# Teaching Integrated Learning and Critical Thinking Through the Lens of the COVID-19 Pandemic

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## Introduction

This report is an account of teaching a "COVID-19 course" at a time when cases spiked in the United States and higher education institutions were preparing for an uncertain immediate future. During the summer of 2020, I taught incoming first-year students at University of La Verne a course whose title included the phrase "Through the Lens of COVID-19." How does one teach students about an ongoing pandemic? What was our goal in offering a course about the pandemic during the pandemic? Pedagogically, the course was piloted as a summer precursor to the university's first-year learning experience program, which focuses on integrated learning, use of high-impact practices, and creating a sense of belonging. This curricular program introduces "basic principles of integrated learning," which are "an important component of developing critical thinking skills" (University of La Verne, p. 4). Integrated learning promotes "connection making" (Huber et al., 2005, p. 5) among diverse skills, experiences, and sources of knowledge. In the new summer learning experience (SLEX) program, of which this course was a part, integrated learning is fostered through a two-part course structure combining interdisciplinary lectures with discipline-specific "innovation labs," which together incorporate knowledge from five academic fields of study, as described below. The course sought to arrive at a holistic view of the pandemic by examining topics through multiple disciplinary lenses and designing assignments that intentionally transcended disciplinary boundaries.

The innovation lab provided students opportunities for metacognitive thinking and writing while it worked in tandem with the interdisciplinary lectures to promote integrated learning. The innovation lab's class discussions and writing assignments were essential for facilitating higher-order thinking skills among these first-time college students. Despite the common assumption that college-level writing produces critical thinking, to achieve such an outcome, assignments must be accompanied by "a fully developed process or skill set for thinking critically" by "overtly integrating critical thinking expectations into our writing instruction" (Condon & Kelly-Riley, 2004, pp. 59, 67). The pandemic-themed course, with writing assignments addressing topics such as mask mandates and stay-at-home orders, allowed students to consider how to evaluate and revise their thinking in dynamic and shifting conditions. This self-assessment of one's thinking, combined with knowledge of how to understand and address problems from multi-faceted viewpoints, empowered students to approach critical thinking as fundamental to adaptive analysis and to practice the application of integrated learning to complex problems in the world.

Integrated learning and critical thinking were modeled and taught through the summer course's structure and themes. Cohorts of five instructors from various departments in the College of Arts and Sciences lectured to groups of 75 to 100 students one

day per week; then, each instructor taught an innovation lab to a subset of the same 15–20 students for the entire summer term. The larger lectures featured topics such as "Artists in a Time of Crisis," "Mental Health and Noncompliance," and "The Rhetoric of COVID-19." Innovation labs maintained a single disciplinary focus, whether art and art history, anthropology, sociology, rhetoric, or communication studies. This structure allowed students to learn about the pandemic through multiple disciplinary approaches while also exploring a single disciplinary view in greater depth. The course was taught remotely, with a balance of synchronous and asynchronous components, enabling students to engage with instructors and peers while accommodating the challenges of life during a pandemic.

Using the theme of "Rhetorics of Science and Public Health" for the innovation lab, I framed critical thinking through writings from various scientific and healthcare fields. Literature from nursing and medical education provided definitions of critical thinking that pushed students away from strictly linear or reductive views of the complexities of the COVID-19 pandemic. For example, Boychuk Duchscher (1999) described how critical thinking facilitates a process of "liberating speakers and readers from the judgement [*sic*] limitations imposed by rigid, unexamined beliefs" (p. 577). Class discussions repeatedly explored how we might be using pre-COVID ideas or beliefs unconsciously to make sense of a novel coronavirus and its effects. Scholarship from science studies and the rhetoric of science drew students' attention to the ideological baggage of pandemic metaphors being used to make the unfamiliar familiar (Angeli, 2012; Ferri, 2018; Taylor & Dewsbury, 2018). As Brandt and Botelho (2020) cautioned about describing COVID-19 as a perfect storm, such metaphors "may misdirect our concepts of—and therefore our approach to addressing— emerging pandemics" (p. 1493). Critical thinking about the current pandemic necessitated examining the belief systems that animate our existing ideas about disease and disaster, with mindfulness of how these ideologies might bias thought processes, lead us toward limitative linear logic, and produce reductive conclusions and misguided plans for action.

The innovation lab also tapped biomedical viewpoints to emphasize critical thinking as a pathway to address pressing questions or problems, something valuable to students trying to navigate conflicting media reports and scientific advice during a pandemic. Nursing, medicine, and related fields are "oriented towards clinical contexts and outcomes" (Adam & Juergensen, 2019, p. 138), where critical thinking is always already situated in an applied context dictated by a dynamic between established knowledge, variation or deviation, and unpredictability. A capacity for open-mindedness is crucial, both to avoid the rigidity of existing knowledge or beliefs and to embrace new learning as a norm of critical thinking (Pu et al., 2019; Ward-Smith, 2020). Here, the advice of medical educators proved especially pertinent. Whether highlighting the dangers of seeking and using evidence to support pre-existing beliefs (Achiellos, 2018, p. 4) or of refusing to reject inconsistent data or irrelevant information (Ward-Smith, 2020, p. 5), biomedical articles outlined a set of critical thinking priorities students could apply to their current understanding of the pandemic. Framing critical thinking as the need to "automatically [question] if the information presented is factual, reliable, evidence-based, and unbiased" (Persky et al., 2019, p. 161) was valuable for first-year college students learning how to develop as analysts in higher education and as adaptive thinkers during a pandemic. Such articles advised students to be mindful of identifying unsupported claims and to avoid declarative conclusions when data is inconclusive.

This summer course harnessed exigencies of the historical moment while orienting students to critical thinking and writing expectations of university coursework. While the course was not a traditional summer bridge program—it ran concurrently with a bridge program, and many students enrolled in both the summer bridge and this SLEX course—it supported similar goals related to student retention and college readiness that are common aims of such programs (Sablan & Tierney, 2016). During a time of economic uncertainty, students could complete a credit-bearing general education course without added financial burden; it would be included in the existing cost of attendance. This decision reflects our mission as an Hispanic-Serving Institution to serve working-class families and first-generation students. We thus welcomed incoming students to the university with a course that emphasized principles of critical thinking and writing relevant to the pandemic and their immediate lived experiences.

**Disrupting the Binary in a Polarized Pandemic**
Students came to the summer course aware of a tension between two spheres of discourse about the pandemic: the scientific, rife with unresolved questions and mixed findings, and the popular, increasingly characterized by the entrenched polarization that has pervaded American politics and its resurgent culture wars. All were aware that scientists had not found conclusive answers about the virus's effects and the best methods of treatment. Some had more detailed knowledge of how initial scientific findings and medical field accounts about the novel coronavirus were typically tentative, limited in scope, and inconclusive or even contradictory. The mass of new information demonstrated the complexity of science-in-the-making, which exists inherently in the realm of the multivalent, the complicated, the ambiguous, and the unresolved. Yet all students heard the roar of traditional and social media, dominated by attitudes of certainty concerning so many aspects of pandemic life. Despite knowing that open questions existed about the virus, students were attuned to and saturated in a media world that had recoiled into seeing the pandemic as a world of binary choices. One question I faced in the first days and weeks of class was to what extent students would embrace complexity and even indeterminacy as centerpieces of our discussions about the unfolding COVID-19 pandemic rather than the oversimplified binaries dominating news reports and social media.

My experience as a first-year writing (FYW) instructor provided the bearings for what to avoid when asking students to write and think critically about the pandemic. FYW instructors sometimes perceive their role, among the many they perform, as undoing what students have been taught in the K-12 system. From the five-paragraph essay to formulaic transitions to pro/con essays, students commonly have rigid ideas of how to structure essays, organize ideas, and make arguments. FYW courses are often sites of adding nuance, complexity, and variation to students' sense of what is possible for them to achieve in academic writing. When teaching the summer COVID-19 course at University of La Verne, I faced a similar challenge of unsettling students' conceptions of writing about hotly debated social topics. Whether addressing social distancing, the wearing of masks, methods of calculating accurate mortality rates, and potential bodily harms of the novel coronavirus—all subjects being actively contested in American society—we needed to get beyond the pro/con binaries of "for" or "against" as a way to process and contend with the data, public policies, and arguments being presented about these topics.

To push the class beyond a binary logic, our primary case study was a commentary article that addressed the debate about masks being a preventative measure against the spread of the virus. The article, from a free monthly magazine that circulates in the Quad Cities region of the Midwest and which hosts an online site, made the author's conclusions clear in its assertive title: "Masks Don't Work: A Review of Science Relevant to COVID-19 Social Policy" (Rancourt, 2020). This title aligns with the strictly binary pro/con essay familiar to students matriculating from U.S. secondary schools. Masks either work or they do not work. Take a side; use only evidence that supports your position; take down the other position using counterarguments, and win the debate. With this approach, students miss opportunities to explore complexities, discern gradations and nuances, gain comfort with ambiguities, and practice writing about the subtleties of complex topics. An analysis of the "Masks Don't Work" article demonstrated the limitations of the binary approach, beginning with the rhetorical action performed by the titular construction of "work."

Masks might serve a variety of functions in reducing the transmission of respiratory diseases, but the reductive notion that masks either work or do not work limits their efficacy to a choice between total prevention and total failure. This reductive view pervaded debates about masks in traditional and social media during the late spring and early summer of 2020. Our class activity provided an opportunity to unsettle those confining borders. By examining Rancourt's (2020) supporting evidence, students gained a sense of the much more complex findings about masks, findings that did not align with the simplified view presented in Rancourt's claim.

We began with the question, what does it mean for a mask to work? That activity expanded students' knowledge of the range of functions for masks: limiting the viral load, or amount of the virus, one discharges or is exposed to; preventing the dispersion of large droplets that can evaporate into smaller, farther-traveling droplets; and reducing but not eliminating the spread of the virus (Bai, 2020). None of these possibilities fall within Rancourt's (2020) meaning of "work." Their validity as protective measures exposed the fallacy of a binary view of mask efficacy. Instead, with the open-mindedness and focus on beneficial outcomes that characterize critical thinking in biomedical fields, students arrived at a more complex, holistic understanding of mask use during a pandemic. Nina Bai (2020) offered a quote from Peter Chin-Hong, an infectious disease specialist, that supplied a more accurate and useful definition of work: the goal is "risk reduction rather than absolute prevention" (Does the Type of Mask Matter?).

For students still reluctant to abandon an over-simplified binary, a review of Rancourt's (2020) supporting evidence revealed the extent to which he had mischaracterized recent research findings. He provided citations and hyperlinks to seven articles, published from 2009 to 2020, as "key anchor points to the extensive scientific literature that establishes that wearing surgical masks and respirators (e.g., 'N95') does not reduce the risk of contracting a verified illness" (Review of the Medical Literature). Yet the articles' abstracts imparted a much less certain view, including mixed findings, calls for more research, and at least one indication of masks being beneficial. Generally, the primary studies were limited in scope, and both the primary and secondary review articles called for more research to determine decisive conclusions. For example, one study's conclusion that masks did not reduce the incidence of common colds was based on insufficient evidence: "A larger study is needed to definitively establish noninferiority of no mask use" (Jacobs et al., 2009, p. 417).

Other abstracts contradicted Rancourt's (2020) key claim. One noted "there is some evidence to support the wearing of masks or respirators during illness to protect others" (Cowling et al., 2010, p. 449). Most striking was a sentence in another source that stated "eight of nine retrospective observational studies found that mask and/or respirator use was independently associated with a reduced risk of severe acute respiratory syndrome (SARS)" (bin-Reza et al., 2011, p. 257). The novel coronavirus formally had been named SARS-CoV-2 due to its genetic relation to SARS. However limited, these findings suggested that masks reduced transmission of such viruses. Rancourt's inclusion of such articles as evidence against wearing masks during the COVID-19 pandemic raises questions not only of logical fallacies but of ethics. Such misuse of evidence was common. While Rancourt purported to prove masks do not work, several cited articles were simply comparative, investigating whether N95 masks were more effective than surgical masks, not whether masks worked in the first place. What these articles ostensibly took as a point of departure—some level of efficacy for surgical and N95 masks—was not mentioned by Rancourt. After scrutinizing the data and evidence, a hallmark of biomedical critical thinking, students were asked to explain whether they found Rancourt's central claim to be spurious.

The in-class analysis activity also considered Rancourt's (2020) rhetorical strategies. While the article appeared to embrace evidence-based critical thinking, instead it featured the trappings of science as a short-circuited distraction. As Michael J. Zerbe (2007) noted, "It is not uncommon for scientific discourse to be appropriated in an effort to frame arguments more convincingly—not as arguments at all but as established Truth" (p. 21). This case study was a kairotic opportunity to demonstrate that point in confluence with the increasingly bitter social debate about masks. Rancourt's list of peer-reviewed sources, with hyperlinks and excerpted quotes, conveys an impression of scientific consensus. This technique is a version of Bruno Latour's (1987) notion of stratification, where "articles give the reader an impression of *depth of vision*" (p. 49) through references to outside texts. Readers gain a sense of seeing what is being discussed even though it is not actually visible in the text.

I asked students to contemplate whether Rancourt (2020) relied on the general public's unfamiliarity with scientific studies, where either an ability to navigate technical publications or a reluctance to explore detailed evidence would lead them to trust his claims without clicking the hyperlinks. The article, after all, appeared to present a substantial amount of peer-reviewed evidence. When asked what was appealing about this technique, some students acknowledged it was tempting to accept Rancourt's absolutist position with its appearance of scientific support; in a world seeking comfort and simplicity in the face of uncertainty and complexity, people can be inclined to trust online articles that offer citations since so many do not. Here, again, we returned to our guiding principles of biomedical critical thinking: challenging our assumptions to remain bias-free, scrutinizing evidence, and being mindful of tentative findings while remaining open-minded if we lacked decisive data.

**Consilience as a Model for Integrated Learning**
After disrupting the pro/con binary, I offered students an alternative model that promoted critical thinking in a context of integrated learning. This model, drawn from Edward O. Wilson's (1998) *Consilience: The Unity of Knowledge*, functioned as a heuristic to develop research papers using sources from the sciences, social sciences, and humanities. Wilson's fundamental point is that most real-world problems are complex and cannot be solved

sufficiently within any single domain of expertise. Only within a unity of knowledge drawn together from several disciplines can we adequately address such problems.

Wilson (1998) supplied a simple model to visualize how such a project might begin and proceed. The model consists of a diagram of four quadrants, with each quadrant occupied by a distinct field of inquiry (see Figure 1). Collectively, the four quadrants include disciplines or fields of study from the sciences, social science, and humanities. Adding a series of concentric circles plots a view of how the four usually disconnected fields might move toward overlap and eventually unity (see Figure 1). Moving toward the central point of intersection displays "an increasingly unstable and disorienting region," and the innermost circle "where most real-world problems exist, is the one in which fundamental analysis is most needed" (p. 10). With the amount of uncertainty and disorientation caused by the COVID-19 pandemic, Wilson's vision of a problem-solving heuristic was befitting of the immediate moment and as preparation for incoming first-year students to make a transition to critical thinking at the university level.

**Figure 1** *Example of Four-Quadrant Model*
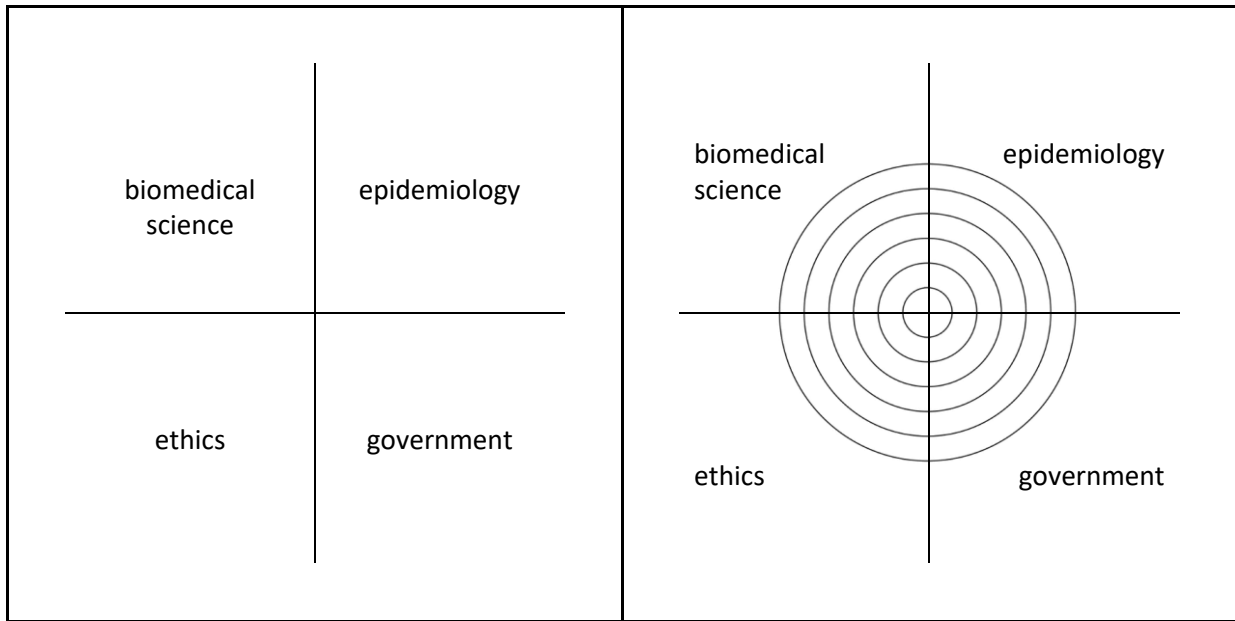


*Note. The four-quadrant model (left) includes sample fields of inquiry for a research paper on mask mandates during the COVID-19 pandemic, with concentric circles added (right) to signify a movement toward a unity of knowledge.*

To introduce the consilience model to students, I drew upon earlier class discussions about the mask debate. Those discussions included the Rancourt (2020) article as well as a range of arguments, including political and legalistic ones, being made by so-called anti-maskers. To demonstrate use of the four quadrants, I proposed an imaginary debate on mask mandates that could be rife with two parties talking past each other and basing claims on little-to-no shared ground. I posed a question: How can we resolve a debate about mask mandates if one party enters the conversation concerned with biomedical and epidemiological data while the other is concerned with threats to civil liberties posed by governmental policies or actions? Without finding a way to incorporate most or all the topics

being raised, there would be no possibility of achieving a resolution that satisfied all parties involved. Was it possible to craft a public policy that took into account the seemingly disparate concerns they raised?

My sample quadrant model included biomedical science, epidemiology, ethics, and government as its four fields of inquiry (see Figure 1). While biomedical science allowed us to examine studies about mask efficacy, epidemiology presented a view of COVID cases by population groups, including by county and state, that might help us understand the effects of existing public policies on masks. Topics about civil liberties fell under the broad category of government, where students could explore existing laws and the legal powers of local, state, and federal governments, including those powers granted under emergency declarations, as well as judicial decisions about public health orders, including those made in state courts during the current pandemic or historically, such as the *Jacobson v. Massachusetts* (1905) decision by the Supreme Court regarding vaccination requirements.

The sample topic—mask mandates—may strike some readers as less indeterminate than the issues Wilson has in mind for consilient solutions. Yet this is why I included ethics among the four quadrants. For however scrutable or obvious the answer might seem to any of us, there was a polarized debate permeating the nation during the weeks of our summer course. All sides of the public policy debate were certain their perspective was paramount. One goal was to emphasize the ethical necessity not to dismiss either biomedical research or first principles of civil liberties when engaging in such policy debates. Both were worthy of consideration. Also, when evaluating various arguments, we asked whether or not each claim was ethical. These considerations were especially useful to guide us in discussions about the underlying question about mask mandates: what is the right thing to do?

Finally, as the class's theme was "Rhetorics of Science and Public Health," we considered the ways rhetoric was being employed in the public health debate about mask mandates. Did the language or ideas reflect the rhetoric of science, ethics, or government, or possibly some other domain of culture or society, and what might all that mean? Some claims posing as scientific or legalistic betrayed other motives. Often we related ethics to our questions about rhetoric, asking whether or not a given rhetorical statement was ethical. This focus on language was a valuable way to look for points of relation and opportunities for synthesis between the four quadrants.

For their final papers, students were asked to use the four-quadrant consilience model, with the option to fill the quadrants with areas of their own choosing. Some adopted the sample model, as much of the course content prepared them to write such an essay. The best essays reflected a sincere attempt at consilience, bringing together a discussion of biomedical science, epidemiology, government, and ethics to argue for public safety while maintaining order and reducing panic. Other students chose their own topics, as the course included a variety of other content related to the rhetoric of science. This latter group tended to fill the quadrants with what might be called subtopics and themes rather than distinct academic disciplines or fields of study. But I count that as a success. If the goal was to encourage students to move beyond a binary argumentative strategy, where all evidence must conform to bolstering a single point of view, then students exploring ways to bring diverse themes and subtopics together into a synthesized argument about the COVID-19 pandemic was a sign they had begun to exhibit integrated learning. If they had not yet drawn deeply upon the sciences, social sciences, and the humanities to make a unified claim, they

had begun to practice the underlying concept of unity that motivates consilient critical thinking.

**Conclusion**

The summer course for incoming students at University of La Verne was generally a success in terms of welcoming students to our institution, ensuring them of the value of following through on their commitment to enroll for the fall semester, and preparing them for integrated learning. My goal in using rhetoric to frame this summer course taught "Through the Lens of COVID-19" was to utilize topics about the pandemic as a way to teach students metacognitive thinking about language use while employing the critical thinking priorities of biomedical fields. Yet the course offers a useful model that can be utilized in a broad array of writing-intensive courses or for transdisciplinary research-based writing assignments. By drawing on discipline-specific discourse about critical thinking from primary literature, we can show students how field-based professionals are advocating for the same higher-order thinking skills being practiced through class assignments. Also, the four-quadrant diagram is an adaptable heuristic, a ready-to-use model that students can employ to visualize a path beyond the familiar pro/con binary.

Consilience and Wilson's (1998) quadrant model offered an accessible entry point for my students to confront the multivalent complexities of the world's most challenging and inextricable problems. Wilson's *Consilience* builds on a notion proposed in C. P. Snow's (1959) *The Two Cultures and the Scientific Revolution* of the dangers for problem solving posed by a rift between science and the humanities. By emphasizing a need for unity, something sorely lacking in American life during the pandemic, and by modeling four quadrants in a clear, simplified visual model, Wilson's approach to a unity of knowledge provided an understandable heuristic for students to transition away from pro/con binaries when writing argumentative papers about complex social topics. It is not a map, but the quadrants' concentric circles provide students a way to see the possibility of unity, of synthesizing multiple ways of understanding the world into a deeper shared knowledge.

A fair critique of this consilience model is that if it is ambitious for experts to arrive at the center and achieve true consilience, it is unrealistic to expect first-year university students to do so. Such a critique has a different outcome in mind than the pedagogical purpose in my classroom in which the merit of this model is its function as a heuristic for students to utilize as an alternative to the type of pro/con binaries featured prominently in secondary education and popular culture. The consilience quadrants offer an entry point for students to begin to practice critical thinking and writing in a context of integrated learning.

It is an added virtue that the model remains a valid framework for more advanced work, whether in later undergraduate or graduate studies, or in professional life. As Wilson (1998) noted, "virtually no maps exist" (p. 10) for completing the type of analysis needed to solve the complex problems facing human societies. If we want, as Paul Hanstedt (2018) noted when referencing the ideas of Edmond Ko, to prepare students to face "*wicked problems*, that is, situations where the parameters of the problem and the means available for solving them [are] changing constantly" (p. 3), then the model provided by Wilson is a practical and durable way to begin to teach students to do so. The four quadrants of the consilience model, if rigid or simplified in the adherence to four components, are at least a conceptual framework for charting transdisciplinary approaches to problem solving and critical thinking that move beyond oversimplified schemes.

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