Lessons From the Pandemic: Engaging Wicked Problems With Transdisciplinary Deliberation

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Abstract: Some crises, such as those brought on or exposed by the COVID-19 pandemic, are wicked problems—large, complex problems with no immediate answer. As such, they make rich centerpieces for learning with respect to public deliberation and issue-based dialogue. This essay reflects on an experimental, transdisciplinary health and science communication course entitled *Comprehending COVID-19*. The course represents a collaborative effort among 14 faculty representing 10 different academic departments to create a resource for teaching students how to deliberate the pandemic, despite its attending, oversaturated, fake-news-infused, infodemic. We offer transdisciplinary deliberation as a pedagogical framework to expand communication repertoires in ways useful for sifting through the messiness of an infodemic while also developing key deliberation skills for productively engaging participatory decision-making with concern to wicked problems.

Some crises, such as those brought on or exposed by the COVID-19 pandemic, are *wicked* problems—large, complex problems with no immediate answer. As such, they make rich centerpieces for learning with respect to public deliberation and issue-based dialogue. We argue that the pandemic exposed serious limitations inherent in mono-disciplinary approaches to instructional communication. We contend further that *transdisciplinary* learning—learning based in the transcendence of disciplinary boundaries to focus on a shared issue—emerges as an opportunity to understand the messiness of a given crisis. To clarify, a transdisciplinary approach fosters "deliberative mindsets" based on participatory

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decision-making (Carcasson, 2017, p. 4). When implemented effectively, a transdisciplinary approach to communication and instruction might also help students manage anxieties related to the pandemic by empowering them to look to their communities to work through decisions and to get support (Frey & Loker, 2020).

Unfortunately, the rapid dissemination of information about the novel Severe-Acute-Respiratory-Syndrome Coronavirus-2 (SARS-CoV-2) was wrought with misinformation based on unfounded theories, misinterpretation of actual data, and mal-information that spread wildly across social media (Enders et al., 2020). Here we reflect on an experimental, transdisciplinary health and science communication course entitled *Comprehending COVID-19*. The course represents a collaborative effort among 14 faculty representing 10 different academic departments to create a resource for teaching students how to deliberate the pandemic, despite its attending, oversaturated, fake-news-infused "infodemic" (Zarocostas, 2020; see also WHO, 2020).

We drew our inspiration for the course from Dannels's (2001) insight about teaching communication across the curriculum in ways that integrate communication skills with discipline-specific knowledge. Rather than integrating learning about communication within or between specific disciplines, however, the course focused on one large communication problem from the perspectives of multiple disciplines that share stakes in responding to that problem. The problem—learning how to navigate the COVID-19 infodemic (both as a sender and receiver of messages)—cannot be addressed merely via "proper articulations" and "fact-checking." Solutions exist in the discovery of a multifaceted array of knowledge domains relevant to productive deliberation of the pandemic. Thus, disciplines represented in the course include art, biology, business, communication studies, economics, health education, English, geography, and public health. The faculty outlined key issues regarding the COVID-19 pandemic related to perspectives of their disciplines (e.g., stay-at-home orders, social distancing, wearing masks). Informed by our work on this course, we offer transdisciplinary deliberation as a pedagogical framework uniquely designed to expand communication repertoires in ways useful for sifting through the messiness of an infodemic while also developing key deliberation skills for productively engaging in participatory decision-making with concern to wicked problems, such as the COVID-19 pandemic.

Transdisciplinary Deliberation and the Messiness of Wicked Problems

The term "disciplinarity" manifests across a spectrum, spanning intra to multi to inter to trans (Park & Son, 2010, p. 84).[1] Each type denotes the degree to which disciplinary boundaries are maintained or transcended.

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Intradisciplinary → Multidisciplinary → Interdisciplinary → Transdisciplinary

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*Intra*disciplinary courses in communication studies are those that teach about the discipline (e.g., communication theory). *Multi*disciplinary courses might bring in perspectives of different disciplines on a shared theme (e.g., sociological perspectives on communication). *Inter*disciplinary courses are those that capitalize on opportunities for bringing concepts *to* or *from* communication studies (e.g., biological communication). *Trans*disciplinary courses take interdisciplinarity a step further, capitalizing on the opportunities of cross-pollinating for specific disciplines—such as communication studies or

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1. Park & Son (2010) do not use the modifier "intra." We have added this for clarity.

biology—while also transcending those disciplinary boundaries to produce emergent knowledge beyond the traditions of those specific disciplines (e.g., a rhetoric of biology). Transdisciplinary courses also emphasize student-driven learning, characterized by collaboration within a shared conceptual framework (Park & Son, 2010, p. 84). In other words, whereas multidisciplinary classes are about demonstrating the breadth of perspectives that exist on a given theme and interdisciplinary classes are about encouraging thoughtful expansions of particular disciplines, transdisciplinary classes are about creating new knowledge regarding a particular problem based in real-world application from multiple disciplinary perspectives.

The orienting framework of the *Comprehending COVID-19* course is what we conceptualize as *transdisciplinary deliberation*, a pedagogical approach to building deliberative skills, which does not shy away from the social complexity of a wicked problem. Rather, it embraces the messiness by capitalizing on opportunities to "thicken" experiential learning opportunities, which may manifest in emergent knowledge between, within, and beyond disciplinary boundaries. Although deliberation is a communication-based activity, it is served by acknowledging that myriad disciplines share a stake in the formation of informed, responsible citizens prepared to productively engage public matters. Moreover, in the case of the wicked problems brought about or exposed by the pandemic, the need for transdisciplinarity became apparent. Consequently, *Comprehending COVID-19* was conceived as a course in *pandemic deliberation*, a transdisciplinary collaboration bound not simply by a shared topic, but a shared goal in cultivating informed citizens, versed in the contexts and lines of argument that converge on the pandemic.

Each module was grounded in a particular discipline; however, each one also shared a specific set of key tensions, which when stitched together as components of a course meant to cultivate skills in deliberating the pandemic, became components of a learning experience oriented toward producing transdisciplinary knowledge. The course objectives and student learning outcomes were:

▶ Navigate the complexities of information about COVID-19 as a biological, geographical, cultural, and economic phenomenon.
▶ Consider the various cross-cutting issues relevant to the scientific and social impacts of COVID-19, including the values that make them matter.
▶ Analyze relevant data and value commitments in order to draw conclusions about the available options for responding to the pandemic.
▶ Reflect on one's personal experience of the pandemic, while assessing the upshots and pratfalls of specific responses, based on applicable information and commitments of value.

Moreover, they are based on Gastil's (2008) four stages of deliberation:

1. Building a basis of information regarding the issue.
2. Pinpointing the valuative commitments involved in the issue.
3. Discovering the array of available options for responding to the issue.
4. Assessing the upshots and pratfalls of each response based on the information and commitments of value (p. 9).

Instead of relying on quizzes or exams for evaluation and assessment, we engaged each module with a semi-public discussion that afforded participants opportunities to practice deliberation throughout the course. To prepare students for this experience, we introduced the course by strategically framing content

to facilitate metacognition of what students are doing: learning how to responsibly and productively engage shared decision-making amid wicked problems, with the pandemic as a congealing centerpiece.

Discussion prompts were consistent across modules in that each one instructed students to (1) complete a task representative of the disciplinary perspective of a given module (e.g., analyzing a map geographically or consulting public data on health disparities), (2) make sense of that information while synthesizing it with their personal experiences/observations, and (3) conjecture about possible courses of action based on the information they found. Thus, the course design offered a "repeatability" of practice, helping students gather their learning over the course, iteratively building a communication repertoire, specially ported to the problem of the pandemic, and tied to the sharing of individual experience, synthesized with multiple knowledge domains as they intersected on the pandemic. For example, the process that clinical trials must follow before vaccines can be approved, which was covered in the biology module, would later be made relevant to discussions of the economic impacts of the pandemic. "I've seen this, but it was different before."

Finally, *Comprehending COVID-19* was a course meant to serve the entire university. To increase accessibility, it was offered for free to incoming freshmen and transfer students and delivered in an online format comprised of eight modules completed in 3 weeks (Table 1). Each module consisted of pre-recorded lecture videos, short activities, and student discussions. To emphasize the deliberative nature of the course, discussions were made central as the only graded component of each module (see Appendix A). To facilitate curricular alignment, a common rubric was used across modules and adapted to address the particular prompt (see Appendix B).

TABLE 1
Summary of Course Topics

Module	Topic	Discipline
1	The Biology of SARS-CoV-2	Biology
	Pandemic Literature	English
2	The Geography of Coronavirus	Geography
3	The COVID-19 Infodemic	Communication
4	Health Disparities and COVID-19 in the U.S.	Health and Exercise Science/Education
5	Economics vs. Public Health Amid COVID-19	Economics
6	Crisis Management and Coronavirus	Business
7	Poverty and Entrepreneurship in a Pandemic	Business
	Building Back Better After COVID-19	Business/Geography
8	Urban Life and Public Space after COVID-19	Geography/Art

Cultivating Pandemic Deliberation Skills: Reflexive Appraisal

This section highlights some reflections—products of hindsight—we observed for others to consider as they design transdisciplinary modules and/or courses to cultivate skills for deliberating the messiness of wicked problems. We frame the discussion around the topics of wicked empathy and the Mobius strip.

Wicked Empathy

By framing discussion questions as opportunities for deliberation with classmates, we were pleasantly surprised at students' eagerness to practice demonstrating empathy as they worked through wicked problems together. More than learning how to communicate with peers during the pandemic, students gained an enhanced appreciation for listening and empathizing while discussing core concepts relevant to the pandemic from diverse perspectives. In one business module, for example, students reflected on the impact of the pandemic on small businesses and entrepreneurs. The entrepreneurial mindset, or the ability that empowers individuals "to come up with new ideas, solve problems, generate creative solutions, and take action to pursue opportunities" (Kuratko et al., 2020, p. 2), complements the deliberative mindset relevant to wicked problems as promoting creativity, empathy, human-centered action, and social connectivity. Thus, students developed skills stemming from an entrepreneurial mindset amid a pandemic. In other words, creating innovative solutions is a necessary piece toward discovering responsible actions. Specifically, entrepreneurship was framed within poverty, which is itself a wicked problem (Peters, 2017). The scarcity of resources, knowledge, and social segregation experienced by those in low-income conditions (Santos et al., 2019), coupled with the pandemic's inherent challenges, required students to develop their ability to create empathy and perspective-taking with a different reality and differences of experience with the pandemic.

By deliberating the layers of complexity inherent to COVID-19 *together*, students were not simply learning how to "make their case," but also how to listen and empathize with different lived experiences. For example, in the health disparities module, a *wicked* empathy emerged that was informed not solely by various issue points, but also by how these issues cut across domains. "I get it now. Thank you for your story."

The Mobius Strip

As Cypher and Martin (2008) observed, the pedagogical entanglement with and for critical thinking is essentially a Mobius strip wherein participants and their assumptions turn in on themselves through active deliberation and reflection. Students would "try out" their skills in each of the eight modules and, consequently, iteratively "thickened" their understanding of what it means to be an effective and responsible participant in decision-making processes. For example, scapegoating, fear appeals, and misinformation were covered in the communication module. In that module's discussion, students were asked to discuss recent articles and encouraged to focus on the consequences of *how* one speaks, as well as *what* one talks about. Students ran the Mobius strip (i.e., starting in one place and then ending up in another place that looked very similar to the original starting place) when deliberating about communication, about the role of sustainability amid COVID-19, and shifting understandings of place and space during (and after) the pandemic, among others. This iteration over the course offered students chances to revisit theirs and others starting places—to reflect on the assumptions, anxieties, and ideologies that each person (including oneself) brings to the deliberation and complicates unknowns of the pandemic.

With regard to teaching during the pandemic, Arnett (2020) said, "The coronavirus may temporarily, or perhaps for the long-term, recalibrate much of what we do, but it cannot, and will not, destroy the importance of learning, studying, practices, and care for one another in the midst of the unknown" (p. 9). One vital skill necessary for approaching problems like the pandemic is the ability and tenacity to try and try again—to be prepared to run the Mobius strip, to loop through the various knowledge

domains and issues, which intersect within a given crisis in efforts to "start again" with others. As they practiced, students animated the importance of deliberation during crises for "the development and deployment of group cognitive processes demonstrate the wide range of 'organizing' that shapes resilience processes" (Williams et al., 2017, p. 748).

Lessons Learned: Concluding Remarks

As is the case with any experimental course taught for the first time, there are things we would have done differently if only "we had known then what we know now." For example, we would augment the cultivation of wicked empathy with peer-review assignments. In them, students would offer feedback to one another, reflecting on their demonstration of empathy in each module discussion as a means of tracking the evolution of their thinking about empathy throughout the course. The power of reflection is bottomless. We would also expand the framing of transdisciplinary deliberation (from the outset of the course) with an emphasis on the Mobius strip, coupled with a recurring item in the module discussions where students are asked to consider their "starting point"—their assumptions, ideologies, and anxieties—at the outset of their discussion response. Finally, we would build module-specific office hours into the course, wherein each participating faculty would take the lead on holding virtual office hours as pertinent to their respective content, further underscoring that faculty are available for direct discussion, augmenting course content with additional avenues for students to pursue their own interests and questions.

Ideas for improving the course notwithstanding, the experiment in transdisciplinary deliberation was a success. In fact, it went beyond our goal of introducing students from across the campus to this unique approach/orientation to health and science that comes from communication studies. Based on student discussions, the course did a service to the student body for at least two reasons. First, it underscored the wickedness of the moment for students in a way that helped them build sensibilities that support working with others to make sense of the ever-shifting touchpoints between the social, economic, and biological systems that made the pandemic matter. And, second, the course provided a platform for students (who were largely isolated from others during the pandemic) to share and reflect on the things that mattered to them, in turn, trading vantage points, kindness, and energy with each other as they worked together to build a communication repertoire in pandemic deliberation. These are lessons learned that could improve pedagogical processes in higher education during future pandemics, as well as part of the new normal in higher education.

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Appendix A

EXAMPLE MODULES				
Module	**Topic**	**Content**	**Minor Activities**	**Discussion**
1.1	Biology of SARS-CoV-2 (The Novel Coronavirus): From Virus Replication to Global Dissemination	What Is SARS-CoV-2 and Where Does It Come From?	Look at an Interactive Map of SARS-CoV-2 Genomes and Mutations	What Is COVID-19? What Does the Pandemic Mean to Me?
		COVID-19 Pathology, Transmission, and Testing	Explore the Johns Hopkins Coronavirus Resource Center	
		Antiviral Therapies and Vaccine Development	Consider the World Health Organization's Coronavirus Page	
7.1	Poverty and Entrepreneurship in a Pandemic	What Is Entrepreneurship?	Meet Famous Entrepreneurs Who Grew up in Poverty	What Is Innovation Amid a Pandemic?
		What Is Poverty?	Take the Global Poverty Quiz Review the World Bank's Global Data on Poverty and Prosperity	
		Entrepreneurship: A Different Solution to Poverty	Mini-Case Study— Yolanda Smith, a Poverty Entrepreneur	
		COVID-19 and the Challenges for Poverty	The Effect of the COVID-19 Pandemic on the UN's Sustainable Development Goals	
		Poverty and Entrepreneurship in a Pandemic	Explore Examples of Pivoting Businesses During a Pandemic	
		What's Next? Navigating Through COVID-19	Learn the SPODER Framework to Foster Entrepreneurship in Crisis Contexts	

Appendix B

DISCUSSION RUBRIC	
No Marks	**Full Marks**
No assignment posted, or posted content is inappropriate, false, and/or irrelevant to prompt.	Post directly addresses the prompt. Content contributes factually correct and thoughtful information. Some effort is made to incorporate information across modules (where applicable). Comments productively advance discussion and respect other points of view.