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Cross-Disciplinary Curricular Connections Between Communication and STEM: A Case for a Tailored Basic Course

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Cover Page Footnote

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Basic Course Forum

Cross-Disciplinary Curricular Connections Between Communication and STEM: A Case for a Tailored Basic Course

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This Basic Course Forum highlights authors' responses to the following topics: What curricular programs present the best opportunity for curricular connections to the basic course? Building upon conversations from the July 2018 Basic Course Institute (hosted by University of Dayton), what administrative successes and challenges do basic course directors face?

As basic course (BC) administrators strive to create sustainable courses and programs, curricular reform and collaborations within the university and employers is now more necessary (e.g., Valenzano, Wallace, & Morreale, 2014; Wallace, 2015). Although options for reform may seem endless, we argue for a tailored BC experience for STEM (Science, Technology, Engineering, and Math) students. Hess (2016) argued that “when employers say they need better oral communication, they are referring to specific knowledge and skills needed in their industry, not just the ability to deliver a standard informative or persuasive speech” and that “we need to better align our teaching and scholarship with today’s needs” (p. 15). But, why tailor a course specifically for STEM majors?

According to the National Science Foundation (NSF, 2018), the number of students intending to major in STEM disciplines rose from 8% in 2000 to 45% from 2016. Further, the NSF (2014) reported that STEM degrees accounted for one third of all degrees conferred in the United States. This increasing enrollment may be explained by the need to compete in STEM fields internationally, the drive to enhance economic impact, and the increasing number of pre-college classes being offered to encourage students to pursue STEM fields (Phelps, Camburn, & Min, 2018). However, recent reports lament the lack of communication skills in STEM graduates (e.g., Agrawal & Harrington-Hurd, 2016), despite the fact that many STEM majors are expected to achieve communication competency. For example, the Accreditation Board of Engineering and Technology (2017) lists “communicate effectively” and “an ability to function on multidisciplinary teams” as required learning outcomes (p. 3). However, activities enhancing communication skills remain sparse in many traditional engineering courses (Le Kernec, Levrai, & Bolster, 2016), and employers believe that graduates are often weak in communication (Prescott, El-Sakran, Albasha, Aloul, & Al-Assaf, 2012). Unfortunately, STEM students also report lacking confidence in their communication skills (White, Breslow, & Hastings, 2015).

To enhance communication skills, STEM instructors must be willing and able to embed communication content within their own curricula. However, engineering instructors reported challenges in integrating multidisciplinary information and aligning content with communication tasks (Dannels, Anson, Bullard, & Peretti, 2008). Although Darling and Dannels (2003) reported that communication was being “recognized as an essential element of the curriculum” (p. 1), many engineering faculty believe that teaching these skills should fall to other experts and disciplines (Zhu, 2014). Thus, we are positioned to answer this call to better prepare STEM students to be effective communicators.

To address this issue, our team met with STEM faculty (e.g., engineering, computer science, information science) to collaborate on creating STEM-specific sections of the BC. These courses were redesigned to incorporate STEM components involving teamwork, writing, and visual, technical, and oral communication. For example, a standard informative essay and speech were revised to a technical manual with visuals, diagrams, and a presentation. Similarly, the standard persuasive essay and speech were revised to a recommendation report for revising a company’s website, along with a team pitch presentation. For faculty who may feel uncomfortable integrating these less traditional assignments without a

STEM background, this cross-disciplinary partnership provides a connection where faculty can seek consultation on what is considered effective communication in these disciplines.

As communication scholars, we know that tailoring messages to our audience is critical. Why should the design of our BC be any different? BC directors and faculty should tailor courses to specific audiences across campus that express a need for discipline-specific communication skills. In this case, a need was expressed by STEM disciplines for specific communication skills and we believe that meeting this need on our campus helped us to: a) increase relevance, interest, and motivation in students, b) better prepare students within their STEM majors and professions and c) increase positive perceptions, value, and sustainability for the BC with interested campus partners.

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