

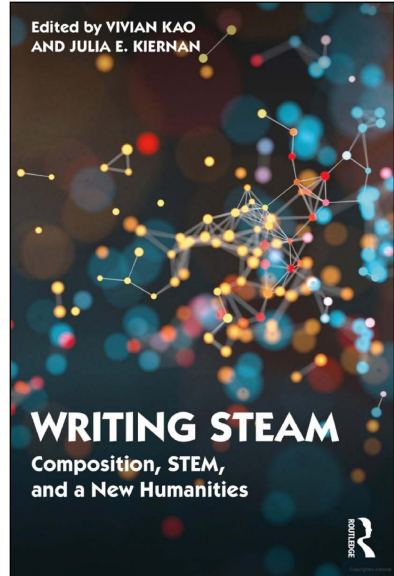
Review

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Kao, Vivian, and Julia E. Kiernan, eds. (2022). *Writing STEAM: Composition, STEM, and a New Humanities*. Routledge. 236 pages, including index.

As humanists, we are often well-too-aware of the central place that STEM holds in many universities, and especially of the “curriculum narrowing” that emerges as a result that tends to push arts and humanities to the sidelines and filling general-education requirements (Piro, 2010, p. 29). One answer to this is Connor, Karmokar, and Whittington’s (2015) concept of “STEAM,” or “a model of how boundaries between traditional academic subjects can be removed so that science, technology, engineering, arts, and mathematics [STEAM] can be structured into an integrated curriculum” (p. 37). Deep integration of writing and STEM is not a new concept for WAC practitioners, but re-imagining STEM as STEAM pushes at the role of writing in new ways: while WAC often focuses on teaching students to write and think well as they move into their disciplines (Cox et al., 2014), reimagining STEM education as highly integrated with the arts and humanities opens up both new topics and opportunities for students to think critically about their areas of study through writing.

It is into this new, integrated STEAM space that Vivian Kao and Julia E. Kiernan—first-year writing coordinator and professor of communication at Lawrence Technological University—enter with their edited collection. If the humanities must be centered in STEM to understand more fully how technology can be used for the overall human good, Kao and Kiernan see writing studies in particular at the fore of that challenge: their book aims to “place the inquisitive, creative, and communicative labor undertaken in composition and writing classrooms at the center of a STEAM pedagogy for higher education” (p. 2). That is, if we take seriously both the utility of writing to learn and critical place of communication in technology’s engagement with the public, the place of writing studies and composition in a STEAM-focused



education becomes crucial. As a whole, this collection explores how three areas of composition work—writing instruction (part 1), writing scholarship (part 2), and writing program administration (part 3)—can “bring STEM and the humanities together in meaningful, creative, and beneficial ways” (p. 2), paving a new path forward for what writing programs can look like at a tech-focused university where the arts are critical to that education.

Part 1 details a handful of innovative approaches to and experiments in teaching that deeply integrate STEM and the humanities, especially in ways that push students to engage critically with the humanistic aspects of their own disciplines through writing. This section, to my mind, is where the book shines the brightest. The section opens with a chapter by DeLuca (chapter 1) that outlines an upper-level technical writing course where students are asked to make connections between their disciplines and writing through presenting a scientific development to a specified audience through a brochure and oral presentation, pushing students to reconsider scientific developments through the eyes of others. Kiernan (chapter 2) then picks up concerns around public trust in science by describing a “Communicating Science” course where upper-level students write public-facing documents about science to the public on controversial issues like nuclear energy or opioid addiction, working through themes like misinformation and storytelling and trust in the process. Fitzsimmons and Pearson (chapter 3) lay out a case study where students translate a topic from their own discipline into a children’s book, revising along the way as they read the books to students and learn how to communicate expert material to non-expert audiences. Finally, Burgess and Handorean (chapter 4) lay out a vision where STEAM does not mean adding more humanities requirements, but revitalizing “how STEM and writing interact in higher education” (p. 65). They pull the reader through the struggles of integrating engineering and humanities perspectives into the same course, including an insightful little assignment on design ethics and communication involving Andy Weir’s *The Martian*.

Part 2 of the collection moves into engaging with current research topics in composition research like inquiry-based pedagogy, student motivation, transfer, etc., and how STEAM can help us to think through these topics with new (technological) lenses. A few themes emerge: for STEM students, their notions of knowledge creation can be reshaped through engagement with the humanities by participating in inquiry-based learning (Duran & Springer, chapter 5) and highlighting the shared notions of design-thinking between engineering and writing (Norgaard, chapter 6); student motivation in humanities classes, too, can be increased through integrating “familiar” technologies and concepts like gamification (Hardin, chapter 7) and virtual reality (Misak, chapter 8); lastly, creativity runs like a stream throughout these chapters as students are pushed to consider the actual process of creation in new

ways, whether through reframing their work as games (Hardin, chapter 7) or explicitly in creative writing (Nicholes, chapter 9)

Finally, part 3 highlights the importance of writing program administration (WPA) to making STEAM happen, and how WPA can foster meaningful STEAM education in different ways. Seeley (chapter 10) and Watson (chapter 11) open this section with two chapters that lament the common problems of lacking institutional support for communication programs and students seeing composition courses as general-education courses to simply get out of the way, and offer both administration-level and course design-level suggestions for how to approach these problems. Wittman (chapter 12) then offers a new way of thinking about STEAM education not as pushing towards new models, but instead remembering a model of education as “wondering,” playing, and exploring through the integration (rather than separation of) rhetoric and STEM. This type of reframing can offer a productive mindset for moving into the role of WPA in tech universities, which Kao et al. (chapter 13) detail in many of its complexities, contradictions, and nuances. This final profile of a first-year writing program and its emergence is especially fantastic as a model for balancing institutional concerns while moving toward a STEAM-driven writing curriculum and program.

This collection shines its brightest when read as a resource for WPAs and those developing writing curriculum, especially for faculty at technology-focused universities. It actively resists a pressure to allow writing curriculum to simply “supplement” the often-dominant STEM fields and imagines a curriculum where humanities and STEM are intertwined in the same classes, pushing STEM students to think more critically and humanities students to develop their thinking in the light of a modern, technological world. Personally, as a writing director developing curriculum at a technological university, I found this book incredibly useful as a wellspring of ideas, and I imagine it to appeal to anyone developing courses in these spaces. The brilliant and well-developed assignment examples like navigating engineering ethics and communication through science fiction (chapter 4) or communicating science that is enmeshed in controversy to the public (chapter 2) are innovative and argued for well, to the point that I plan on picking them up in my own curricular development.

While the teaching examples are the brightest, the research section is slightly dimmer, or perhaps more accurately, only still a small opening of light. While the research section touches on some different areas of interest to WAC and composition broadly, I would welcome seeing both theoretical and experimental research on what this kind of STEAM integration might do for both students and faculty inside and outside of composition. Does it open new research opportunities? I can imagine that the closer integration of STEM and humanities into STEAM would open new ideas in writing studies: what kinds of new communicative challenges do students and

practitioners face when engaging more deeply with engineering ethics through these practices? How does research in STEAM curricula, with the way it creates interdisciplinary spaces, forward computational humanities work, along the lines seen in the *Journal of Writing Analytics*? The editors of this collection fully recognize that writing studies has often sat outside of STEAM, and thus the work here takes a useful and very welcome hack at breaking ground into this area. My hope is that the break into this space with this collection can be an inspiration to the WAC research community to re-imagine composition research when writing takes place as a truly interdisciplinary, integrated STEAM effort.

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