

INTRODUCTION TO SPECIAL ISSUE ON INTERNATIONAL ENGINEERING COMMUNICATION

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In her editorial in the inaugural issue of this journal, “International professional communication: An overview” (2013), Rosário Durão opens by reminding readers about our connections to each other, to the environment, and to the world in which we’re living through the examination of Japan’s tsunami disaster of 2011.

In distilling this poignant example, Durão’s final summary resonated the loudest for us: “International professional communication is essential for humans to be safe, interact with their environments, engage with their fellow human beings, make decisions, and take action” (p. 4). In these very clear



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and simple terms is the valuable reminder that our relationships with each other and within the sociotechnical systems in which we operate depend on communication—clear communication—in order for us to live safely, responsibly, and ethically.

This dependence is abundantly clear in engineering fields, where clear communication plays a critical role in making decisions and taking actions, especially in regards to human wellbeing. Whether it is advancements in the medical field that help us heal or maintain health, agricultural innovations that ensure food makes its way from the field to our table, or power systems underlying technologies that we rely upon, engineering is intertwined with our daily lives. We travel on bridges and roadways, use machines and tools in our vocations and avocations, handle materials in common household items—all planned and designed by engineers. This reality is the case for individuals on all continents. All of humanity is impacted by engineering.

And within engineering, right alongside the software codes, equations, simulations, and problem-solving formulas engineers use is the additional tool of communication. Both as a process and as a product, numerous classroom and workplace studies have been devoted to developing theories and practices for effective engineering communication. Much of this work to date has focused on within-culture communication in engineering. Far less information is available on international engineering communication. While past IEEE Professional Communication Society conferences have included international engineering communication sessions and a recent conference (July 2013) focuses on communicating globally, sustained dialogue around this issue is in its early stages, and there is ample room for development in the ways we are thinking about and addressing engineering communication at an international level.

Especially within the last two decades, the engineering profession has experienced globalization thanks to mergers and international partnerships, NAFTA, and the development of the European Union. This special issue of the *connexions* journal aims to catalyze a more focused conversation about the role of engineering communication within global workplaces and among international audiences.

In doing so, the issue brings together a wide range of international perspectives and practices to help educators and researchers alike expand our understanding of what cross-cultural engineering communication entails, how faculty might incorporate it into a range of curricular and cocurricular experiences, and how students learn in these environments.

Kedrowicz and Taylor make a compelling argument for broadly rethinking our understanding of ways to integrate engineering and communication to encompass not only skills and document templates but also complex issues of relationships. In arguing for a robust approach in which educators help students understand that “communication [is] the very process through which knowledge is constructed” (p. 99), they demonstrate ways in which communication in the disciplines can create space for a holistic approach that encompasses global as well as local communication challenges.

The teaching cases and studies of student learning all enact this approach in various ways. At the assignment level, Fadde and Sullivan offer an engaging and highly usable case study that can be employed in a range of courses. Their article provides the case, essential background theories and studies, and a varied set of implementation strategies that create a flexible opportunity for both engineering and communication faculty.

At the course level, three of the articles offer approaches and analyses of courses at different levels of the curriculum and different levels of complexity. Allen, McCall, and Mike describe a collaboration among first-year composition faculty, engineering faculty, and a living-learning community to offer a first-year composition course with an international engineering focus. They present two different approaches to the course, analyze the strengths and limits of each approach, and highlight the importance of collaboration among the composition faculty as well as between the composition and engineering faculty—that led to the success of the course.

Hannah, Berardy, Spierre, and Seager describe an upper-level engineering course that paired U.S. and Indian students in a noncooperative ethics game—The Externalities Game (TEG). In analyzing students' experiences, the authors highlight the particular kinds of cross-cultural communication challenges students faced as they attempted to work through ethical decision-making. They note the barriers created by distance and culture, the reliance of engineering students on quantitative approaches that discounted human relationships, and the absence of trust across cultures. Their work concludes with critical suggestions for future cross-cultural collaborations that can leverage communication to engage students in global ethics.

Most complex is the case offered by Maylath, King, and Arnó Macià in which engineering students in Spain, technical communication students in the US, and translation students in Finland collaborated to produce technical documentation in multiple languages for engineering projects. Their ambitious collaboration—built on several years of smaller collaborations—highlights the kinds of complex challenges engineers face

when working cross-culturally in nonnative languages—in this case, Spanish engineers writing in English. Their work highlights the ways in which both engineering and technical communication students needed to develop both technical and cross-cultural fluency to support the collaboration. They conclude with a series of concrete, actionable suggestions for educators interested in developing cross-cultural modules and courses to better prepare students for the global workplace.

Omachinski focuses on cocurricular experiences and, in particular, on study abroad as sites for students to develop international mindsets and cross-cultural communication practices. She argues persuasively for the value of short-term study abroad experiences for engineering students, particularly in light of curriculum demands that make long-term experiences more challenging. After laying a firm foundation for the approach, grounded in prior research, she explores the experiences of engineering students on a 25-day trip to Germany. Her findings identify both the barriers students face in terms of time and language and the kinds of strategies that help address those barriers, including routines, local norms, host families, and friendships. Her work highlights the kinds of global learning outcomes that result from even short trips and provides guidelines for educators who wish to implement such programs.

What is perhaps most striking about many of these articles is the degree to which they highlight the need for collaboration among educators—global communication in engineering does not happen in a vacuum. Similarly, engaging engineering students in the processes, practices, and theories that enable effective cross-cultural work requires faculty who are willing to come together across boundaries—both within and across universities and countries—to create effective learning environments. ■

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