The Swamp and the Scaffold:
Ethics and Professional Practice
in the Writing Classroom

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Instructors within the writing across the curriculum (WAC) movement leverage student writing for learning and engagement beyond the traditional English or composition classroom. To this end, WAC pedagogy foregrounds the benefits of real-world active learning strategies. Educators often find it logistically difficult to create sustainable versions of these realistic environments, however. The same challenges faced by writing instructors present themselves across disciplinary contexts, including ethics and computer science instruction. In this article, we describe our integrated ethics module linking first-year composition students with computer science capstone design teams to better integrate the study of ethics into the writing classroom while giving students more realistic contexts for practice. The tension between two prominent metaphors for learning – the swamp (the messy situationality of professional practice) and the scaffold (the building of progressively more challenging tasks for students out of smaller, simpler assignments) – guides our discussion of WAC-centered course design.

While writing and ethics pedagogy both foreground the benefits of real-world active learning strategies, in practice it is logistically difficult to create sustainable, realistic environments. However, it is precisely in these cross-disciplinary encounters that the most exciting phases of exchange take place. A large and cross-disciplinary body of literature explores the educational benefits of engaging peers, mentors, and community partners as external audiences to better simulate authentic situations for professional knowledge development (Gardner & Alegre, 2019; Blakeslee, 2001; Missingham & Robert, 2014). The role of peers, both professional and academic, is central to educational theorists like Donald Schön and Lev Vygotsky, especially in their widely popularized metaphors for learning: swamp and scaffold. As faculty at a large STEM-focused university, we found ourselves deeply engaged with questions of both ethics and communication in our

composition and technical communication classes.[1] In response to the pedagogical gaps we perceived in our own classes, we collaborated in a writing across the curriculum (WAC) experiment. We designed a linked assignment sequence and studied its efficacy in teaching principles of both communication and ethics. The tension between two prominent metaphors for learning: the swamp (the messy situationality of professional practice) and the scaffold (the building of progressively more challenging tasks for students out of smaller, simpler assignments) guides our analysis of WAC course design.

The metaphor of the scaffold is useful for course design as we build progressively more challenging tasks for students out of smaller, simpler assignments in order to facilitate their greater mastery. However, scaffolds are less persuasive as a conceptual organization for ethics training—after all, ethics does not exist as a fixed body of knowledge one can incrementally climb. What are the alternatives? Before Donald Trump and Ronald Reagan's promises to "drain the swamp" of Washington DC, the design philosopher and educational researcher Donald Schön saw in the "swampy lowlands" of professional practice not a breeding ground for mosquitoes (and unethical actions), but rather the conditions that generated professional knowledge. Schön's contributions regarding the ways in which professionals think in action through improvisation and experience-based reactions to complex problems are well known. He credited a long tradition of educational theorists including Rousseau, Dewey, Piaget, Vygotsky, and Wittgenstein as informing his articulation of "reflection-in-action." The metaphors of swamp and scaffold emerged for us as we made curriculum design decisions on how to better integrate the study of ethics into the writing classroom. Schön's swamp suggested to us the value of real professional situations to train students' ethical thinking. In contrast, Vygotsky's scaffold reminded us that students need support to perform tasks within their zones of proximal development as they are aided by other, more expert, practitioners. What place does a scaffold have in a swamp, we wondered, and does the metaphor of the scaffold capture a student's "improvement" in ethics?

To explore the role of swamp and scaffold in the training of ethics in a writing classroom, we opted to conduct an experimental integrated ethics module and then to survey the students on their educational gains three semesters after its conclusion. The ethics module linked one author's seventy-three first-year composition students with the other author's one hundred upper-division computer science students around a common goal: to explore the teaching and retention of ethical knowledge.

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1. While most of our students' degrees carried an ethics requirement, in practice, sections of ethics were often full, and students were not able to take these classes until the last semester of their senior year. By this time, many students had already begun internships or other professional interactions with community partners. We therefore saw the study of ethics in the first-year composition classroom as well as in the computer science classroom as a necessary curricular supplement.

Our module asked students to help each other meet each course's diverse learning objectives.

Computer science students were enrolled in a capstone course that taught discipline-specific development and technical communication skills through the design and development of a client-based project. The learning goals for capstone design teams, composed mostly of junior-year students, concerned collaboration and communication skills. We asked them to work with others outside their immediate group, explain their work to non-subject matter experts, and to incorporate the fresh perspectives and ethics-related research of the first-year students. User testing was a vehicle for this kind of learning: midway through the semester, composition students acted as user testers for capstone design team prototypes, offering feedback focused on ethical areas such as accessibility, privacy, and data protection. At the end of the semester, capstone design students wrote up a final report that explained the ways in which the ethics research inflected their design process and the ultimate design decisions they made.

Composition students' learning objectives prioritized learning about the research process, and to this end they crafted annotated bibliographies and advisory reports as they researched the fields of the capstone design students' projects. Composition students also used this experience to explore the rhetorical concepts such as audience, purpose, and *kairos.* They adopted the perspective of consultants and analyzed their computer science team as an audience. The focus on a real-world problem clarified and solidified the purpose of their writing to this audience. They explored *kairos*, or opportune timing, in several senses. For example, by finding relevant recent research for the annotated bibliographies they considered how an intervention in a discourse is kairotic (i.e., they should speak to the discourse as it exists now, not twenty years ago). They also experienced *kairos* as interpersonal timing during their inter- and intra-team exchanges.

To assess our pedagogy, we encouraged our students to submit detailed Course Instruction Opinion Survey (CIOS) feedback as the courses reached their conclusion. We took their feedback into account as we later composed a survey. A year and a half after the collaboration's end, we distributed it to the composition students. For the most part, students who were in their first year during the collaboration were in their junior year by the time they responded to the survey. The timing of this survey allowed us to capture the lower-division students' reflections as they became upper-division students grappling with the same coursework and challenges as their design capstone counterparts in our module. Our survey asked students about what they perceived as the most salient learning gains from the collaborative lesson with

a particular emphasis on transfer and the students' experience applying said gains to additional academic and professional contexts.[2]

We combined situational and principle-based pedagogical models of teaching ethics, modeling an approach to ethics in computer science that students could export to other disciplines. We broke from established "horizontal" models of collaboration (for example, in-class peer review) by matching student groups of different academic years. Our more "vertical" approach also differed from other models matching students of varying levels of experience. Each class offered a tangible learning benefit to the other. Lower-division students were given real contexts for ethics research, while upper-division students received research-based advice regarding the ethical implications of their design decisions that extended their ability to understand ethics as a topic of ongoing consideration throughout the product development process.

The Scaffold: Incremental and Collaborative Learning for Ethics

Scaffolding, in the sense of scaffolded assignments moving from simpler to more complex, also often entails students from differing levels interacting with one another in the hopes of improving their skills. The zone of proximal development (ZPD), as Vygotsky writes, describes "the level of potential development as determined through problem-solving under adult guidance, or in collaboration with more capable peers" (1978, p. 86). As scholars beginning with David Wood, Jerome Bruner, and Gail Ross (1976) have come to understand it, scaffolding assumes a threshold between "novice" students and peer "experts" that might be bridged by pairing the two together.[3] In this scenario, the expert can provide some sort of structural guidance of the other student's learning and then gradually fade away as the novice attains more autonomous, expert levels of proficiency. For example, in the pedagogical study that coined the metaphor of scaffolding, Wood et al. (1976) give the example of a tutor demonstrating how to create a pyramid with a set of interlocking blocks. A tutor might start by connecting two blocks together in the hopes that the student comes to

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2. Our approach to transfer was informed by both WAC literature and engineering ethics pedagogy. In WAC, we built on the work of Elizabeth Wardle encouraging the use of explicit application and self-reflection to promote transfer (2009); extradisciplinary writings and transfer (Roozen 2010); transfer and rhetorical analysis (Fishman and Reiff 2011); and transfer and genre awareness (Clark & Hernandez 2011). In engineering ethics pedagogy, we drew from the use of multi-disciplinary approaches and problem-based approaches to transferably teach ethics (Jones 2016; Herkert 2005; Flanagan et al., 2008).

3. See "The Role of Tutoring in Problem Solving," 1976. Peter Smagorinsky has recently noted that the popular conceptions of scaffolding and ZPD have effaced much of the complexity that was part of Vygotsky's original theory and thinking. According to Smagorinsky, such simplification is due in large part to the poor translations, and subsequently faulty readings, of Vygotsky's work. See Smagorinsky, 2018.

perform the operation on their own. Once the student does, the tutor can encourage the student to repeat the operation or emulate other steps. In the writing classroom, scaffolding often emerges in terms of assignment design—for instance, a research paper that is scaffolded via an annotated bibliography, brainstorming activity, rough draft, peer review, revised draft, etc. Each of these steps is taught via instructor and peer interactions as students observe a lecture and engage with activities with peers in small groups.

While the idea that more competent peers can assist junior student development continues to be a potent pedagogical strategy that we were eager to learn from (Blakeslee, 1997), we were ultimately struck by how scaffolding, as it is popularly understood, tied us to a more rigid and hierarchical conception of how learning works that did not actually seem applicable to the subject matter at hand. Where scaffolding assumes an upward, linear movement, ethical appreciation and awareness is notoriously not always a faculty that improves with experience and seniority (Bishop, 2013). By asking beginning students to provide advice to more experienced students, our module questioned the assumption that the trajectory of ethics development is teleological. That is, it is not the case that people necessarily get "better" at ethics as they gain experience as students and professionals. In this way, we understood ethics not as something that could be rudimentarily scaffolded—i.e., an incremental set of assignments that could effectively raise one's ethical appreciation—but rather as a socially-constructed topic informed by a wide range of values and beliefs.

In creating a multidisciplinary learning module that would utilize collaboration between two classes of different subject matter and grade levels, our module followed similar collaborations done by Geisler, Rogers, and Haller (1998), Wojahn, Dyke, Riley, Hensel and Brown (2001), and Wojahn, Riley and Park (2004). Furthermore, it utilized the "advocacy approach of technical communication": the potential for diverse teams of affiliated professions to more comprehensively cover relevant issues, in this case ethical ones (Geisler et al., 1998, p. 20). However, as these studies have noted, establishing effective forms of communication between affiliated but differing disciplines remains a central challenge. Specific professions can have existing sets of priorities that make it difficult to understand alternative concerns (Geisler et al., 1998).

Indeed, we found that we had to reconsider traditional models of scaffolding in the context of employing multi-level collaboration. This complex mutual scaffolding—i.e., working with two different student levels at the same time—carried its own pedagogical challenges based on the delicacy of managing diverse learning objectives. The upper-division students were committed to implementing the specified technical knowledge of their major, while the lower-division students were studying and establishing ethical research practices. We wanted our scaffolding to

attend to the ways in which learning helps in and contributes to a "collective…cognitive space" in which a lifetime of developmental skills might lead to forms of mastery (Smagorinsky, 2018, p. 255). By asking both groups of students to consider ethics at early phases of the project, we hoped to emphasize the importance of "soft skills" such as flexibility and openness championed by Wojahn, Riley and Park (2004). By asking students to collaborate in multiple phases—e.g., serve as users during user testing and implement written suggestions in final reports—we wanted students to appreciate their ongoing collaborative relationship rather than individual disciplinary goals. Thus, we emphasized the encounter between the different rhetorical contexts and professional situations of the two classes as much as the discrete operations of conducting user research or writing an advisory report.

The Swamp: Rhetoric and Professional Ethics

Why toss students into the deep end of a swamp of professional ethics during their first-year writing classes? That is, why not allow students some firm ground until their upper-division philosophy coursework? After all, almost all of the students we worked with have an ethics requirement prior to graduation, usually accomplished in the student's third or fourth year. To answer this question, we drew from recent work in rhetoric and technical writing by Carolyn Miller (1979), Lois Agnew (2016), and Paul Dombrowski (2000), among others. We agree that rhetoric as a discipline is rooted in the goal of "cultivating an ethical disposition and fostering respectful relationships with people with whom one does not agree" (Agnew, 2016, p. 9). More specifically, technical writing itself is an enterprise that is "involved in communicating not only technical information, but also values, ethics, and tacit assumptions represented in goals" (Dombrowski, 2008, p. 3). We took our cue from Miller's influential work on technical writing as a humanistic discipline in developing a module that asked students to think about questions of accessibility, inclusion, and unintended consequences from the beginning of a project. This approach, informed by Bishop's (2013) work on business ethics, understands ethics as a proactive tool rather than a "reactive measure." That is, students explored ethical frameworks in tandem with the development of their project and plans rather than applying a corrective diagnosis to an already-existing ethical problem.

Our thinking was strongly influenced by Schön's (1987) work on learning, as we encouraged students to become "reflective practitioners." That is, to gain awareness of their current implicit disciplinary knowledge base and to leverage this knowledge to frame questions and problems in real-life situations. Schön's insights in "reflection-in-action," or the complementary nature of doing and thinking, were particularly important for us as we developed the module. Slogging through the swamp of professional practice meant that the insights produced from these outward-facing

projects were hard-won, and, we hope, ultimately more memorable and valuable. The deep end of this swamp, like the deep end of the pool into which one might toss a new swimmer, represented a space where students came into contact with real and sometimes overwhelming issues.

In the end, our module expanded the application of theories of educational scaffolding by demonstrating the necessity of collaboration through writing particularly for "gray" topics such as ethics. Our democratization of ethics helped students see the field not as a top-down criticism but as an ongoing set of communal concerns and considerations, in the same vein as McGlynn and Kozlowski's strategies for purposeful group activity. The approach also makes concrete the "community stakeholders" that are vital to public-facing work (Allan, 2018, p. 268) and provides a "wider audience" which makes the world feel "real" (Hersh et al., 2011).

In the Reeds: An Integrated Ethics Module's Assignment Sequence

Our integrated ethics module asked students from one author's lower-division composition course to collaborate with the other author's upper-division students to assess the relevant ethical issues related to a client-based computer science project. Lower-division students were drawn from three sections of first-year writing with twenty-four to twenty-five students each for a total of seventy-three students. These students came from a variety of degree programs but were predominately in STEM tracks. Our upper-division students were in two sections of computer science junior design and technical communication composed of fifty students each section. These students were already primed for collaboration due to the nature of the course series that was co-taught by a computer science instructor and a technical communication instructor. The courses required them to work in four to six-person teams with an external client to develop a project and their technical communication skills over the course of two semesters. Participants in this study were provided with informed consent forms prior to their work on this project, on the recommendation of our university's Institutional Review Board.

Before conducting analyses of the ethical concerns related to the client-based computer science projects, students in both courses were assigned reading on ethics, followed by lecture and discussion. Lower-division students contextualized current thinking on the history of ethics through reading and discussing excerpts from a book comparing the history of honor and ethics frameworks.[4] Subsequently, they read and discussed a library guide on evaluating sources and ethical citational

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4. Sommers 2018 pp. 115.

practices.[5] They were asked to put these lessons into practice in a follow-up assignment which required students to identify a key ethical debate in local policy-making discussions, to represent both sides fairly, and to select credible evidence to support their favored side.

For their initial ethics lesson, the upper division computer science students were given a case study in which a failure to understand the needs and practices of potential users led to lapses in accessibility and ethical language. Computer science students were first shown a demo video and 2016 Lemelsohn-MIT Student Prize announcement for SignAloud, a set of electronic gloves that purported to "translate sign language into text or speech."[6] After asking students to discuss what they believed to be the merits of this invention, students were then provided with an article from *Audio Accessibility*, an article from *The Atlantic*, and comments left on SignAloud's Facebook page that critiqued the creators for failing to accurately understand and describe the nature of ASL and the needs of the Deaf community.[7] This particular case study was not meant to serve as a definitive way to prevent any kind of ethical lapse that might occur during project development. Rather, it sought to encourage a "dialectic about ethics" with a variety of stakeholders, a dialectic that could go beyond the classroom and the students' particular projects.[8]

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5. "Research Process: A Step-by-Step Guide" used the CRAAP method (currency, relevance authority, accuracy, purpose) to evaluate sources. Since the semester of our study, we have moved to a lateral reading model to teach source evaluation and citational practices.

6. "UW undergraduate team wins $10,000 Lemelson-MIT Student Prize for gloves that translate sign language." *UW News* 12 April 2016 <https://www.washington.edu/news/2016/04/12/uw-undergraduate-team-wins-10000-lemelson-mit-student-prize-for-gloves-that-translate-sign-language/>. The official demo video for SignAloud has been made private, though the video is available through other channels. See "SignAloud Gloves that Translate Sign Language into Text and Speech YouTube." *YouTube*, uploaded by ayoub ronnie, 25 April 2016, https://www.youtube.com/watch?v=X1efQ1QzybE and "Inventors Create Gloves That Translates Sign Language Into Speech." *YouTube*, uploaded by ViralMediaCrew, 25 April 2016 https://www.youtube.com/watch?v=wdJgO6XyMmE.

7. See Sveta, "Why the Signing Gloves Hype Needs to Stop." *Audio Accessibility* 1 May 2016 <https://audio-accessibility.com/news/2016/05/signing-gloves-hype-needs-stop/> and Michael Erard, "Why Sign-Language Gloves Don't Help Deaf People" *The Atlantic* 9 Nov. 2017 <https://www.theatlantic.com/technology/archive/2017/11/why-sign-language-gloves-dont-help-deaf-people/545441/>. The Facebook page for the project has since been deleted.

8. For a discussion of dialectic about ethics in the technical writing classroom, see J. Blake Scott, "*Sophistic ethics in the technical writing classroom: Teaching* nomos*, deliberation, and action*," *Technical Communication Quarterly*, 4.2 (1995): 187–99. Scott's work complements the scholarship of Sheryl Fontaine and Susan Hunter who have argued for writing and communication classes to foster a larger ethical awareness as opposed to a static set of principles to be applied (Fontaine and Hunter, ed. 1998). Subsequent studies have also emphasized how language and the

The integrated ethics assignment sequence was introduced in the fourth week of a fifteen-week semester: the point in the course when the computer science students had been assigned a client and associated project, were conducting user research, and were beginning to draft user stories.[9] Figure 1 shows the assignment overview, as it was presented to the composition students.

1. Review client sheet and form groups based on interest (1/16)
2. Review this guide, focusing on the "Evaluating sources" and "Home" tabs. http://libguides.gatech.edu/English1102and1102/home
3. Write an annotated bibliography with each student contributing 3 resources. Each entry should include 2–4 sentences summarizing the argument of the resource in question. As a whole, the annotated bibliography should give the junior design team a comprehensive overview of the literature around the ethics of a certain topic.
4. Write an advisory report. It should include
   A. An overview
       a. What team are you advising? What is their project? What field (i.e., technology. health. etc.) is the project within?
   B. Advice and recommendations
       Write a 3-4 page report (about 300 words per student) that synthesizes the findings of your annotated bibliography and addresses the questions below. The report should give the junior design team the background they need to make ethical decisions in their project's scope.
       a. What are the big picture ethical questions that people ask in the field? What ethical issues should the group be aware of?
       b. What precedents have been set for dealing with potential ethical issues?
       c. What general recommendations do you have for a project of this kind? For example, a group working on a rideshare app might need to know about critiques of ridesharing and ride hailng from several different perspectives (safety. economics, environmental impact, etc.)
   C. The annotated bibliography

Figure 1 Assignment overview

Each composition student was asked to choose which client-based project they would like to research and thus for which computer science team they would write the advisory report. The element of choosing a team was aimed at increasing student

communication of technical information carries "hidden values" and "tacit assumptions represented in goals" of which developers need to be aware (Dombrowski 2000).

9. User stories are documents used in the Agile framework of software development. User stories take the viewpoint of the user in order to describe software features—for example, "as an educator, I want to access my gradebook so that I can assign grades to students."

engagement, as it allowed students to activate any prior expertise on a given field and to research the ethics of a field that was of personal interest. Based on these choices, composition students were assigned into groups of three–four per design capstone project. These groups wrote an annotated bibliography which required each student to contribute three resources with a few sentences summarizing the argument. The sources in the annotated bibliography needed to provide insight on the ethical issues relevant to the client-based project they selected.

Based on this annotated bibliography, each team authored a brief report with an overview of the project (e.g., self-driving cars) and its field (technology, health, education, etc.), and the big-picture ethics questions people ask in the field. They explained any precedents that have been set for dealing with potential ethical issues and make some general recommendations for a project of the kind proposed by the capstone design team. The lower-division students' ethics reports were given to the relevant upper-division team in the sixth week of the semester so that design teams could consult the ethics report prior to their user testing and prototyping content arc.

In the ninth week of the semester, lower-division students provided our upper-division students with valuable realism in our module's user testing phase. In this stage, upper-division students created a series of "tasks" for testers to perform in order to determine whether the product's preliminary design was satisfactorily meeting usability requirements; lower-division students served as testers of these prototypes. Prior to the testing, lower-division students read disability studies scholarship on accessibility (Yergeau et al., 2013) so that they might offer informed critiques of the projects' accessibility to the capstone design student teams. Lower-division students shared verbal feedback with the upper-division teams and wrote a review of the experience to be shared with the teams after the class session. This review incorporated what the lower-division students had learned about ethics and applied this knowledge to the newly-evolved stage of the capstone design project.

Following the testing, upper-division students composed a Prototype Modifications Report. This report asked students to document their findings from their usability test with lower-division students and to propose what changes they would make to future iterations of the product in light of their test results. Upper-division students were asked to focus on the interactivity of the prototype, i.e., its ability to allow users to accomplish intended goals and objectives successfully.

At the end of the semester, upper-division students authored final reports that detailed the entirety of the development work they had done over the course of the semester. As part of this report, upper-division students were asked to have a committed section on ethics that addressed the ethical considerations that had been brought to their attention by working with the lower-division students. Specifically, they were asked to identify which recommendations proposed by composition students they

would implement. If they chose to disregard specific recommendations, they were asked to provide a rationale for why a recommendation was not implemented or articulate an alternative means of addressing the relevant ethical issue. These decisions were required to be supported by relevant sources, either those that the composition students' annotated bibliographies supplied or those that the capstone design students found during their own research. This dual approach to establishing credibility mirrors standard practices for industry in which a professional draws from both the expertise of others and their own investigations.

The View from Within: Local Observations and Findings

Our collaborative assignment sequence—particularly the composition of documents for a specific audience (i.e., upper-division computer science students) and the actual delivery of the documents to that audience—had several purposes. Firstly, the prospect of real-world application provided energy and immediacy for the lower-division students' work. After all, they knew their writings would be read by a set of upper-division students who were engaging with the same issues and concerns. Secondly, the real-world application also naturally limited the breadth of their bibliographies from the beginning, circumventing sticky issues of scope. Thirdly, and perhaps most significantly, the lower-division students' efforts were placed into an audience-driven context that directly influenced their communication decisions.

We found that these audience-driven contexts engendered critical considerations from students about the presentation of information. For example, Figure 2 shows the approach taken by one lower-division team as they produced the initial report on the ethics of eSimulation for a project aimed at a local community food bank. As the example demonstrates, students began to approach a professional field of knowledge to which they had little-to-no prior exposure. They experimented with how to break down this complex information into a form that would be useful for the external audience of the upper-division design team—in this case, dividing the content into four types of ethical concerns.

The Ethics of eSimulation

Gamification is recent development in the new era of technology, typically used by companies to incentivize employees ("players") or to provide the player with game style way of accomplishing a task. For example, Fitbit awards the player virtual milestones for accomplishing a task as well as incentivizes the user to be healthier. However, some gamification programs can struggle to separate the spheres of the game and reality. To ethically evaluate a gamification program, one must evaluate how the game and reality interact. The four main ethical concerns are manipulation of the player, exploitation of the player, intentionally or unintentionally harming the player, and finally the game altering the players character in a socially unacceptable way.

Manipulating a player is defined as the objective of the game is to alter your behavior to reflect the desire of the program. This can ethically good or bad, depends on how the game wishes to change the user, if that is objective at all. The food bank simulation objective is to illuminate the effects of food insecurity and hunger, thus potentially manipulating the user to be more receptive to these topics. While it is a potential form of manipulation, it seems like a positive one.

Exploitation is when a game replaces real incentives with virtual ones, for example, earning an online badge instead of money. In the simulation, the player receives fake cash and benefits that they can store in their wallet and can redeem for food. The simulations provides no source of evident exploitation of real incentives, due to the fact that the incentive of the simulation is to teach. Teaching is done at the same time as virtual incentives are being won and lost.

Figure 2. eSimulation ethics report

Figure 3 demonstrates a similar attention to audience. Lower-division students organized information in their annotated bibliography according to topic rather than only alphabetically for the upper-division students' ease of reference:

Annotated Bibliography

The Ethics of Gamification

"Community Food Experience." Community Food Experience, Atlanta Food Bank, Oct. 2015, acfb.org/sites/default/files/Community-Food-Experience-Oct-2015pdf.

This source is a pdf that explains a live simulation done by the Atlanta Food Bank. Inside are the setup instructions, gameplay rules, objectives, as well as material to teach to the participants.

Kim, Tae Wan, and Kevin Werbach. "More than Just a Game: Ethical Issues in Garnification." *Repository.upenn.edu*, University of Pennsylvania, June 2016, repository. upenn.edu/cgi/viewcontent.cgi?article=1051&context=lgst_papers.

Tae Wan Kim and Kevin Werback discuss the emerging field of eGamification and how this new field brings a new set of ethics. While this source mainly pertained to business ethics, it also broadened to expand its research into other fields. They stated that with most upsides, there can be a concurrent downside to a game, and that downside needs to be ethically considered.

Warren, Scott, and Lin Lin. "Ethical Considerations for Learning Game, Simulation, and Virtual World Design and Development. "Www.researchgate.net, Jan. 2012, Ethical considerations for learning game, simulation, and virtual world design and development.

Scott Warren and Lin Lin explain how to design games with gamification ethics in mind. They use multiple examples in the paper to illustrate their argument and to provide context.

Accuracy of Simulations

Figure 3 Annotated bibliography

These annotated bibliography and brief reports were successful as opportunities for lower-division students to review, synthesize, and present ethical ideas around a specific domain; however, the assignments themselves did not necessarily yield industry-appropriate language. We prioritized student-driven engagement and so provided more open-ended requirements. We did not, for instance, assess based on the advisory reports' use of a specific range of seminal articles regarding privacy, accessibility, or another ethical domain. The report served as a tool for the upper-division students, but more could be said about both the writing of the report and

its reception. For instance, students here employed a more academic and essayistic writing style, familiar to them from high school English. The collaboration revealed points of rhetorical weakness and indicated the potential need for concrete lessons or lectures on how to render written advice in a clear and direct manner. In a future version of this sequence, an additional phase might be added where composition students can receive feedback from computer science counterparts on the usability of the report. This feedback could then be implemented in a second draft. We could then see if the composition students were able to frame their writing more successfully in terms of what the computer science students needed to learn.

Despite these rhetorical weaknesses, the actual delivery of the lower-division students' documents to project teams provided the upper-division students with the opportunity to be recipients of research and learning from affiliated peer groups. These upper-division students had already learned to make annotated bibliographies in their own lower-division coursework, but there was little to indicate that they had as of yet any experience reading them and using bibliographical research to extend their own work, a task important for them to master in their future careers and graduate study.

User-testing and the opportunity for real-time exchange it provided proved similarly productive. As Figure 4 demonstrates, upper-division students received valuable feedback on their prototypes and were receptive to the lower-division students' questions and concerns. The lower-division students in this case informed the upper-division students' final project as they raised important concerns around privacy at an early point in the project. This gave upper-division students time to address the issues more effectively than would have been the case if they only had been brought to the team's attention later in the semester by the client or, worse, an angry end user.

We believe the user-testing portion of the assignment sequence could be usefully adapted for other classes as well, so long as the target class uses a client- or project-based curriculum. While this assignment worked well for computer science students, a number of disciplines require the explanation of complex disciplinary material to a non-expert audience. By conducting user-tests, upper-division students gained valuable experience showcasing their products to those outside their own development team and thereby cultivated their own abilities to speak to a variety of audiences.
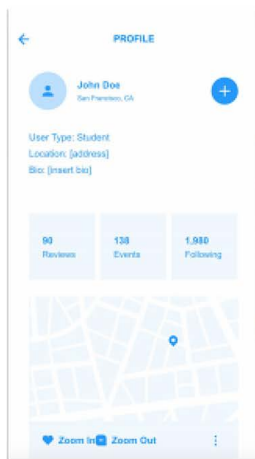
Figure 2: User Profile. Information displayed on the user profile was considered problematic to user testers who suggested that event attendance and location might best be kept private.

Our testers noted that the user profile displayed all the events a user was attending and their location.[22] The testers proceeded to ask us if there was a means by which users could decide how much data they would like to share with other users and to be honest we simply hadn't thought that far ahead.[23] Our application had nothing in it's settings to calibrate a user's privacy preferences and that's simply a feature too important to not include. For now, we simply decided to remove the location tag and make the "events" tab unclickable. This is a naive solution, but we believe it is better to assume that our users want us to share less of their information rather than more. This assumption is based on a 2018 Pew Research survey which found that 74% percent of its participants think it is important to be in control of who can get information about them.[24] In addition, the survey found that 61% of participants would like to do more to protect their privacy.[25] With this information in mind, we believe we have a moral responsibility to our users to protect their privacy even if that comes at the expense of certain desirable features.

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[22] ENGL 1102 Group, "Digital Prototype Demonstration," Interview by author, March 11, 2019.
[23] ENGL 1102 Group, "Digital Prototype Demonstration."
[24] Spyros Kokolakis. "Privacy attitudes and privacy behaviour: A review of current research on the privacy paradox phenomenon." *Computers & security* 64 (2017): 122-134.
[25] Spyros Kokolakis. "Privacy attitudes and privacy behaviour: A review of current research on the privacy paradox phenomenon."

Figure 4. Prototype Modification Report

The View from Above: Broader Implications

We came away from our exploration of swamp and scaffold with two core takeaways to apply to broader questions of the writing curriculum. Drawing from our own observations and the results of a survey, we noted its success in terms of audience awareness and transferability of learning. We administered a survey to the composition students a year and a half after they completed the collaboration (we were unable to contact the upper-division students, most of whom had graduated and left the university by this point). The thirteen-question survey was sent to seventy-three students and we had a forty-one percent response rate of thirty students. Of these students, fourteen described themselves as Asian, thirteen as White, and one as Multiracial. Two students left this question blank. Seventeen respondents indicated their gender as male, twelve as female, and one left the question blank. The survey asked students for their impression of their own contribution (more, equal to, or less than teammates), whether they fulfilled the university's ethics requirement, and a series of six Likert-scale questions about the module itself. We also asked three open-ended questions about what the students remembered from the module and how they would improve it. Student responses to the Likert-scale questions are summarized in Table 1.

Table 1. Follow-Up Survey Summary

Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I think I would have learned more using a traditional case study approach instead of coordinating with another team in an ongoing course		7	13	10	
Working with a group of juniors and seniors from my own university made the assignment more useful and interesting	8	17	5		
I benefited from working with a group of juniors and seniors beyond the assignment itself (i.e., expanded a social network, made new friends, etc.)	1	5	8	15	1

Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I learned skills that transferred to other classes through completing the ethics advisory report		14	16		
I used skills that transferred to other, non-academic contexts through the ethics advisory report	4	16	8	2	
Acting as user testers and providing feedback to junior design students was a good use of class time	10	17	1	2	

Our students indicated that "Working with a group of juniors and seniors from my own university made the assignment more useful and interesting (Strongly Agree: 26.7 percent. Agree: 56.7 percent. Neutral: 16.7 percent). First-year composition students did not feel as if their educational needs were subsumed in order to help the other students meet their learning objectives, even in contexts where they were providing valuable feedback that pertained to a project that was not their own. They felt that "Acting as user testers and providing feedback to junior design students was a good use of class time. (Strongly agree: 33.3 percent. Agree: 56.7 percent. Neutral: 3.3 percent. Disagree: 6.7 percent)." Our institution is quite large, with an undergraduate enrollment of over 15,000 students. This may be part of why the exercise did not lead to social extra-academic network building outcomes as we had hoped. Students largely disagreed that "I benefited from working with a group of juniors and seniors beyond the assignment itself (i.e., expanded a social network, made new friends, etc.) (Strongly Agree: 3.3 percent. Agree: 16.7 percent. Neutral: 26.7 percent. Disagree: 50 percent. Strongly disagree: 3.3 percent)." Presumably, more face-to-face time could have improved this outcome as well (students had very little real-time interaction).

While our university is in a large urban setting, an integrated, vertically-linked module like the one we used has promise for other institutions without nearby ready sources of potential clients. Given the benefits of a client-based curriculum in the writing classroom, we felt that this approach would be particularly useful for smaller, rural institutions. In fact, a similar approach might prove even more beneficial in a smaller environment because it could lead to expanded social networks for first-year students, who are often kept together through the first-year curriculum. In a

smaller setting, allowing structured class time for first-year students to interact with upper-division students could be even more successful in fostering professional relationships. Despite our module's only modest success in its secondary objective of promoting professional relationships, the primary objective seems to have been met. That students perceived their roles as user testers to be a valuable use of class time shows that they grasp important learning outcomes: improved communication strategies across oral and visual modes, offering feedback on a real project, is as important as traditional essay-writing.

Our other key takeaway was that the module indeed provided transferable practices and knowledge, but in a different way than we expected. Our ethics module was administered in the spring of the composition students' first year. The follow-up survey was administered the fall after their second year. We hoped to see that students remembered the module and were able to draw from its lessons in other contexts. Surprisingly, this goal was realized more in non-academic contexts than in coursework. Students mostly agreed or were neutral on the question "I learned skills that transferred to other classes through completing the ethics advisory report. (Agree: 46.7 percent. Neutral: 53.3 percent)." When we asked about real-world contexts, however, the level of agreement rose: "I used skills that transferred to other, non-academic contexts through the ethics advisory report. (Strongly agree: 13.3 percent. Agree: 53.3 percent. Neutral: 26.7 percent. Disagree: 6.7 percent)." We believe this response indicates that we met our objective of providing real-world experiences for our students. We hypothesize that the classes they took during their second year returned them to a more abstract model of "reflection-on-action" rather than immersing them in practical, real-world questions as "reflection-in-action." In these contexts, the learning gains would not have been as directly applicable. However, as many students completed internships the summer of their sophomore year, they would have put the module's lessons into practice.

Our survey also asked several open-ended questions such as:

1. How did you feel about doing the ethics advisory report at the time?
2. What general impressions do you have of the assignment now, a year and a half later?
3. What recommendations do you have to improve the assignment?

Recalling their perception of the assignment at the time, one student shared:

> At first, I thought it redundant for the teams, but after researching and even brainstorming ourselves, I realized there are many aspects of ethics that can be easily overlooked. I then realized we didn't need to tell the team exactly what to do, but we definitely needed to bring up aspects they might not consider. I felt like we did have a meaningful impact on the teams.

Responses from students regarding their general impression of the assignment confirmed, for the most part, what we had hoped: that the assignment would prime them for future ethics courses and help them apply ethical principles in practice. For example, one student wrote:

> Reflecting on this assignment, I feel like it was a great experience that helped me become more aware about how easily data is collected now, and how important it is to prevent misuse of data. I think that having some kind of introduction to ethics early on is necessary, and it should be something that is emphasized throughout the college learning experience rather than concentrated in a senior level course. I'm glad I got to work on this assignment and do sometimes think about it when working on projects for my CS minor or while eating salty things and pondering about my sodium intake…

In response to our question about potential improvements, many students requested more time and communication checkpoints with upper-division students. As one student suggested:

> While I was interested in the subject, I felt like there was a little disconnect with the junior design students—I cared more about the ethics research than their project, and they were more of a nice conclusion to the assignment. I never got to hear more about their project beyond the written summary and conversation we had in that one class period, so it would have been nice to interact with them a little more and get better insight on what exactly they were doing (which probably would help them better too, since we would be able to make our recommendations more personal rather than having them be extremely broad and kind of guessing at what kind of issues they might have). Maybe this could be done with an additional meeting at the beginning of the project where we could talk to them and learn more, along with the final meeting where we provide feedback?

In a longer study, we would like to assess whether the ethics recommendations produced by the lower-division students continued to inform the design projects after the end of the semester. In another iteration of this collaboration, we would respond to these survey responses by providing lower-division students earlier feedback from the upper-division students on the annotated bibliographies so that they could experience from the beginning of the semester the sense of contributing to a real, ongoing discussion. We also would make the deadline for the ethical plan portion of the final report earlier so that lower-division students could act as peer reviewers and see for themselves the ways in which their contributions impacted the final product. One or two additional meetings or required written communication

exchanges could also be incorporated, though at the risk of placing too high of a burden upon the upper-division students as their curriculum is already well-developed and demanding.

Conclusion

In addition to the transferable knowledge students mentioned, we believe this integrated assignment models ethical collaboration and listening practices that, in turn, will lead to more genuinely informed ethical decision making. By introducing lower-division students to upper-division students as informed voices with valuable input early on, we sought to destabilize some of the hard-lined hierarchies—that seniority necessarily means expertise, that professionals with domain knowledge need not consider the perspective of non-experts—that can often attend and subsequently stifle professional practice and communication. We still valued the idea of mastery or scaffolded knowledge, however. Indeed, both student groups were provided with structured sets of assignments that directly built off the material from the last. Such scaffolds were consistently attended by multi-level, multidisciplinary engagements as a means to enhance their efficacy. Broadly speaking, it was our hope that this learning module might instill a kind of methodological habit in the process of project development: to listen to and implement a multidisciplinary set of voices, including—for upper-division students—those junior to oneself. For lower-division students, it was our hope that the experience of becoming valued collaborators and the preview of the swampiness of professional practice might instill confidence and a more robust sense of audience as they made an immediate intervention into an ongoing project.

Swamp and scaffold, we found, both required these methodological habits of humility. On the one hand, these methodological habits required a willingness to accept orienteering resources in the face of pitfalls that can often only be recognized when multiple perspectives are brought to bear on swampy questions of professional practice. On the other hand, these habits required the ability to build one's own prior knowledge and to climb the scaffolding erected by less-senior collaborations. By encouraging our students to collaborate through these processes of ethical knowledge-making, we invite them to view technical communication as a way of participating in a community. Methodological habits of humility provide a means to resist thinking of knowledge itself—including professional writing and ethics—through a positivist lens in which science is "a matter of getting close to the material things of reality and farther away from the confusing and untrustworthy imperfections of words and mind" (Miller, 1979, p. 16). Instead, we embrace what Miller describes as a rhetorical post-positivist perspective in which knowledge is a process of communally-based enculturation. In effect, by loosening the hierarchical imaginations of disciplines and disciplinary knowledge, our collaboration invites students to use

the writing process to unearth ethical concerns through multiple phases of exchange which also provide important lessons in reception.

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