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Subject: Teaching Toolbox: Creating Space through Pedagogy

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## Creating Space through Pedagogy

by Emily York, Holly Yanacek, Christine May, Cindy Klevickis, Daisy Breneman, and Shannon Conley

Why does it often seem that Interstate 81 is not just a physical, but metaphorical barrier to collaboration across campus? This present-day physical divide on our campus brings to mind reflections on the difficulties of collaboration between the humanities and the sciences by [C.P. Snow](#), a British novelist and chemist. Snow (1993), reflecting on his personal experiences moving between the realms of the human and the natural sciences stated that he felt as if he were “moving among two groups... who had almost ceased to communicate at all, who in intellectual, moral and psychological climate had so little in common that instead of going from Burlington House or south Kensington to Chelsea, one might have crossed an ocean” (2).

While we may disciplinarily differ as faculty, and teach and conduct research through the lenses of our respective fields, many of us at JMU do have one thing in common: a shared passion for teaching—a commonality that transcends both physical and metaphorical barriers. A shared [curiosity](#) regarding developing new pedagogies around a theme of “Imagining Justice with Science, Technology and Society” is what brought our cohort of six faculty and nine students together for the 2021-2022 academic year. Faculty and students represented a diversity of disciplines from across campus, including the humanities, social sciences, and natural sciences. Hosted by the [JMU STS Futures Laboratory](#) and sponsored by grants from the [National Science Foundation](#) and [Madison Trust](#), we engaged in a series of workshops throughout the fall, in which mutual and collaborative learning occurred among and between faculty and students.

The goal of these workshops was to get to know each other, find intersections among our interests, engage questions of justice at those intersections, learn pedagogical approaches and concepts used in the [STS Futures Lab](#), and workshop new teaching units that would be rolled out in the spring. ‘STS’ here refers to ‘Science, Technology, and Society’ (also often ‘Science and Technology Studies’), an interdisciplinary field that draws on social science and humanities methods to study technoscience, broadly speaking. ‘[STS pedagogies](#)’ are quite varied, but tend to examine the social, ethical, and political dimensions of science and technology, and develop critical thinking capacities that interrogate deterministic assumptions about technology. In the STS Futures Lab, for example, we work on developing STS ‘habits of mind’ with a number of frameworks and methods; while not an exhaustive list, some examples include [design fiction](#), [technoableism](#), [STS Postures](#), [response-ability](#), and [creative anticipatory ethical reasoning](#).

Through these workshops, we developed a shared space, or “[trading zone](#),” in which we had to move outside of our disciplinary languages/jargon and learn how to communicate with faculty and students

who were not experts in our field. The pedagogical focus enabled a comfort level in which we were able to ask clarifying, and challenging, questions of each other, and ultimately facilitated our development as a [community of practice](#) that has sustained us and flourished beyond the initial project.

In the examples and perspectives that follow, faculty from Foreign Languages & Literatures, Biology, Integrated Science and Technology, and Justice Studies share how this took place in their own teaching, and the lessons learned from the experience.

### **Examples and Perspectives**

#### **Holly Yanacek**

As a faculty participant in this project, I experienced firsthand how [radical interdisciplinarity](#) can lead to impactful, accessible teaching and scholarship. This collaboration between JMU faculty and student researchers in the humanities and in STEM fields enabled me to integrate pedagogical approaches from the field of Science and Technology Studies (STS) into my HUM 200 General Education literature course on the topic Humans, Animals, and Machines. The activities that I developed with the support of this community of practice asked students to imagine what might characterize a just future in relation to advances in both robotics and in gene editing technologies. We discussed how such developments could transform ways of life in the next 30 years and how different stakeholders would be affected. We then compared the [design fictions](#) that the students created with the futures imagined in the literary works that we discussed in the course. I was amazed that simply integrating STS pedagogies into what I was already teaching in the classroom could have such an impact; students reported that the activities deepened their understanding of and critical thinking about literature, ethics, science, and technology. JMU could continue to expand support for this kind of [interdisciplinary collaboration](#) by doing two things: 1) by creating more accessible [spaces that foster interdisciplinary conversations](#) and 2) by providing more *time* and *incentives* for faculty to connect, explore common interests, and learn and innovate together.

#### **Christine May**

Working with this team of STEM and humanities faculty broadened my perspective and added a new and comfortable dimension to interdisciplinary teaching. It began with the development of a teaching module on “envisioning a just future with genetic engineering” and it has permeated many other aspects of my teaching across classes. The initial module was developed for a large (>100 person) General Education course titled BIO 130: Contemporary Topics in Biology. The theme of that semester was genetic engineering; as Kevin Esvelt describes it, “there has never been a more powerful biological tool, or one with more potential to both improve the world and endanger it.” After learning about gene editing, along with perspectives about ethical reasoning and disability justice, students anticipated possible future scenarios of how genetic engineering can be used to cure genetic disease, but also enhance humans (notably a double-edged sword). Students then created artifacts from the future and shared the back-story of how their envisioned future came to be. Observations indicate that students found this approach engaging and relevant, and it helped to facilitate broad-scale ethical reasoning around a topic that has the capacity to fundamentally change the boundaries of life. STS pedagogy was new to me before working with this team, and it has transformed my teaching from pure-science to a

more inclusive blend of science and humanities. Initially, it was outside my comfort zone, but the team was very supportive, made it attainable, and added legitimacy by sharing their expertise. In summary, working together as an interdisciplinary team engaged and inspired all of us, which in turn engaged and empowered our students.

### **Cindy Klevickis**

As teachers, my fellow participants in this project and I wanted our students to be able to apply their knowledge to real-world situations, work across disciplines, and be aware of ethical and social issues related to science and technology, enabling them to make informed decisions and contribute to a more equitable and just society. This project helped each of us accomplish that goal. It would have been much more difficult without the supportive interdisciplinary community that this project created and the ideas and models the other members of our community of practice provided.

In my case, STS pedagogies were integrated into a class module called “Imagine the Future of Vaccines.” The students themselves were interdisciplinary. They came from Health Science, Nursing, Elementary Education, Inclusive Early Childhood, Geography, Business, and Biology majors, and Medical Humanities, and Humanitarian Affairs minors. As background for this module, students learned about [the global smallpox eradication campaign](#), [the development of the polio vaccine](#), the many vaccines developed by [Maurice Hilleman](#) in the 1960’s and the [science and technology behind the recent COVID mRNA vaccine](#). Then, together, we used [design fiction](#) to [imagine how vaccines might transform the world over the near future](#). Students predicted improvements in vaccine production and distribution that could result in [equitable access](#) for everyone in the world, increased effectiveness, and more rapid vaccine development for newly emerging diseases. Ideally, vaccine improvements could result in a healthier and more prosperous world. Design fiction also allowed us to explore [potential drawbacks of future changes in vaccine development, production, and distribution](#).

### **Daisy Breneman**

This experience allowed me to significantly expand the [transdisciplinarity](#) of JUST 385: Disability and Justice by infusing STS content and practices into my teaching. Though valuable, an even more resonant takeaway from the experience was *care* and the ways that we worked together to innovate our teaching and build a [community of care](#). Care happened in so many ways, including in the actual design of the experience; we made efforts to be [inclusive](#) and to meet the needs of everyone in the space. Our work took place during extremely challenging times, and we supported each other through those times. We actively worked to get to know each other (saw each other’s pets on Zoom calls, learned more about families and hobbies, laughed and supported each other). We created a space where we could all bring our whole selves and feel a [sense of belonging](#). In addition to caring about each other, we also cared, deeply, about the work. Being in an environment where everyone was enthusiastic and passionate reinvigorated me. We also attended carefully to issues of power, and power imbalances, and practiced [intellectual](#), [cultural](#), and [personal humility](#). Though there are a lot of institutional and other structures that divided us (including that interstate!), we noticed, named, and resisted them, in order to work and be in collaboration. Another thing I’m grateful for is the way we felt, and expressed, [gratitude](#)—to each

other, for the opportunity, and just in general. For these reasons, and more, I remain committed to keeping the work and community going.

### **Concluding Invitation**

Through these workshops, we began to think of ourselves as a community of practice that is engaging in a form of asynchronous [collaborative teaching](#). [Collaborative teaching](#) is hard. It takes time and it rarely counts as a full course in a teaching load, just to start. It also requires a kind of choreography—pulling together shared goals, navigating different pedagogical styles, developing timing and rapport. It's challenging doing this even with a close colleague in the same discipline, much less somebody we don't know well who's in a different discipline.

Yet, for many of us, collaborative teaching offers the possibility of not only creating an exciting learning opportunity for our students, but of developing new, mutually supportive relationships with our faculty colleagues, learning from each other, and experiencing camaraderie in our teaching. We—the authors—reflected on this many times during the challenges of the last few years.

So maybe not all collaborative teaching needs to be synchronous co-teaching, with its planning and choreography and logistical challenges. What if we could coalesce around shared matters of concern, meet together periodically to learn from each other, get feedback from each other as we develop new modules in our own courses, and then enter into our classes and teach?

From the students' perspective, we appear to just be the same individual professor they've come to expect. From the administrators' perspective, there are no questions about scheduling or course credit. But we know that we bring with us the traces of our whole community of practice—we don't suddenly have their expertise, of course, but our pedagogy has been enriched by their input and feedback, the tools and strategies they've shared, and their moral support. This may be especially useful when we're trying to tackle complex issues that straddle the intersection of [science, technology, and society](#)—topics that might benefit from expertise that comes from both sides of campus. And our mutual learning continues with each new project, including collaboratively writing this toolbox!

Want to learn more? We invite you to join us in building this community of practice. If you are interested in engaging themes of ethics and justice in relation to science and technology and would like to forge similar collaborative relationships with colleagues spanning Humanities, Social Sciences, Natural Sciences, and Engineering fields, we would love to build on this initiative. Please watch the CFI Digest for an opportunity to join us on Friday, May 5th, in the STS Futures Lab, and identify new potential lines of connection between faculty teaching interests. There will be a chance to follow up with a workshop at the CFI May Symposium. In the meantime, please feel free to reach out to any of us!

#### *About the authors:*

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