

# ENGINEERING COMMUNICATION AND THE GLOBAL WORKPLACE

Preparing professionals and global citizens

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Excellence in communication continues to be important for professional success in engineering. However, the norms associated with communication competence have shifted to include communicating with technology, impacts of the global market and social context on communication, and mutual respect and appreciation for disciplinary and cultural differences. These subtle shifts demand that we reimagine our approach to communication instruction to prepare engineers who can communicate in the global workplace across a diverse, international audience. Our purpose is to show how communication in the disciplines (CID) can be the avenue for preparing engineers for global participation and citizenship. We use the concept of metaphor to show how current CID work emphasizes communication as a tool to serve professional goals. We offer the metaphor of voice for (re)imagining a broader approach to CID that will prepare students for communication in



**CONNEXIONS • INTERNATIONAL PROFESSIONAL COMMUNICATION JOURNAL**

2013, 1(2), 81–105

ISSN 2325-6044

the global workplace by positioning communication competency as a powerful, consequential interaction.

**Keywords.** Communication in the disciplines, Professional communication, Citizenship, Metaphors.

The National Academy of Engineering (NAE) advocates an understanding of engineering education that is considered in a global context (2004). The new global economy impacts engineering work such that technology has changed information sharing, collaborative practices, and the nature of work and workplaces. Increasingly, engineers are working as parts of virtual teams comprised of expert knowledge workers across multiple disciplines located around the globe. Excellence in communication continues to be required for professional success, but the norms associated with communication competence have shifted to include communicating with technology, the impacts of the global market and social context on communication, and mutual respect and appreciation for disciplinary and cultural differences. This subtle shift in communication competence demands that we reimagine our approach to communication instruction to better prepare engineers who can communicate in the global workplace across a diverse, international audience.

Approaches to communication instruction in engineering can include requiring writing or communication courses, collaborating with communication and writing centers, and integrating communication and writing programs (e.g., Ford & Riley, 2003). Regardless of pedagogical approach, engineering communication initiatives typically incorporate the teaching of context-specific communication skills, or communication in

the disciplines (CID) (Dannels, 2001); that is, standards of professional communication are positioned within the norms of engineering work. Principles of situated learning provide the foundation for this theoretical approach that advocates locally constructed communication competencies, instruction in discipline-specific genres, and context-dependent assessment (Dannels, 2001). The primary purpose of CID is professional preparation, driven largely by recommendations from accrediting agencies and industrial representatives.

In current practice, CID instruction emphasizes communication skills training, in part because the primary purpose is professional preparation (Dannels, 2001; Sullivan and Kedrowicz, 2012). That is, CID practitioners work with engineering colleagues to develop instruction in oral and written communication competencies, teach various genres of communication, and provide assessment that takes into account the engineering norms of professional communication. Standards of communication competence, instruction, and assessment are situational and negotiated between communication experts and engineers to prepare students for the professional communication activities associated with their field.

While CID offers many benefits, critics of this approach (e.g., Fleury, 2005) argue that the focus is too narrow. Rather than emphasizing skills training or “how to,” they argue the purpose of communication education should be to provide students with a liberal education that prepares them for (global) citizenship. In response to this critique, CID scholars and practitioners have begun to interrogate the “in the disciplines approach” in the hopes of embracing an expanded view of CID which fully realizes its potential by preparing citizens and professionals for the global workplace. For example, in the current CID approach students may learn how to deliver

a five-minute informative presentation on a current engineering topic. With the new articulation of CID, students would be given instructions for such a presentation that would allow them to imagine a larger scale presentation for their future jobs, job talks, or other professional settings (e.g., TED talks).

The purpose this paper is to show how CID can be the avenue for preparing engineers for global participation and citizenship. CID is a necessary beginning, but given the narrow, apprenticeship model of curriculum often characterizing CID work in engineering classrooms (Fleury, 2005), CID must move beyond just professional skill development to encompass a broad focus that will prepare students to be citizens of the world. Current CID work embraces a functional approach through invoking the metaphor of communication as a tool or skill to be mastered to serve professional goals. We offer instead the metaphor of voice as a starting point for (re)imagining a broader approach to CID that will better prepare students for communication within the global workplace.

Additionally, we include examples from our own institution to interrogate the tension between “situatedness” and the broad education necessary for global citizenship. The first author administers an engineering communication program that exemplifies the CID approach, and the second author was a communication instructor in that program for two years. We provide integrated, discipline-specific communication—oral and written—and teamwork instruction in required, core undergraduate engineering classes. We have seen the value of this program in preparing students for the local, professional communication demands of their future work, yet we also see a lack of broad understanding about communication as a process and a lack of connection to the importance of communication education to their ethical participation in the global economy. This led us to critically examine

the work we do in an effort to provide depth and breadth of communication instruction that will lead to more civically-engaged students prepared to be active participants in the global community.

First, we explain CID and highlight critiques of CID as currently at odds with the goals of a broad communication education. We invoke the organizing metaphors of tool and voice (Putnam & Boys, 2006) to show the tension that characterizes CID solely as professional preparation versus CID as global citizenship preparation. We conclude by offering a (re)imagined approach to communication in the disciplines that both attends to professional preparation and engaged, global citizenship.

### **Communication in the Disciplines: Professional Preparation**

Communication in the disciplines is an outgrowth of the larger communication across the curriculum (CXC) movement. Historically, CXC included a variety of activities, including faculty development, campus-wide oral communication labs, and development of communication instruction and activities for specific courses (Hay, 1987). The driving force behind CXC initiatives was the need to provide all students, regardless of discipline, with competence in oral communication. Dannels' (2001) communication-in-the-disciplines approach reflects the reinvention of CXC scholarship (Dannels & Housley Gaffney, 2009) to embrace targeted, discipline-specific communication in context.

The development of communication competence occupies a central focus in engineering (e.g., Dannels, 2000, 2002; Darling & Dannels, 2003). The engineering profession adheres to standards of conduct and ethics mandated by governing bodies or formal associations. The Accreditation Board of Engineering and Technology (ABET) mandates that engineering

graduates meet specific performance outcomes, one of which is communication ([www.abet.org](http://www.abet.org)), and the National Academy of Engineering points to the importance of communication for educating engineers prepared for all aspects of the profession (NAE, 2004). Thus, the importance of professional communication to engineering practice is widely recognized and accepted. But, what characterizes communication competence in the engineering discipline?

The goal of CID instruction is professional preparation—or moving students through the transition from novice to a member of a discourse community, or community of practice (Artemeva, 2007). Principles of situated learning and genre theory can be used to effectively teach students the professional tasks and communication activities characterizing engineering work (Artemeva, 2005, 2007; Artemeva et al., 1999; Poe et al., 2010). Thus, the CID approach embraces targeted, discipline-specific communication in context, whereby specific features of communication are privileged, and guide the instruction and assessment. Four principles of situated communication pedagogy provide the foundation for the CID framework:

1. Oral genres are sites for disciplinary learning.
2. Oral argument is a situated practice.
3. Communication competence is locally negotiated.
4. Learning to communicate is a context-driven activity (Dannels, 2001, p. 147).

With these principles as a backdrop, Dannels' (2001) communication-in-the-disciplines model posits the generation of locally constructed communication outcomes, identification and support of discipline-specific communication genres, and incorporation of discipline-specific assessment (p. 153). In short, CID emphasizes context and discipline-

specific communication instruction and evaluation, and offers more relevant instruction to facilitate student development of workplace communication skills.

Competent engineering communication is simple, persuasive, results-oriented, numerically rich, and visually sophisticated (Dannels, 2002). As a result, instruction and assessment of communication in engineering emphasizes these key features in discipline-specific genres like design presentations and oral proposals. Through teaching students the characteristics of competent communication in *their* discipline, CID instructors socialize students into the profession and contribute to the development of their professional engineering identity (Artemeva, 2005; Dannels, 2000).

To this end, the goal of CID is professional preparation such that, after earning their degree, students enter the workplace prepared for the specialized communication activities that are integral to their work (e.g., Artemeva, 2005; Dannels, 2003; Poe et al, 2010). But some scholars ask “at what expense?” Critics of CID (e.g., Fluery, 2005) claim that this approach privileges situated, skills-based instruction instead of attending to broader understandings of the communication process that are integral to preparing students for civic life. As Fluery (2005) states, “liberal education [should be] a central concern for CXC, in opposition to the compartmentalized specialization of CID” (p. 73), thus assuming CID to be an inherently narrow framework. In other words, in the most reduced form of CID, specialization of communication and a focus on discrete discourse communities is problematic because it instills in students a rather myopic view of communication, one that perpetuates the notion that communication can be reduced to a formula. For example, Paretti and McNair (2008) remind us that despite the emphasis on communication

throughout engineering curricula, students still struggle with the transition from novice to professional “due to the rhetorical and contextual complexity associated with communication” (p. 238).

In sum, Fleury (2005) notes, “In a CID approach—with its emphasis on singular, specialized disciplinary competence—students may miss the landscape, the multiple paths, perhaps even the multiple vehicles available to them as they move on in their academic work and beyond” (p. 74). In other words, in the most reduced form of CID, specialization of communication and a focus on discrete discourse communities is problematic because it reinforces singular thinking in that students engage the task at hand with no consideration of broader implications. Instead, Fleury (2005) advocates for an “against the disciplines” approach “designed to facilitate liberal education by having students question received wisdom, practice an array of communication styles, and play with established communication conventions” (p. 73).

For Fleury and others, engagement, or educating for citizenship, should be the goal of a liberal education. Students prepared for civic engagement can apply their leadership, demonstrate knowledge, awareness, and the understanding necessary to contribute to a culturally diverse world, and apply academic and disciplinary knowledge to addressing global problems (Stanton, 2008). Unarguably, communication competence is integral to liberal education and the goals of civic engagement. Communication enhances relationships with others, facilitates effective leadership, and affords individual’s personal power through their learned skills (Morreale, Osborn, & Pearson, 2000); it is “the process through which democratic possibilities are shaped and social realities constructed” (Murphy, 2004,

p. 80). In short, communication is essential to democratic participation in a global community.

Yet, in many universities, the development of communication competence for noncommunication majors is left to an “across the curriculum” or “in the disciplines” model where students learn *through* and *about* communication in their majors. While CID is certainly valuable for teaching students communication skills, we would be remiss if we failed to point out the constraints characterizing these kinds of collaborations. Because the primary goal is professional preparation, significant effort is dedicated to teaching and assessing discipline-specific genres and features of communication. It has been our experience that given the integrated nature of communication instruction, time is at a premium, resulting in a negotiation of trade-offs between instruction in broad principles of communication and teaching to a specific assignment (e.g., Sullivan & Kedrowicz, 2012).

Tension exists between the “situatedness” characterizing CID and civic engagement as an outcome of communication education. We can look to metaphors as a way to (re)structure the seemingly contradictory aims of CID as discipline-specific professional preparation and broad communication education necessary for participation in a global workplace. This participation demands attention to social contexts, impacts of technology, ethical communication, and mutual respect and appreciation for cultural differences, all of which go beyond the formulaic view currently characterizing the CID approach. Making sense of CID through metaphors can organize new ways of engaging with material. The metaphors of communication as a tool and communication as voice are especially relevant to the tension between CID as narrow, professional preparation and CID as broad, global engagement.

## **Methodological Framework**

This project was born out of experiences in the ongoing collaboration between the Colleges of Humanities and Engineering at a large western research institution. This collaborative program is designed to prepare engineering undergraduate students for the professional communication demands of their work in industry. Collaboration occurs in at least one required course for each engineering student from freshman to senior year. Communication and writing instructors are PhD students from the College of Humanities. These graduate students provide communication instruction in the classroom, consult with students on their writing and speaking, and work with the program director and engineering faculty on assignment (re)design.

The data was derived from regular classroom interactions and experiences associated with the instructor/student relationship and thus, according to IRB criteria, the study was exempt. Data collection processes occurred within the parameters of an ordinary teaching day, making the interactions true to everyday experiences within this context. Over one year's time, data was collected in semester-by-semester student evaluations, daily teaching journals, email interactions, and daily interpersonal communication experiences. The end-of-semester evaluations were administered in-class, respect to particular communication genres, and the focus of the evaluations was to gain understanding on how students perceived communication instruction and instructors. These questions were largely open-ended, requiring students to use their own discourse to describe their experiences and feelings. Both the teaching journals and email interactions are snapshots of teaching data in that they represent students' thoughts, questions, ideas,

and reactions. In all, this data set yielded approximately 87 pages of single-spaced text.

We conducted a qualitative thematic analysis of the data. Information from end-of-semester evaluations, journal entries, and interactions were interpreted using grounded-theory techniques (e.g., Lindlof & Taylor, 2011; Strauss & Corbin, 1990). To this end, the data was open-coded, and then constant comparative methods were used to draw interpretations through the words of the participants.

### **Preparing Professionals: Communication as a Tool**

The goal of CID instruction is to create competent communicators, or what each discipline “want[s] their students to be able to sound like and do in terms of communication when they graduate” (Dannels, 2001, p. 153). As CID instructors, we strive to prepare professionals through the presentation of skills-based communication instruction. Current approaches to CID, with the emphasis on professional preparation, reify the tool metaphor of communication, specifically, communication as a skill—or competency necessary to accomplish particular organizational goals (Putnam & Boys, 2006).

We see this notion of communication reinforced both in the ways we, as CID scholars, position communication in relation to engineering, present communication through our instruction, and in the ways students explain the value of communication. For example, our efforts to secure “buy-in” from engineering faculty and students about the importance of communication typically centers around the link between competent communication and professional advancement. We often explain how communication skills are the key to moving into managerial positions.

Likewise, our current approach to instruction emphasizes a focus on “how to” communicate through introducing an assignment, explaining the communication conventions which characterize competent communication with respect to particular communication genres, and providing students with a breakdown of steps to follow to complete the assignment. One student acknowledged the specific tools: “I learned how to subdivide a project into distinct subsections for ease of presentations, which will be useful for my senior project.” We explain how to prepare an oral proposal including requirements associated with content, organization, delivery, and visual aids. Thus, through our current pedagogical approaches, we are complicit in reinforcing the metaphor of communication as a tool or competency that is linked to organizational effectiveness.

From this functional perspective, communication is a means to an end, and students seek to master the tools that will help them perform a specific skill (i.e., engineering communication). For students, communication represents one tool among many that will help them succeed professionally. Further, our students equate professional success with financial success. We see their conception of communication as a tool when we ask them to explain the importance of communication: “Of course it’s [communication] important; communication makes the money,” and “despite the merit of any project, if you can’t communicate its value, you will never get funding.” These responses illustrate students’ views of communication as a specific skill that serves the instrumental goal of enhancing their workplace effectiveness and, subsequently, their potential earnings. That is, communication is reduced to a set of skills and tools with little appreciation for the more sophisticated principles and processes of communication. While this view of communication might suffice when introducing communication instruction

and the importance of communication competence to professional demands, it is problematic in the sense that students begin to view the theoretically-rich concept of communication as common sense and therefore, useless until needed during specific moments.

Not only is communication instruction primarily skills-based, these skills are presented and understood in a rather formulaic way through the presentation of genres. In fact, students yearn for templates that they can model: “Give us examples of good engineering writing that we can try to emulate.” This example points to students’ desire for a formula or equation for *doing* communication rather than communication being the process of task accomplishment. Means-to-an-end becomes a point of contention when students start to resist the “ease” of the formula; and, subsequently, resist the instruction. During end of semester course evaluations, some students explain: “I already paid for an English class,” “If I cared about communications [*sic*] I’d take a class on it,” and “Enough with the writing already. This combination did not leave much time to actually work on our project.” These examples—the last one in particular—illustrate the disconnect for the students in terms of how broad knowledge of communication principles and theory and critical thinking could enhance their ability to do, and be important, participative engineers in the global workplace. This resistance to communication invites us to rethink how we are introducing and “selling” communication in the engineering classroom.

As a consequence of the current presentation of communication components, students view communication application as a means to an end, “merely another hoop to jump through,” or even a waste of their time. This is reflected in their views regarding performance feedback. Students justified this assertion: “I already know how to give a presentation and I

knew what they would tell me to improve on,” “I haven’t looked at most of the comments on our papers, so I guess I didn’t utilize them at all,” and “I might use [the feedback] to get a good laugh.” These examples illustrate the lack of respect for communication principles, perhaps because current communication instruction is presented at the surface level, devoid of theory and rigor. These comments also point to a lack of respect and appreciation for the discipline of communication and the communication instructors who are trained to deliver the instruction.

Because communication is only viewed as a set of skills needed to get the grade, students do not see a need for specialized instructors (i.e., communication experts). Rather, they would prefer that technical experts teach communication. The students acknowledge: “I would prefer to have people who have more technical experience review my papers,” “fire the communication consultants, and save the money. The professors teach it better,” and the “[CID] program provides nothing that the current engineering professors can’t already provide.” This notion that technical experts can teach communication reifies the misconception that communication is a common-sense discipline, lacking in theoretical and empirical depth. Once again noted by an engineering student: “[the communication instructors] are [*sic*] not content and technical experts. You are all theorists. T crossers and I dotters.” This final statement suggests that students lack appreciation for the complexity and rigor characterizing the communication discipline and also presents interesting issues regarding mutual respect for disciplinary differences.

Current approaches to CID have much potential to cater to the aims of a liberal education and the diverse global community. However, given the emphasis on professional preparation for specific communication tasks, as

Fleury (2005) notes, implementation of this framework can be reductionist in focus. In other words, this emphasis on skills—or communication as a tool—is at odds with a broader view of communication as engagement or preparation for active global participation. We offer the metaphor of communication as voice to open more possibilities for CID to attend to the goals of a broad liberal education necessary for participation in the global workplace.

### **Preparing Global Citizens: Communication as Voice**

Appreciation for communication as a dialectic between suppression and expression, or communication as voice (Putnam & Boys, 2006), encourages discussion and instruction in the broader ideas of communication strategies, consequences, and power. This metaphor encourages an examination of discursive practices as informed by the language used for rhetorical sense-making (Fairhurst & Putnam, 2004) insofar that the words, expressions, and larger connections that we make inform the “voice” of the behavior in an organizational setting at large. As Putnam & Boys (2006) contend, “An organization within the voice metaphor becomes a *dialogic process of social formation* or a *radical engagement* in the process of constituting organizational life” (p. 38). It is through the new conceptualization of communication as voice that we are able to imagine new ways of teaching communication in the disciplines—because voices and perspectives that were once silent become a part of the conversation in a more theoretically rich understanding of what it means to communicate effectively.

We advocate a shift in CID instruction from an emphasis on the structural/functional transmission view of communication to an emphasis on communication as social interaction and meaning. The metaphor of voice

encourages not only consideration in immediate, local context, but also the potential for global application and critique. (Re)imagining the presentation or packaging of communication through the metaphor of voice expands the possibilities of what communication can accomplish. To this end, discourses of participation and responsibility will be encouraged within a classroom rather than an emphasis on basic tools with limited functionality outside of a single assignment or communication task.

Instead of reinforcing communication as a skill set to help students accomplish professional goals, we should treat communication as a complex process understood as the interplay between audience, context, and purpose. For example, in the current practice of CID writing instruction, students are taught a “how to” version of writing a proposal. The students are given a template to follow with a formula that encourages tasks of “delete this” and “insert here.” With the new teaching strategy, students will be given a similar task; however, questions regarding intelligent rhetorical strategies—audience, context, purpose—will be brought to the foreground. In this view, our instruction can encompass a larger discussion of why specific features of communication are indicative of competence in specific circumstances. This shifts the conversation from “how to” to “why” and will result in a broader understanding of rhetorical sensitivity and the power of communication in both local and international contexts.

Shifting the conversation from “how to” to “why” also allows for the interrogation of the conventions associated with specific genres of oral communication. Genres are cultural artifacts representing ideological and disciplinary knowledge (Berkenkotter & Huckin, 1995). Students can be taught to critically examine genres of oral discourse and, in so doing, will develop more than formulaic knowledge that has been locally and culturally

applied. Genres privilege specific organizational structure, arguments, evidence, and conventions that, when critically examined, will point to what knowledge is valued, silenced, or ignored. As Dannels (2001) reminds us, “genres are rhetorical—laden with contextual motivations, purposes, audiences, and strategies” (p. 149). Framed in this way, teaching—and learning of—genres are not separate from learning broader intercultural communication competencies that can prepare students for international work.

The way to move to engaged CID is to teach students the theoretical principles underlying communication. In other words, while teaching students what counts as evidence in their discipline, we should emphasize how argumentative practice is context-dependent, and illustrate how particular forms of evidence (e.g., ethos, pathos, and logos) are more—or less—persuasive depending on the specific context and audience. We can also expose students to the ideas of invention and identification as they relate to their presentation preparation, to offer them a theoretically rich understanding of the strategies and consequences of their communication. After all, this will become especially important when they collaborate across disciplines and, of course, when they communicate cross-culturally.

Our assessment practices must move beyond a checklist indicating the presence or absence of specific communication features and the extent to which communication conforms to particular genre conventions. Instead, we must provide feedback and evaluation on students’ ability to navigate the process of communication, as well as their understanding of the rationale involved in their decision-making, where communication is concerned. For example, portfolios—where students are asked to provide a rationale for

the communication choices they make—are representative of this kind of assessment.

If we position communication as a theoretically-rich process with implications for students both in the classroom and workplace, and outside these arenas, perhaps we can quell their resistance to communication instructors. Recent student feedback shows that they were seeking deeper instruction—“The instruction on teamwork was basic and seemed like common sense. More depth on the subject may be helpful”—and acknowledged its utility: “they [communication skills] are important because the engineer needs a way to communicate with other people,” and “it is one thing to have a great idea, it is a completely different challenge to convey how great it is.” If we make an effort to respond to students’ desire for greater depth and breadth of communication instruction, students will come to understand the value of disciplinary expertise, both their own and that of their communication instructors.

In addition to a (re)imagined view of communication competence, genre, and assessment, we can also draw on principles of deliberation and link them to team communication, an area currently under-theorized from within the CID framework but of the utmost importance to global teamwork. Structured deliberation fosters critical thinking through analysis and evaluation of ideas, respect for diverse viewpoints, and multiple forms of listening, all of which are important for effective teamwork and decision-making (Murphy, 2004). We imagine that within the framework of communication as voice, students will engage in a more dialogic process of teamwork rather than a formulaic approach. In other words, the voice metaphor encourages thinking for context-specific situations, insofar that students will learn to respond and react according to the circumstance rather

than assuming textbook outcomes. This represents a broader approach to CID, such that we can teach students how to navigate interpersonal communication cross-culturally, thus enhancing both their appreciation of communication as a process and the development of important communication abilities, including perspective taking, cultural sensitivity, and critical evaluation and judgment.

### **Implications of CID for the Global Workplace**

As CID practitioners, we must be mindful of the way we position and teach communication in engineering. Often, communication is treated as a skill that a novice can be taught to do (Artemeva, 2005, 2007; Artemeva et al., 1999; Poe et al., 2010). Instead, communication instruction should provide the necessary tools while also teaching students how knowledge *of* and competence *in* communication is necessary for participation in the global community. CID instruction is a useful avenue for preparing students for the communication demands of their work; however, we argue that the *way* we teach and talk about communication offers potential for attending to the unique circumstances surrounding the global sphere.

We see three key implications for instruction. First, as Palmerton (2005) suggests, we must teach that communication competence can be realized only through an appreciation of both skills and knowledge-based instruction. Rather than privileging skills-based instruction, we must teach communication as the very process through which knowledge is constructed, born out of contradictions, diversity, and (dis)agreements. This process is the conceptual understanding of communication as voice, allowing and encouraging all voices and processes to be a part of the conversation rather than just one (Putnam & Boys, 2006). For example, this process view invites

a level of critical thinking that is engaging in ways a skills approach can never be, foregrounding “the *process* of knowing over the *possession* of knowledge” (Canary, 2010, p. 182, emphasis in original), fostering an appreciation for communication as a process rather than communication as a formulaic product. This shift in focus facilitates appreciation of life-long learning rather than the “in-the-now” learning that characterizes the skills approach. For example, students will be tasked with the consideration of all rhetorical elements (e.g., audience, context) for each project rather than one formula for understanding that could be applied broadly across presentations or written documents.

Second, a “well-established phenomenon in contemporary American life is the growing dependence on experts and professionals to solve our social problems” (Wadsworth, 1997, p. 1), thus justifying the importance of well engaged and informed professionals with a commitment to contribute to the public good. Yet, the current skills-based format privileges professional training without instilling in students a wider appreciation of the power of their communication to transform society. By positioning communication as voice, we educate students about the potential implications of their communication within and toward global engagement.

Third, we can work from within engineering and attend to the unique demands of professional practice to make the case for communication and engagement. For example, there is a movement toward “holistic engineering education” (Grasso & Burkins, 2010) that emphasizes a multifaceted approach where students develop both technical knowledge as well as an understanding of the social and cultural circumstances surrounding their work. They must be able to engage in systems thinking and embrace life-long learning. Attending to the demands of professional practice allows us

to expand the position of communication from periphery skill to a more central place in the curriculum, one that generates profound understanding of the power and consequences of communication.

### **Conclusion**

In order to create students who are more globally minded, the context of CID has the potential to be more fruitful than even a dedicated basic course. CID is characterized by the coming together of experts from different disciplines, requiring them to create shared meaning within one cohesive space. What happens within this space is and has been the factor in many debates within the viability of CID. However, we contend that it is precisely through CID that we are able to engage students and prepare more civically-minded adults.

We acknowledge that sometimes faculty and students' embrace of communication instruction can be challenging. As CID practitioners, we are complicit in this tension between situatedness and engagement because of the way we package and sell communication to our colleagues in other disciplines. We typically purport that we can help their students become more effective communicators, thus dually preparing them for specific class projects and the workplace. We sell communication to the students and faculty as a means to an end. We try to get them to buy in, showing how we can improve students' communication competence. Instead, we need to shift the way we talk from an emphasis on communication competency as an instrumental goal to communication as powerful, consequential interaction. In this way, we can prepare engineers to communicate in the global workplace across disciplines and cultures. ■

## References

- Artemeva, N. (2005). A time to speak, a time to act: A rhetorical genre analysis of a novice engineer's calculated risk taking. *Journal of Business and Technical Communication*, 19(4), 389–421. <http://dx.doi.org/10.1177/1050651905278309>
- Artemeva, N. (2007). Becoming an engineering communicator: Novices learning engineering genres. 4th International Symposium on Genre Studies, Tubarão, Brazil: University of Southern Santa Catarina.
- Artemeva, N., Logie, S., & St-Martin, J. (1999). From page to stage: How theories of genre and situated learning help introduce engineering students to discipline-specific communication. *Technical Communication Quarterly*, 8(3), 301–316. <http://dx.doi.org/10.1080/10572259909364670>
- Berkenkotter, C., & Huckin, T. N. (1995). *Genre knowledge in disciplinary communication: Cognition, culture, power*. New York: Lawrence Erlbaum Associates.
- Canary, H. E. (2010). Constructing policy knowledge: Contradictions, communication, and knowledge frames. *Communication Monographs*, 77(2), 181–206. <http://dx.doi.org/10.1080/03637751003758185>
- Dannels, D. P. (2000). Learning to be professional: Technical classroom discourse, practice, and professional identity construction. *Journal of Business and Technical Communication*, 14(1), 5–37. <http://dx.doi.org/10.1177/105065190001400101>
- Dannels, D. P. (2001). Time to speak up: A theoretical framework of situated pedagogy and practice for communication across the curriculum. *Communication Education*, 50(2), 144–158. <http://dx.doi.org/10.1080/03634520109379240>
- Dannels, D. P. (2002). Communication across the curriculum and in the disciplines: Speaking in engineering. *Communication Education*, 51(3), 254–268. <http://dx.doi.org/10.1080/03634520216513>
- Dannels, D. P. (2003). Teaching and learning design presentations in engineering: Contradictions between academic and workplace activity systems. *Journal of Business and Technical Communication*, 17(2), 139–169. <http://dx.doi.org/10.1177/1050651902250946>

- Dannels, D. P., & Housley Gaffney, A. L. (2009). Communication across the curriculum and in the disciplines: A call for scholarly cross-cultural advocacy. *Communication Education*, 58(1), 124–153. <http://dx.doi.org/10.1080/03634520802527288>
- Darling, A. L., & Dannels, D. P. (2003). Practicing engineers talk about the importance of talk: A report on the role of oral communication in the workplace. *Communication Education*, 52(1), 1–16. <http://dx.doi.org/10.1080/03634520302457>
- Fairhurst, G. T., & Putnam, L. (2004). Organizations as discursive constructions. *Communication Theory*, 14(1), 5–26. <http://dx.doi.org/10.1093/ct/14.1.5>
- Fluery, A. (2005). Liberal education and communication against the disciplines. *Communication Education*, 54(1), 72–79. <http://dx.doi.org/10.1080/03634520500077032>
- Ford, J. D., & Riley, L. A. (2003). Integrating communication and engineering education: A look at curricula, courses, and support systems. *Journal of Engineering Education*, 92(4), 325–328. <http://dx.doi.org/10.1002/j.2168-9830.2003.tb00776.x>
- Grasso, D., & Burkins, M. B. (2010). *Holistic engineering education: Beyond technology*. New York: Springer.
- Hay, E. (1987, November). Communication across the curriculum. Paper presented at the meeting of the Speech Communication Association, Boston, MA.
- Lindlof, T., & Taylor, B. (2011). *Qualitative communication research methods* (3rd ed.). Thousand Oaks, CA: SAGE Publications.
- Morreale, S. P., Osborn, M. M., & Pearson, J. C. (2000). Why communication is important: A rationale for the centrality of the study of communication. *Journal of the Association for Communication Administration*, 29, 1–25.
- Murphy, T. A. (2004). Deliberate civic education and civil society: A consideration of ideals and actualities in democracy and communication education. *Communication Education*, 53(1), 74–91. <http://dx.doi.org/10.1080/0363452032000135788>
- National Academy of Engineering. (2004). *The engineer of 2020: Visions of engineering in the new century*. Washington D.C.: The National Academies Press.

Palmerton, P. R. (2005). Liberal education and communication across the curriculum: A response to Anthony Fleury. *Communication Education*, 54(1), 80–85. <http://dx.doi.org/10.1080/03634520500076844>

Paretti, M. C., & McNair, L. D. (2008). Introduction to the special issue on communication in engineering curricula: Mapping the landscape, *IEEE Transactions on Professional Communication*, 51(3), 238–241. <http://dx.doi.org/10.1109/TPC.2008.2001255>

Poe, M., Lerner, N., & Craig, J. (2010). *Learning to communicate in science and engineering: Case studies from MIT*. Cambridge, MA: The MIT Press.

Putnam, L. L., & Boys, S. (2006). Revisiting metaphors of organizational communication. In S. R. Clegg, C. Hardy, & W. Nord (Eds.), *Handbook of organizational studies*, 2nd edition London: Sage.

Stanton, T. K. (2008). New times demand new scholarship: Opportunities and challenges for civic engagement at research universities. *Education, Citizenship, and Social Justice*, 3(1), 19–42. <http://dx.doi.org/10.1177/1746197907086716>

Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park: Sage.

Sullivan, K., & Kedrowicz, A. A. (2012). Gendered tensions: Engineering student's resistance to communication instruction. *Equality, Diversity, and Inclusion*, 31(7), 596–611. <http://dx.doi.org/10.1108/02610151211263405>

Wadsworth, D. (1997). Building a strategy for successful public engagement. *The Phi Delta Kappan*, 78(10), 749–752. Retrieved from <http://www.jstor.org/stable/20405921>

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