciplines—disciplinary epistemologies and the ways in which those epistemologies are enacted. In the seminar, I ask faculty to access these epistemologies through thinking about threshold concepts (Meyer and Land) and ways of thinking and practicing (Hounsell and Anderson). Briefly, threshold concepts are concepts through which learners in any discipline must think to be successful. Ray Meyer and J.F. Land, the researchers

who initially identified threshold concepts, describe several attributes associated with learners' experiences with them. They are *liminal*—learners' progress toward them takes a one-step-forward-two-steps-back trajectory toward and away from passing through the “threshold” of a threshold concept. They can be *troublesome*, as they challenge learners' existing understandings and ways of operating for a number of reasons (Perkins 2006). They can be *transformative*—they change the ways learners think and understand. They also are *integrative*, as once learners “see” or think through threshold concepts, they affect their understandings beyond the immediate context. They are likely *irreversible*—it's hard to revert to earlier ways of seeing. Finally, they are associated with *expert practice* (Bransford et al)—experts see through and with threshold concepts as a series of patterns, where novices do not.

As experts in a research university, “disciplinary knowledge” is central to faculty members' identities; they are here *because* their disciplinary knowledge has been recognized and validated through processes associated with those disciplines as “communities of practice” (Lave and Wenger). They have earned advanced degrees, their research and/or teaching is regularly reviewed and validated by colleagues, and so on. Faculty are also deeply interested in and motivated by disciplinary knowledge, even when or if they seek to broaden its boundaries, as I note above in the discussion of working “on the world.” Intellectually, this knowledge is part of their “academic home” (Poole), where they are comfortable and have deep understandings of how to function. The seminar also asks faculty to focus on undergraduate courses *in* faculty members' disciplines, courses that are by definition intended to introduce students to fundamental precepts and ways of operating in those disciplines.

But in many of these courses, some learners—especially underrepresented and low-income learners—are less successful than others. This is especially true in STEM disciplines; on our campus it is also the case in some social science disciplines. Extending from research in writing studies (e.g., McCarthy, Carroll; Beaufort) and building on extensive work in other disciplines (e.g., Bransford et al.; Chamany; Tanner), the seminar begins by asking participants to engage with *theoretical knowledge* about epistemologies of disciplines articulated by examining threshold concepts (Meyer and Land) and/or ways of thinking and practicing (Hounsell and Anderson), and *practical/experiential* knowledge about teaching and learning in disciplines.

Discussing “takeaways” from the seminar, faculty in the REM sessions described a number of features associated with disciplinary knowledge as they defined threshold concepts or ways of thinking and practicing. Faculty also returned to these elements of disciplinary knowledge in their discussions about “effects” of the seminar. Walid (communication) described a threshold concept in the social marketing class that he was focusing on in the seminar: “[the] concept of reciprocity . . . that we work on everything communally” and people are not bringing expertise to collaborators.

Mary (psychology and brain science) named “what a hypothesis is” as central to the disciplinary knowledge that was foundational for her research methods course. John L. (EEMB) didn’t name specific disciplinary concepts, but did discuss the importance of identifying these concepts for students: “if they learn nothing else,” he said, “then they should learn the threshold concepts because that’ll allow them to move to a new level, perhaps.” In in-depth interviews, year 1 participants (not part of the REM study) also named other elements of disciplinary knowledge that they considered to be critical for successful learning: using the “scientific approach” to study communication (Dolly, communication), participating in science as a researcher “designing experiments that answer questions with unknown outcomes” (Rolf, molecular biology), “analyz[ing] why and how certain historical, social, political narratives speak to particular audiences in particular times and places” (Kate, history). The domain of disciplinary knowledge is perhaps most accessible to faculty because it is closest to their everyday lives in the academy; at the same time, that closeness makes outlining its boundaries all the more important and, sometimes, challenging.

Domain 2: Representational Knowledge

Where disciplinary knowledge is perhaps most familiar to seminar participants, representational knowledge is the domain most likely to feel familiar to those in writing studies. It extends directly from the expertise of writing: “how learning is represented,” that is, through writing or other forms of composed knowledge. This idea is perhaps the central organizing principle of WID research, which studies “the writing that occur[s] in disciplinary classes” (Bazerman, et al., 10). It is reflected in threshold concepts of writing studies: writing is a way of enacting disciplinarity (Lerner); disciplinary and professional identities are constructed through writing (Estrem), genres are enacted by writers and readers (Hart-Davidson). When faculty from other disciplines express concerns about student writing to writing instructors or program directors, their concerns are often about representational knowledge, the idea that students “can’t write” or are struggling to write appropriately in their courses or disciplines. In the seminar, faculty worked through theoretical knowledge about how learning is represented in writing, as well as practical/experiential knowledge of writing as part of the learning process (both their own and their students’).

REM session participants described a number of takeaways associated with representational knowledge. Samantha, a faculty member teaching a writing intensive course in her department, said that she was “trying to think through the diverse learning environment or skills environment, and thinking about learning in that way.” Her “main concern” was “design[ing] assignments that were clear, that were not asking [students] to do too much.” John (EEMB) said that “I realize[ed] that just being able to write with a new set of terminology, or being able to speak with a new

set of terminology, is difficult for students.” This realization, he said, “made me think more about the way I grade exams . . . in terms of even a short answer question. If it’s worded oddly does that mean the student doesn’t understand it, or does it mean they’re learning to use this new terminology?” Drew, from statistics, followed John’s comment, saying that he now gives students examples of “what I want the write up to look like.” By considering the role(s) that writing plays in students’ learning within their classes and disciplines, faculty come to understand representational knowledge as a practice that is integrally related to other domains, rather than a stand-alone or separate activity.

Domain 3: Empathetic Knowledge

“Empathetic knowledge” is developed as faculty consider how learners represent themselves and their identities *in* learning. Historically, empathetic knowledge has been used as a shorthand to refer to degrees of enactment of two kinds of empathy: cognitive, that is, the ability to understand the perspective of another, and affective: “the experience of emotion, elicited by an emotional stimulus” (e.g., Cuff et al 147; Pendelton-Jullian and Brown 148). More recently, though, researchers like medical ethicist Georgina Campelia have redefined empathetic knowledge as a *reciprocal practice*: something that is co-constructed as people—in this case, faculty and students—seek to learn about one another’s perspectives, identities, and experiences while simultaneously considering our own. Enacting empathetic knowledge as a practice, faculty members’ roles are to look for moments of intersection and divergence among identities and experiences, attempting to “form and confirm knowledge with others” (Campanella 530)—rather than just trying to find ways for others to approach their disciplinary knowledge, or understand how people are doing so. When I shared this model with faculty participants, they also felt it important to add metacognition to this domain, since that implied reflexive awareness of one’s own actions in relation to perceptions of others’ positions, responses, and actions.

Especially in the domain of empathetic knowledge, too, the literature on racial stereotyping and racism (e.g., Steele; Yosso et al.; Milem et al.), the learning experiences of underrepresented learners (Mallinson and Charity Hudley; Charity Hudley, et al.), and the construction of disciplinary knowledge practices as they relate to race (Chamany; Prescod-Weinstein) are central. Depending on their experiences as learners and their disciplines, faculty have greater and lesser degrees of experience with this focus, and I find it crucial in the seminar to make room for multiple ways of thinking about and acting on these ideas. Thus, seminar participants read peer-reviewed literature on issues associated with identities and learning, as well as pieces published in more mainstream publications (including some written by academics, e.g., Coates; Nadworny; Jack). Additionally, faculty conduct interviews with one of their former

students—preferably those who didn't do very well in their course. With the student's permission, these interviews are transcribed and become an additional set of readings for discussion.

In group discussions following appreciative inquiry interviews, both seminar alumni groups placed empathetic knowledge centrally in their maps. Faculty indicated that they understood more about students and their experiences, a manifestation of empathetic concern; understood how those experiences were different from their [the faculty members'] own; and thought about these as they structured their courses. For instance, faculty reflected on how they reflected on their own experiences as learners and how this reflection affected their thinking about teaching. Walid (communication) realized that coming from a highly educated family,

the thing that I definitely want to take away is the extent to . . . [I come into class with] assumptions. . . . [L]earning came very easy to me and I knew the tricks. I don't know how it came to me but I knew the tricks and I knew how to study. I knew how to plan how long to take on each exam. I had these tricks in place. And it was a good reminder that, and I sort of assume that to be the case for everyone, which is definitely not the case, especially for first generation.

John L. (EEMB) also thought the differences between his experiences and that of his students. Reflecting on the availability of information for students, John L. said, "it's easier for them, but in some ways it's harder, I realize. And I hadn't really—I'm, I knew this. It was something I knew but hadn't addressed, hadn't really had a chance to think about with people." Bruce, a faculty member in ecology, referred to the importance of "understanding at a deeper level the diversity of student backgrounds and the consequential differences in what they're bringing to the table." Mary (psychology and brain science) described realizing that it was helpful for her to share her own experience with students, sharing with them "how I came [to be a faculty member] and how my parents didn't go to college so I was a first generation student." Mary, for instance, said that "One thing I really got out of it was the idea of how students are just going from class to class. . . . They're required to think or how they're supposed to approach problems or . . . reading or . . . anything . . . assignments in different classes are just so different." Mary, Walid, and John H. (economics) also described the effects of increased empathy: "We all talked about how we ended up with more empathy for our students. So that's kind of local to us and then [we talked about] various ways that we changed . . . how we taught the class. . . ." Concurring with a comment about having "more empathy" for the students in the group discussion, for instance, Samantha said, "I didn't go in thinking that would happen, but that's exactly happened . . . I had more empathy because I knew more about them."

Domain 4: Learning Knowledge

Learning knowledge refers to considerations of processes associated with learning. Several principles from the research underpin this portion of our work. First is the idea that experts are able to understand the study of their subject within disciplinary boundaries. These boundaries are rooted in threshold concepts (Meyer and Land 2006). When novice learners encounter these concepts, though, they must undergo a process of learning about them. This process can be troublesome for a variety of reasons, for example, it can bump up against existing ideas or challenge inert knowledge or ways of understanding the world (Perkins). Once experts perceive subjects through threshold concepts, they are better able to undertake learning in the contexts where those concepts are situated because they better understand what kinds of questions to ask (and not ask), how to interpret evidence or data, and how interpretation is represented [generally in writing]. The ability to perceive these expectations also facilitates learners' abilities to make conceptual connections between different ideas, producing "critical thinking" or "analysis" that serve as the hallmark of learning. Another important element in this domain is time—that is, the time it takes to approach, engage in, and manifest learning. The time element is especially important given that UCSB is on ten-week quarters.

Study participants described this knowledge through the reading and through their experience *as* learners in the seminar, often blending the two together in their responses. John L. said "It was really interesting for me to see how students might come into my class from a social science background and have difficulty using the terminology . . . not because they're poor speakers or poor writers. It's just because it's new to them." Drew, John L's interview partner, immediately agreed: "we . . . talked a lot about . . . the idea that students don't inherently come into your course knowing how to navigate your course."

Consistent with the last part of John L. and Drew's comments, participants also described their understandings of learning knowledge through course concepts. Economist John H. discussed his evolving understanding of the learning bottlenecks that were faced by students in his high-stakes intermediate macroeconomics course. "They just view solving [economic] problems as mathematical process and have no idea what the mathematical steps mean. Whereas, I go through these problems . . . I know what these processes mean. So, I have to be cognizant of that . . . I can't take it for granted when I talk to a student that when I say I'm taking a derivative that they really know what a derivative means conceptually and not just mathematically." And participants discussed their evolving understandings of students' movement between classes through understandings of learning knowledge. As these comments indicate, faculty participants' understandings of learning knowledge are deeply rooted in disciplinary knowledge and representational knowledge, as well.

Epistemologically Inclusive Teaching: Pedagogical Activity as Intentional Action Through Knowledge Domains

“Epistemologically inclusive teaching,” as I describe above, is defined here as teaching that makes explicit knowledge-making practices (epistemologies and their enactments) visible and accessible to students and provides students the opportunity to engage with those practices. For some faculty, this means making practices more explicit so that students can see and participate in them more readily (“working in the world”); for others, it means making practices more explicit so that students [and faculty] can interrogate and change them (“working on the world”). The pedagogical activities that faculty develop in their courses—from structuring a curriculum, to designing assignments, to providing materials via lecture or discussion, to assessing student work—are manifestations of epistemologically inclusive teaching practices, the enactment of how faculty seek to create “more” inclusive spaces in their courses and enable learning that works in the world or on the world.

The REM sessions demonstrated how faculty developed and implemented epistemologically inclusive teaching practices, locating them as intentional actions that were situated within one or more of the four knowledge domains (disciplinary, representational, empathetic, learning). This emphasis on intentional action that is connected to a domain is critical, as it counters the idea that “good teaching” or “active learning” can be achieved through the use of tips and tricks, that is, the kinds of strategies that are sometimes highlighted distinct from context on commercial websites, or reflected in requests to writing faculty members for course assistance, for example, whether we can offer one-off workshops on things like “commenting on student writing.” But creating a division between the other domains and writing-teaching-learning activities has long been a central concern among WAC faculty (e.g., Walvoord; McLeod 1989; Mahala and Swilky). To illustrate how faculty enacted epistemologically inclusive teaching in their disciplinary contexts, then, I next draw on transcripts of REM sessions to illustrate this idea in action. Prior to each transcript excerpt, I indicate the knowledge domain(s) with which the faculty members’ comments are associated.

John L. and Drew: Working in the World

John L. (EEMB) and Drew (statistics) provide a compelling illustration of faculty connecting pedagogical activity through the four knowledge domains in order for students to work *in* the world. This means that John and Drew are creating more accessible ways for students to access the knowledge of their disciplines through teaching practices. In this excerpt, they are describing their takeaways from the ONDAS seminar.

John L.:

Empathetic: I think the main takeaway I got from it was what it is like to be a learner again

Learning: so it was really interesting for me to see how students might come into my class from a social science background and have difficulty using the terminology for example, (Representational/Disciplinary) not because they're poor speakers or poor writers. (Learning) Not because they're poor speakers or writers, but It's just because it's new to them.

Drew:

Learning/Disciplinary/Pedagogical activity: Something I took away from the beginning . . . was . . . thinking about what are the hurdles or the pieces of the course that are going to trip up students and trying to be conscious about explaining those.

Learning/Disciplinary: I also we thought talked a lot about . . . the idea that students don't inherently come into your course knowing how to navigate your course . . . that was a big part of thinking about how what my expectations were for the students . . . that the students didn't know what those were, that they . . . maybe didn't understand those things.

John L.:

Learning/Disciplinary/Empathetic: I love having these non-STEM majors in my [general education] classes, but I hadn't really thought too much about how difficult it is for them . . . [N]ot just this aspect of different expectations and different writing expectations in different subjects . . . I realize that just being able to write with a new set of terminologies, or being able to speak with a new set of terminology, is difficult for the students.

Pedagogical activity: It's really made me think more about the way that I grade exams . . . in terms of even a short answer question, if it's worded oddly does that mean the student doesn't understand it, or does it mean they're struggling to use this new terminology?

Drew:

Pedagogical activity: In terms of thinking about my teaching, this wasn't the direction I was thinking about my teaching. I was thinking more about using tools I could use. Oh, I've got to put some stuff up online and I've got to put interactive exercises and things like that . . . [But] there's a bunch of things that I do differently now. . . . I certainly structure my syllabus at the beginning where

I highlight, okay, these are the three threshold concepts in this course, without saying that literally to them, but I sort of say these are the three sort of key ideas that we're working towards in this course. . . .

Representational: I'm very conscious now when I'm giving assignments of having more guidance as to how I want them completed. For instance, we do data analysis labs and I give them an example of what I want the writeup to look like.

In this exchange, John L. and Drew are connecting pedagogical activity through the other domains associated with pedagogical expertise, expressing those ideas in ways that demonstrate their application to teaching students to work “in the world.” Both are talking through the domains identified here to design teaching that helps students more easily access and work with ideas associated with their classes and disciplines that they consider important. Figures 2 and 3 provide a visual representation of small portions of their discussion. In each, elements of their dialogue are plotted in the vicinity of the domain with which they are most associated. The pedagogical activity that these considerations connect to is located in the center of the diagram.

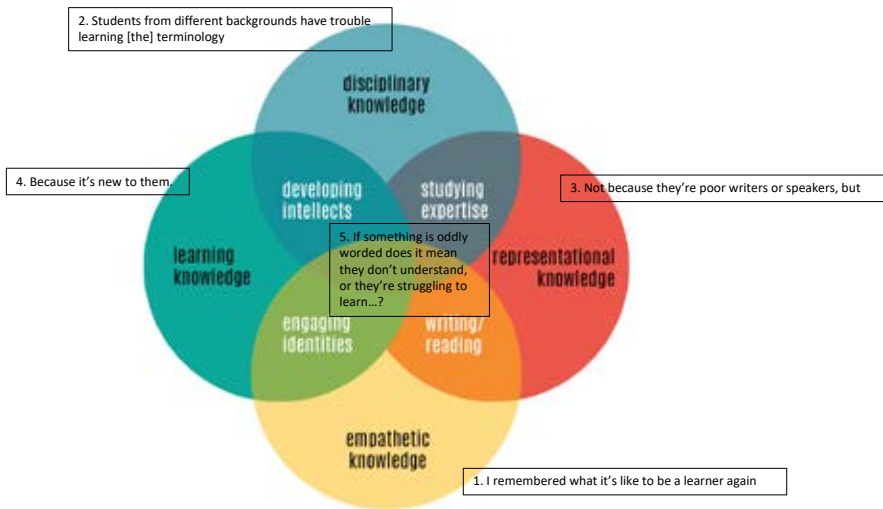


Figure 2. “In the world”: Partial representation of John L.’s enactment across pedagogical domains. Figure created by the author.



Figure 3. “In the world”: Partial representation of Drew’s enactment across pedagogical domains. Figure created by the author.

Walid: Working on the World

John L. and Drew’s excerpts demonstrate how faculty described effects that here are associated with the idea of more accessible practices to enable students to work “in the world,” creating more accessible pathways for students to access the disciplinary and representational knowledge of the discipline through faculty members’ own understandings of empathetic knowledge, learning knowledge, and pedagogical practice. Excerpts from Walid’s descriptions of takeaways from the faculty seminar demonstrate how these pathways can come together to illustrate working “on the world.” This involves working on structures and practices to change them and to potentially change the contexts where design takes place. To show this sense of “working,” I again break Walid’s contributions into sections that correspond with each of the four domains: disciplinary knowledge, representational knowledge, empathetic knowledge, and learning knowledge. I also note the intentional connection to pedagogical practice included in the contributions. Figure 4 illustrates correspondences with the model outlined here.

Disciplinary: So the biggest takeaway . . . I sort of landed on this concept of reciprocity with communities . . . the idea . . . that we work on everything communally and I’m not bringing my expertise to them. . . .

Pedagogical practice: And literally as we were talking about this idea about our communities we're working with I said what would it look like if I fully applied that ethic to this class?

Representational: And I had them write and turn in stuff.

Empathetic: My TA read [what they handed in] and said [students seemed to be complaining]. But I tried to pause and say . . . let's really honor them, which is what I was trying to do. . . .

Pedagogical: [As a result of taking their feedback seriously], I changed the syllabus organization. I changed the number of assignments. I changed the type of assignments. I changed about a third of the things that I did . . . I really sort of pushed the idea of honoring students as a community myself, and how well I was doing that or not as part of this class. . . .

Walid's description of the effects of his takeaways—redesigning multiple elements of his course, including the ways in which students could provide input into that design—provides an illustration of how he created more opportunities for students to expand the epistemological boundaries of the class extending from the threshold concept that he identified.

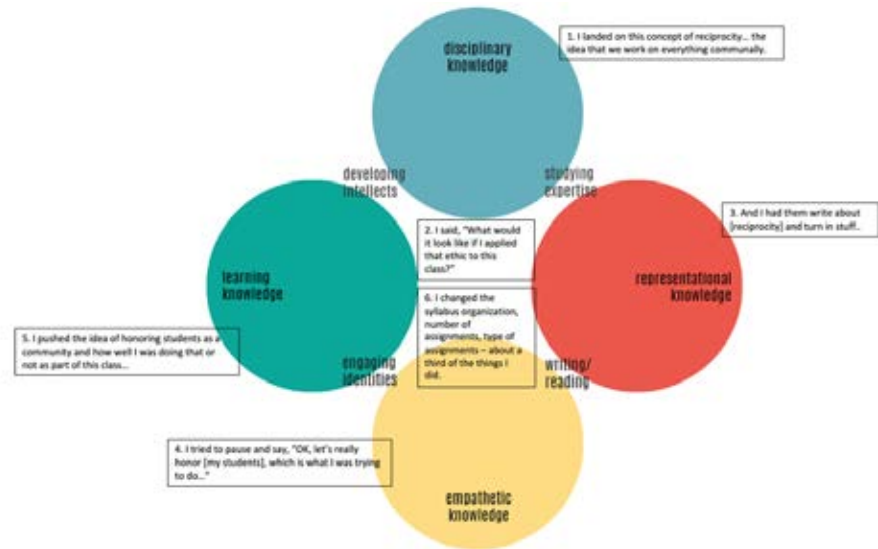


Figure 4. “On the world”: Partial representation of Walid’s enactment across knowledge domains

Writing's Knowledge and Faculty Learning

The model that I've used to describe these “more” inclusive practices—focusing faculty learning within and across domains—has gradually emerged from the three years of this seminar, as well as from data collected from seminar participants in this study and a previous one (Adler-Kassner). Conceptually, it draws heavily on work by threshold concepts researchers and others who have focused on faculty learning through conceptual frameworks (e.g., Meyer; Timmermans; Entwistle; Irvine and Charmichael; Bunnell and Bernstein; Wardle), as well as on research to understand faculty change (e.g. Martensson et al). Part of this effort has also involved creating ways for faculty to act on the integral connections between each of these domains, especially as they connect to pedagogical practice. The model also has been influenced by the necessity to connect these domains to practical strategies that faculty can use in their teaching. The challenge here, as for when faculty ask writing teachers for “quick tips” (e.g., “can you do a forty-five-minute workshop on commenting on student writing?”) is this connection between conceptual theory and actual practice. As in the case of the “forty-five-minute workshop on quick tips,” teaching activities must be intentionally connected (conceptually and in operation) by faculty to and through the other domains here—disciplinary knowledge, representational knowledge, empathetic knowledge, and learning knowledge,. Otherwise, the chance of understanding what they are intended to do, much less whether or not they are achieving their effect, which is to say “working,” is virtually impossible to understand or assess.

The emphasis on intentionality and the location of teaching activities within specific domains is closely affiliated with pedagogical expertise outside of writing studies, as well. Based on an extensive review of the literature, for instance, Elvira et al. provide ten “instructional principles” framed through a theory of pedagogical expertise. They place these into three large categories: “Transforming Theoretical/Conceptual Knowledge into Experiential/Practical Knowledge” (192), “Explicating Procedural/Experiential Knowledge into Conceptual/Theoretical Knowledge” (195), and “Reflecting on . . . Practical and Conceptual Knowledge by Using Self-Regulative Knowledge” (196). Elvira et al.’s categories can be seen as a parallel framing of the idea proposed here, that epistemologically inclusive teaching involves situating activities within the four knowledge domains I outline: disciplinary, representational, empathetic, and learning. Similarly, Novak et al, whose work on concept mapping represents an attempt to provide structural practices to link learning behaviors and processes, contend that learners (in this case, faculty learners) must have a “*conceptual* understanding of the phenomenon they are investigating” for activities to contribute to their “relevant knowledge” (p. 4).

Ian Kinchin has built on the foundation laid by Novak et al. to explore expert learning (and teaching). Advancing an argument that itself reflects extensive research on novice-expert practices (e.g., Bransford), Kinchin then identifies a paradoxical challenge if these domains are not integrated into teaching practice. Experts, he says, are able to both connect discrete ideas in linear patterns, creating “chains” of practice, and to connect those chains to other chains in meaningful and hierarchical ways that are situated within contexts, creating what he calls “nets of meaning” (2–3). But often, when teachers create lessons for students, “the[ir] complex (often hierarchical) understanding . . . is converted to a linear . . . sequence of lecturers and tutorials. From this the student is expected to construct [his or her] own understanding of the topic. The students’ understanding is then assessed using a linear format (such as an essay or a multiple choice paper). In such scenarios the hierarchical structures held by student and teacher remain private whil[e] only the linear translation is shared for scrutiny” (4–5).

Consistent with the idea of employing writing’s professional knowledge to facilitate learning, then, data from this study, distilled into the knowledge domain model outlined here, illustrates how writing professionals can create ways for faculty to explore disciplinary, representational, empathetic, and learning knowledge and then to apply that learning to their teaching. For the model I have outlined here, the literature associated with the development of expertise, especially work by I. M. Kinchen and references in that work to concept mapping have been especially important. The argument advanced in these texts, that the construction of hierarchical maps that are joined together through expressions of intentional practice, has been generative for me and as I put the ideas embedded in it into practice, for faculty. This occurs as faculty learn within each domain and, in some instances, map their understandings along different dimensions—“geometrical structures” (Gärdenfoers 6) that help to guide the application of participants’ understandings and ideas—within each domain. For instance, within the domain of “disciplinary knowledge” are concepts associated with articulating epistemologies and ontologies of disciplines (such as “community of practice,” “threshold concepts,” and “ways of thinking and practicing”). The vertical dimension in this domain, “disciplinarity,” locates “disciplinary concepts” at the top and “subdisciplinary concepts” at the bottom. The horizontal axis, “level of learner,” locates “novices” at the left end and “experts” at the right. Figure 5 is a heuristic I use often with faculty to think about these dimensions, asking them to focus their thinking or locate their ideas within its boundaries.

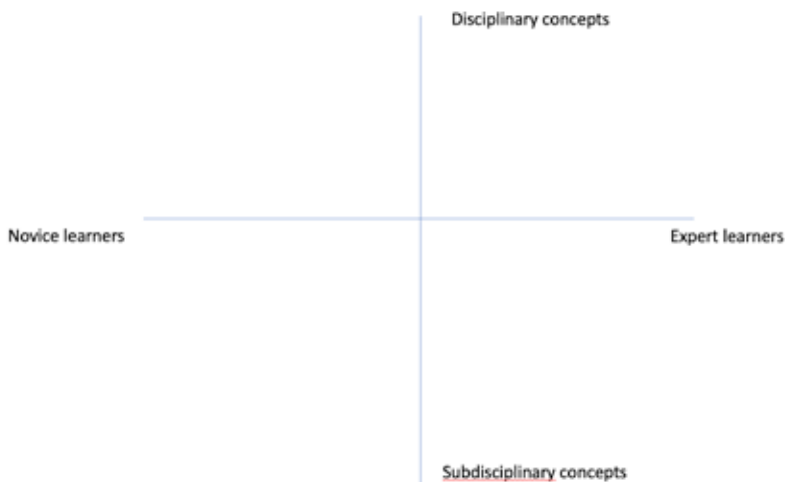


Figure 5. Disciplinary concept/learner heuristic. Figure created by the author.

While separating faculty members' reflections into domains (and dimensions within each domain) may seem to pull apart activities and conceptualizations that are integrally related, the very act of pulling them apart, like layers of an orange, seem to enable faculty to understand and then to reconstruct/redesign their teaching into a different whole. From the perspective that writing is composed knowledge that is grounded in epistemologies, identities, cultures, contexts, beliefs, and practices, then, people who are *in* writing—that is, writing studies professionals—can work with others to think about writing from this perspective, too. That is: we can work with others to move understandings of writing from questions of the practical (what kinds of assignments can I create? How can I give effective feedback?) to questions about composed knowledge (what does good learning and writing look like here?) and processes of composing (can I use writing to better understand? To help students better understand?). As this study shows, faculty find that participating in a seminar that extends this perspective affects their teaching in multiple ways. As the analysis of the transcripts through conceptualizations of expertise suggests, it also seems to contribute to the development of teaching expertise that is manifest in more epistemologically inclusive teaching practices.

Acknowledgment

Thank you to Madeleine Sorapure for (yet again) creating brilliant visuals to illustrate my thinking. Thanks, too, to *WAC Journal* reviewers who provided valuable feedback on the initial submission of this article.

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Appendix A: REM protocol

Faculty questions

Stage 1: Inquiry interviews (~30 minutes, participants interview each other)

1. Your name, name you'd like to be referred to for this research (if not your name), and your discipline?

Part 1: Reflection

1. What do you see as takeaways, if any, from the ONDAS seminar?
 - a. If you didn't have any takeaways, why do you think you didn't?
 - b. If you did: did these takeaways connect to existing ideas that you had?
 - i. If so, what were those and what were the connections?
 - ii. If not, what was new about them, and why did they strike you as potentially useful?

Part 2: Implementation

1. If you have had takeaways:
 - a. Have these takeaways had effects for you? Please be as specific as possible: class approaches, assignments, activities, or something that you've thought about since participating in the seminar. Can you make connections from your takeaways to these specifics?
2. If you haven't had takeaways: what do you think prohibited or prevented you from taking things away from the seminar?

Part 3: Effects

1. If you have had takeaways:
 - a. What do you think has happened – to you, with students, to your teaching – connected to your takeaways? Please be as specific as possible – focus on a person, class day, or something else if you can.
 - i. What of these effects did you expect? What didn't you expect?
 - b. If you would like to: is there a student you think demonstrated especially impressive work to demonstrate these effects? What did the student do?

Stage 2: Mapping

The following text was provided in a brief (10 minute) slide presentation:

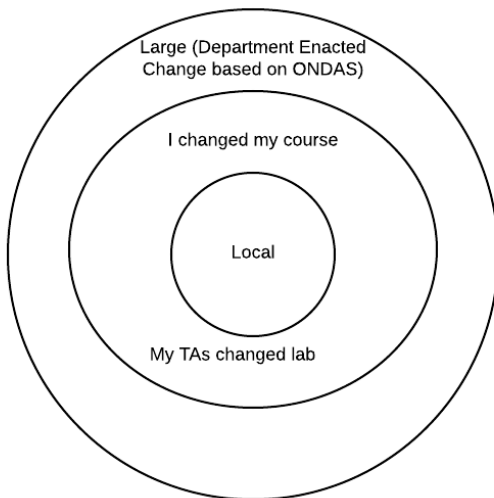
Slide 1: Goals

- Simple: Trying to figure out what's happening by mapping, metaphorically, how the program has influenced your actions as faculty/instructors, locally and otherwise.
- The metaphor is imagining a pebble thrown into a pond:
 - Bluntly, the pebble represents the ONDAS seminar. Has it had an effect on the pond?
 - The effect of the pebble extends outwards, with local effects as well as unexpected effects via ripples

Slide 2: Consider three levels of effects

- No Effect: The ONDAS Seminar didn't do anything for you
- Small effect (local, isolated, etc): ONDAS only had an effect on you, and you maybe haven't even enacted it in your class (but intend to).
- Medium Effect (local, community, etc): Enacted something you learned from ONDAS in a class you teach and it influenced others as well
- Large Effect: Enacted something you learned in ONDAS and it's spread to other faculty, your department, overarching ways of thinking
- Unexpected Effect: Some Effect that doesn't work with this linearized version of the ripple effect. Had some distal effect, unexpected effect

Slide 3: possible REM model



Slide 4: Examples (from Chazdon et al)

