15. Technical Communication Pedagogy and Layered Literacies in Workplace Training Courses

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Abstract: Technical communication scholarship explores how students who are enrolled in university courses acquire and transfer rhetorical skills and literacies into the workplace (Beaufort, 2008; Brent, 2011; Cargile Cook, 2002; Haas, 1996; Russell, 2007; Winsor, 1996). Absent from these discussions are workplace writers who may not attend college and instead complete non-academic training courses. Often these writers are expected to complete technical documents without receiving formal writing instruction (Amidon, 2014; Angeli, 2015, 2019). The widely used layered literacy framework (Cargile Cook, 2002) offers a way in which to understand how writers learn multiple literacies in the hybrid workplace-classroom context of workplace training programs. As such, this chapter uses the layered literacy framework to better understand how workplace communicators learn multiple literacies outside of the technical communication classroom and inside workplace training. In turn, this chapter shows how the layered literacies framework informs other actions related to writing, including decision making and synthesizing data, and how the framework is strained when applied to workplace training contexts.

Keywords: workplace education, adult learners, EMS report writing, EMS education, fire department training

Key Takeaways:

- The concept of layered literacies informs other actions related to writing, especially decision making and synthesizing data, which students can develop in the technical communication (TC) classroom.
- Workplace communicators learn multiple literacies outside of the TC classroom and inside workplace training.
- The workplace training classroom suggests that literacies, especially embodied and multisensory, are more than layered; they are symbiotic and in tension

Technical communication (TC) scholarship has explored how students enrolled in university courses acquire rhetorical skills and literacies they learn in academic TC courses and transfer them into the workplace (Bay, 2006; Beaufort, 2008; Brent, 2011; Cargile Cook, 2002; Haas, 1996; Munger, 2006; Russell, 2007; Win-

sor, 1996). As a part of this discussion, scholarship focuses on how we as TC teachers can bridge the gap between academia and the workplace, pointing to internships, service learning, co-ops, and client-based projects as ways to prepare students for the classroom-to-workplace transition.

Absent from these discussions, though, are courses and training programs developed by and offered through workplaces. Research on workplace training education related to writing or literacy has been conducted outside of the United States (Matthews, 1999; Taylor, 2000), and research conducted in the United States is at least ten years old (Bogert, 1989; Hollenbeck, 1993; Karlson, 1991; Thrush & Hooper, 2006). Despite this gap in scholarship, the workplace training context promises to teach TC teachers and scholars much about how we might prepare our students for workplace writing.

In the United States, workplace training programs are often designed by employers and immerse their employees in workplace-specific skills and the workplace environment. As such, workplace training programs are a hybrid space because they are both workplaces and classrooms. The programs are not typically offered at colleges, and they are not just workplace activities—they are on-the-job training, developed by workplace instructors who may or may not have pedagogical training. These training programs, then, can provide insight into how workplace instructors prepare their employees for their local workplace. In turn, university TC teachers might better understand how to prepare college students for the workplace.

The profile of participants in these workplace training programs varies in a few ways. Age range varies, from participants who are directly out of high school to participants who have decades of workplace experience. They might be current employees who are in the program in order to complete continuing education, or they might be new to the workplace with limited workplace experience. In turn, education levels vary, ranging from a high school diploma to a few college credits to bachelor's degrees and completed certifications. Programs vary in length too; continuing education programs can last a few hours, while workplace training programs that are designed for new employees can span a few days, weeks, months, or years.

The training program that I'm currently studying is a three-year firefighter and paramedic training program that enrolls recent high school graduates. In this way, these students, called "cadets," are similar to students who are enrolled in our university TC courses with one exception: the cadets are expected to complete high-stakes workplace documentation every day on the job with about only two hours of formal writing instruction, which is significantly less time than we spend with our TC students who might not be entering such high-stakes workplaces.

In this chapter, I contribute to workplace training education scholarship, specifically workplace writing, by examining how the TC theory of "layered literacies" manifests in and is strained by workplace training contexts. In doing so, I

aim to better understand how students develop the requisite TC skills that have been shown to be fundamental to the workplace. Thus, this chapter answers two questions:

1. How do we account for teaching TC in different contexts with current theoretical and/or pedagogical knowledge, specifically layered literacies?
2. How do students in workplace training programs prepare for employment opportunities that include managing, reporting, and sharing diverse types of data to multiple audiences in various discourse communities?

To answer these questions, I draw on the first two years of a six-year longitudinal research project with my research site, an urban fire department's three-year training course, known as the Training Academy. The Academy trains recent high school graduates to become firefighters and paramedics through rigorous physical training, classroom-based teaching and testing, and field training. Although the cadets may not see themselves as technical communicators, TC is fundamental to their workplace (Angeli, 2019). It is the lifeblood that allows them to achieve workplace goals, and as part of this work, the cadets are expected to develop layered literacies to care for patients and document medical decisions.

■ Layered Literacies and TC Pedagogy

Scholars have argued that technical communicators' work is often invisible in the workplace (Brady & Schreiber, 2013), and part of this work involves "layered literacies." As developed by Kelli Cargile Cook (2002), layered literacies refer to a framework that structures the six interrelated "key literacies" of TC pedagogy: "basic, rhetorical, social, technological, ethical, and critical" (p. 7). This framework has been applied to a number of studies that range from research on the design of informed consent forms (Wright, 2012) and TC certificate programs (Turner & Rainey, 2004) to assessment (Brinkman & van der Geest, 2003; Thomas & McShane, 2007), service-learning and civic engagement (Dush, 2014; Eble & Gaillet, 2004; Turnley, 2007), and civic and ethical literacies (Batova, 2013; Hannah, 2010; Kienzler & David, 2003).

Recently, scholars have added two literacies to this framework: embodied and multisensory. Embodied literacy is a way that students develop a "critical awareness of one's own embodied positions, as the technical communicator, in relation to users and technical documents" (Swacha, 2018, p. 264). Citing Jay Timothy Dolmage, Kathryn Y. Swacha notes that the body is rhetorical and informs the technical communicator's writing processes and practices. Likewise, in healthcare contexts, such as prehospital emergency medicine, the patient's body is rhetorical; it communicates information through various pathways, including vital signs when hooked up to a telemetry machine, changes in skin color and temperature, and pupil dilation (Angeli, 2019; Fountain, 2014; Melonçon, 2017).

Focusing further on healthcare contexts, "multisensory literacies" are a way to understand healthcare's embodied, mediated experience and how expert and non-expert users engage their senses in medical settings (Bivens et al., 2018). For paramedics, the patient's body and the patient's environment cue them into treatment decisions. For example, if a patient has an altered mental status due to low blood sugar, paramedics will follow treatment protocols to increase the patient's blood sugar. Then, to ensure the patient's blood sugar remains at a healthy level, paramedics might look to see if the patient has food in the house. If the patient does not, the paramedic might suggest to the patient that they transport the patient to the hospital to ensure the patient's blood sugar doesn't drop again. To do so, paramedics will draw on their rhetorical persuasive skills to convince the patient to go to the hospital.

Despite the wide range of studies that apply the layered literacies framework, less explored is how this framework translates into training courses outside of the university. In these contexts, students are expected to have knowledge of multiple literacies: basic, technological, rhetorical, ethical, critical, and social. My research site, the Academy, offers an opportunity to understand how layered literacies manifest in non-academic training courses. In turn, the Academy teaches us about two newer, interrelated literacies, embodied and multisensory, which are fundamental to the healthcare workplace. Additionally, this site shows how the workplace-classroom hybrid space strains parts of the layered literacy framework, thus illustrating how it risks being unstainable (Lawrence & Hutter, this collection).

■ The Research Site

This chapter is drawn from a six-year, multi-cohort longitudinal research project with the Milwaukee Fire Department's (MFD) Cadet Training Academy (IRB Protocol #HR-3332, approved 5/19/2017). In the Academy, cadets earn four licenses, each demonstrating a higher level of firefighting skill and medical care: EMT (Emergency Medical Technician), Fire 1, Fire 2, and Paramedic. Cadets also take national exams to earn their National Registry EMT and Paramedic certifications. To apply their skills in the field, cadets complete three rounds of ride-alongs: 4-hour EMT shifts, 8-hour paramedic shifts, and 12-hour paramedic shifts. During these shifts, they must care for a certain number of patients and complete a certain number of hours, and as they move through their shifts from EMT to paramedic, their medical and writing responsibilities change and increase in complexity. For example, during EMT-BASIC, cadets handwrite patient care narratives on paper and include basic information, such as patient vitals and transport decisions. Then, as cadets start their paramedic training, their medical responsibilities and decisions become more complex, and they document all decisions and interventions electronically, requiring them to remember more information and synthesize it into a patient care narrative.

My larger research project answers two questions:

1. If workplace communicators do not attend college, how do they develop effective technical workplace communication skills?
2. In contexts in which college-aged students are immersed in the discipline (e.g., fire science) instead of taking university courses about the discipline (e.g., "Writing about Fire Science"), what curricula can promote technical writing skills required to succeed in the workplace?

The first three years of this longitudinal study were dedicated to a pilot study. In the pilot, I conducted classroom observations, collected survey responses from 18 cadets, and worked with six focal participants. Focal participants completed one 40-minute one-on-one interview with me and two 30-minute focus groups. Additionally, I collected all of the writing these participants completed, which includes their entrance exams, class notes, clinical notes, and practice patient care reports (PCRs), which documents the decisions made and treatments provided during a 911 response. Additionally, I observed each of them for eight hours during their paramedic field training where they work under MFD providers (who are paramedics). I rode along with the cadets and their supervising providers as they responded to 911 calls. This involved a total of 48 hours of field observations.

As such, collected data includes completed surveys, field notes from observations, audio recording and transcripts from interviews, and student writing (class notes, completed writing assignments, and practice PCRs). Collected data also includes completed PCRs that current MFD providers submit, which provide a point of comparison for writing the cadets will be expected to complete once they graduate from the Academy. This chapter is informed specifically by my work with six focal participants whom I have been working with for two years at the time of writing.

▋ EMS Providers are Technical Communicators

First responders, who include Emergency Medical Service (EMS) providers, are rhetoricians and technical communicators in many respects. In their workplace, written documentation skills and visual literacy play a significant legal and medical role (Amidon, 2014; Angeli, 2015, 2019; Helferich, 2016; Seawright, 2017). As technical communicators, EMS providers translate medical language to lay people throughout a response, most importantly to the patient. Their writing responsibilities include completing a PCR for every 911 response in which they integrate their observations, actions, and memory from the 911 response into a narrative-style summary. Ultimately, the PCR persuades various audiences that the actions EMS took were appropriate and effective, and it allows those audiences to continue patient care. Specifically, the PCR audiences include

- quality assurance professionals who review quality of medical care provided in the field;

- medical directors and medical examiners who also review quality of medical care and investigate high-profile responses, like a shooting or multi-vehicle car accident;
- physicians and nurses who continue patient care in the hospital;
- insurance and billing companies who determine medical coverage; and
- lawyers who litigate law suits.

The consequences of ineffective, inaccurate, unpersuasive PCRs can be dire. Patients may be left with large medical bills, EMS agencies may not be reimbursed for supplies and expenses, and if called to testify, an EMS provider may lose her license if the PCR does not persuade a lawyer, judge, or jury that effective care was provided to a patient. As a persuasive document, the PCR narrative is the culmination of a complex writing process that, I argue, draws on layered literacies.

◼ EMS Writing and Pedagogy

Despite its importance and complexity, writing in the EMS workplace is given little attention compared to the other critical skills EMS providers learn. For example, EMS providers learn clinical skills, like intubation, and they practice these skills many times to ensure their skills result in effective patient care. However, they might not use this skill every day on the job; they may use it once a week, once a month, or once every three months depending on their community's medical needs. The PCR, on the other hand, is completed at the end of every 911 response. As such, if an EMS provider cares for seven patients on her shift, she will write seven reports that day.

Turning to my research site, MFD's primary role in Milwaukee is to provide the community with emergency medical care. In 2017, 81 percent of all MFD fire and EMS responses were EMS responses (Milwaukee Fire Department, 2017), and at the end of each response, MFD employees are obligated to write a PCR. Despite this prominence of report writing in their workplace, MFD's Training Academy, like most EMS training programs in the United States, lacks a formal mechanism to teach PCR writing. Based on the first 24 months of my pilot study and my near ten years as an EMS writing researcher, I have learned that writing is taught as a product instead of the complex process we in TC understand writing involves. These workplace training programs tend to use what writing scholars would recognize as "the inoculation model" of writing instruction: students are introduced to the basics of documentation in a few hours and then practice it during their field training, and if students are given feedback, feedback strategies may not follow best practices. EMS textbooks also reinforce this model; a typical textbook is around 1,500 pages, and about five pages (~0.003%) are spent on documentation.

The inoculation model does not reflect the writing and literacy practices of EMS providers. Instead, it shortchanges these literacies, all of which influence their ability to practice prehospital medicine and document patient care. The

layered literacies framework offers one way we can teach students how to gather, manage, report, and distribute data to a variety of stakeholders and audiences.

I should note that the Academy does not use language from the layered literacy framework. Rather, I am making the implicit work that cadets engage in explicit. In doing so, we might learn how to tend to students' layered literacies, including embodied and multisensory literacies, inside and outside the TC classroom.

▪ Coding Scheme

For this chapter, I draw on my corpus of data collected from working with six focal participants who were Academy cadets. This corpus includes their completed surveys, field notes from my classroom and field observations, audio recording and transcripts from interviews and focus groups, and cadets' writing (class notes, completed writing assignments, and practice PCRs). Using layered literacies as codes, I identified areas in my corpus where students applied or enacted these literacies (see Table 15.1).

Table 15.1. Coding scheme of how layered literacies manifest in the study's corpus, including focal participants' writing, my field notes, and interview and focus group transcripts

Literacy	Definition	Example
Basic	"The ability to read and write" (Cargile Cook, 2009, p. 8)	Cadets read and write during class to take notes and during ride-alongs when they re-read protocols and documents.
Technological	Learn and use technology; understand how technology facilitates social interaction and action.	Cadets interact with medical technology during ride-alongs and refer to information gathered through technology, such as cardiac rhythms, when writing up reports.
Rhetorical	"[A]nalyze, evaluate, and employ various invention and writing strategies based upon [students'] knowledge of audience, purpose, writing situation, research methods, genre, style, and delivery techniques and media" (Cargile Cook, 2009, p. 10).	Cadets discuss the audiences and purposes for writing during ride-alongs and address them in their practice PCRs.

Literacy	Definition	Example
Social	"Collaborate and work well with others" (Cargile Cook, 2009, p. 11).	Cadets collaborate with one another to practice skills and to write the practice narrative reports. They asked providers for help, too. During field training, they eat meals and care for the fire stations with MFD providers.
Ethical	"Knowledge of professional ethical standards . . . [and the ability] to consider all stakeholders involved in a writing situation" (Cargile Cook, 2009, p. 15)	Cadets focus on providing effective, appropriate, professional patient care and communication. In their PCRs, cadets learn how to document objective information ("The patient struggled to walk to the stretcher, falling twice.") instead of subjective information ("The patient was obviously drunk.").
Critical	"Ability to recognize and consider ideological stances and power structures and the willingness to take action and assist those in need" (Cargile Cook, 2009, p. 16)	Cadets understand where they fall in the hierarchies of patient-healthcare provider and between cadet-MFD provider. They knelt next to patients when providing treatment and let patients know what they were doing, verbalizing all moments of care: "Sir, I'm going to listen to your heart now." They are also aware of the necessary hierarchy in the firehouse during ride-alongs, for example, referring to providers as "sir" and "ma'am" and standing at attention when MFD providers were talking.
Embodied and multisensory	"[T]he ability to understand how bodies and embodied experiences affect and are affected by how users interact with technologies and texts in varied physical, material ways" (Swacha, 2018, p. 261) "[A]ural, tactile, and visual experiences" that inform interaction of users and health (Bivens et al., 2018)	Cadets learn how to gather information from the environment and the patient's body, and how their environment impacts their ability to provide treatment and, thus, document. One cadet was frustrated by not being able to start an IV because the ride in the ambulance was bumpy due to pot holes in the road. The provider offered feedback, sharing that the cadet needs to trust his skills despite a bumpy ride. The providers assured the cadet that, with time, he'll learn which roads are smoother and conducive to starting an IV; even though providers can't tell which roads they're on in the back of an ambulance, they learn where they are by how the ride feels and by the number of turns the ambulance takes.

Analysis of pilot study data suggests that cadets are expected, although not explicitly, to develop layered literacies (see Table 15.1). For example, they engage their embodied and multisensory literacies by completing high intensity workouts to prepare their bodies for and to mimic the intensely physical scene of a fire rescue. In doing so, cadets better understand how to perform in high-stress, po-

tentially dangerous situations. Of most importance to TC, though, is that cadets integrate all of these literacies to write a PCR that justifies their decisions and actions during a 911 response. To complete this technical document, cadets draw on multiple literacies to integrate their observations, actions, and memory from the 911 response. Overall, layered literacies manifested in their learning process, specifically during their field training and in their written products, especially their practice PCR narratives.

■ Literacies Are Interrelated and in Tension

Although all the literacies informed cadets' learning and medical practice, the literacies were interrelated and, perhaps most notably, in tension. This tension is part of the interrelated relationship of layered literacies (Bay & Blackmon, 2016), and Cargile Cook (2002) notes that this tension is at the core of how layered literacies work in TC.

Focal participants navigated this tension as they developed their literacies, which was most noticeable during focus groups when they shared their experiences with documenting in the field. During paramedic training, cadets completed their practice PCRs electronically, and to facilitate their writing and to help them remember information, participants reported that they took notes by hand during a response, and their notes were chronological, following the order of steps and actions taken during a call, from start to finish. When they transferred these notes to the computer, participants noted they felt frustrated because the organization of the computer report did not follow their note-taking methods in the field. This genre shift "interrupted" their writing process, impacting their ability to recall details and present a cohesive, synthesized narrative. Participants shared they preferred to write by hand because the technology was limiting and did not reflect how they organized their ideas—the technology, in other words, did not mirror their writing process. Participants were concerned about this tension because they knew they would be required to write PCRs electronically once they became MFD providers.

In this way, literacies are in tension. Learning technological literacy bumps up against their basic, multisensory, and embodied literacies in that technology does not facilitate the information gathered through and created by these literacies. When participants wrote in the field, they shared that they walk through the response in their head to recall the care they provided (embodied, multisensory) and the information gathered through medical technology (technological). When they wrote with technology, they reported that their writing ability was negatively impacted.

In sharing this experience, though, participants demonstrated their growing awareness of their literacies, specifically their embodied and rhetorical literacies. Their responses indicate they are aware that their physical interaction with technology is in relationship with their writing and documentation abilities.

Likewise, by sharing that their writing-by-hand process allows them to follow the chronological order of the call and better recall details, they demonstrate their rhetorical literacy: they know that their documentation needs to include details, because one of the main purposes of their documentation is to re-create the 911 response in writing. In achieving this purpose, they allow other stakeholders to act accordingly and appropriately, which is a key element of social and ethical literacies.

■ Literacies Manifest in the PCR Narrative

Although cadets did not use the term "layered literacies," they noted and demonstrated that they were developing each literacy by gathering information for and by writing their practice PCRs. I observed these developments during ride-alongs, in interviews, and in focus groups, and these literacies also manifested in their practice PCRs. In doing so, cadets demonstrated layered literacies as they integrated actions, observations, and memories into their writing.

The following two PCR narratives were written by two participants, Gary and Sophie, who were completing ride-alongs together during their EMT training. In this response, they were called to the scene of a motor vehicle accident with two cars and one patient, and following their training requirements, they hand-wrote their practice PCR narratives after the response. I have included in brackets where the literacies are present in their narratives.

> Gary's practice PCR narrative:
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> Dispatched to special case. We arrived on scene to find a 4 door sedan that had been T-boned [multisensory]. Intrusion on the vehicle was about 20 inches [multisensory]. Patient was loaded into MED and 2 IVs were placed [technological, embodied, ethical]. Patient complained of pelvic pain but pelvis was stable on palpation [embodied, rhetorical]. A c-collar was applied and phentynole was administered IV [technological, embodied, ethical]. Patient was initially hypertensive. After placing patient in Trendelenburg position, BP and vitals stabilized [embodied, multisensory]. Tenderness was found in the RLQ on palpation [embodied].
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> Sophie's practice PCR narrative:
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> Med X was dispatched to the scene of a car accident with 1 patient. Upon arrival, the patient was standing next to the car and reported that she got out through the passenger side after her side, the driver side, was impacted [multisensory, rhetorical]. Since there was an intrusion of about 20 inches, a major injury is possible [multisensory, rhetorical, critical, ethical, embodied]. The patient reports pelvic and back pain. After lying on the cot, she was moved into

the med unit for further evaluation. A cervical collar was applied and warm IV fluids were administered via 18 gauge [technological]. With a pain level of 8, pain meds were administered which improved the pain to a level 2 [technological, rhetorical, ethical]. No DCAP-BTLS was found except tenderness in the abdomen and pain in the pelvis and back [embodied]. Rapid transport was given to HOSPITAL and care was transferred to the ER staff [rhetorical, social, ethical].

These practice narratives suggest that participants integrate the information gathered through literacies into their writing, thus demonstrating their skills and achieving the rhetorical purpose of the narratives. The detailing of appropriate medical treatment decisions indicates participants' ethical literacies, as they are tending to their patient's needs in effective ways. They understand how technology, like IVs and c-collars, contributes to patient care, and they include how their senses and the patient's body informs treatment decisions and medical care, highlighting their embodied and multisensory literacies.

Additionally, participants' rhetorical literacies are visible, most notably in the second cadet's narrative. In this narrative, Sophie highlights her understanding that a legal audience might read her document: "Upon arrival, the patient was standing next to the car and reported that she got out through the passenger side after her side, the driver side, was impacted." Sophie relies on her observation skills to detail this part of the response, and she also demonstrates her rhetorical skills, especially her audience awareness. In this excerpt, Sophie details that the patient was standing next to the car upon arrival, and in this enthymemic statement, the missing detail is that the responding EMS crew did not move her—Sophie reported that the patient moved herself by exiting from the passenger side. This move may have required the patient to potentially twist and turn, which could implicate underlying injuries. If, after the response, the patient experienced medical problems that were potentially related to this car accident, like paralysis, and if the patient sued the EMS agency, a lawyer would read this narrative to learn more about the scene. The lawyer might consider questions like "Did the EMS crew move the patient? Were those movements appropriate? Might they have caused the patient to become paralyzed?" By noting that the patient was "standing next to the car upon arrival," Sophie speaks to a potential legal audience and answers these questions, with the subtext, "Our crew did not move her; she moved herself. We took care to treat her pain and ensure she did not have imminent life threats. We secured her neck to prevent any spinal cord damage. If she becomes paralyzed or has related issues in the future, it was not due to our care." To develop this subtext, Sophie drew on her rhetorical literacy, and to convince her potential legal audience, she integrated details and evidence drawn from her embodied and multisensory literacies.

Embodied and Multisensory Literacies Are Interdependent

Findings suggest that multisensory and embodied literacies are interdependent. During coding, many of the references that I coded "multisensory" also applied to "embodied." This dual-coding suggests that these literacies have a symbiotic relationship in the healthcare workplace training environment, and they are so intertwined that they might actually be one literacy instead of two in this setting. Likewise, this finding also suggests that the linear nature of layered literacies might not be sustainable (Lawrence & Hutter, this collection).

I hesitate to combine these two literacies or choose between them for two reasons. First, I do not want to contribute to the layered literacy framework's expansiveness that Lawrence and Hutter discuss in this collection. Second, reducing these two literacies to one risks making it fit the framework's linear structure and removes any nuanced exploration of the literacies' symbiotic relationship. The following paragraphs are my attempt at this exploration.

To understand how their bodies and patient's bodies influence the writing, data-gathering, and medical care process (embodied literacies), participants gathered information from the environment through their own individual senses (multisensory literacy). They needed to focus on where they were in the response—in relation to the patient or other pertinent objects, like a car in a car accident—to gather data and respond accordingly. In doing so, participants developed their situational and sensory awareness (Angeli, 2019), which informs embodied and multisensory literacies.

For example, during classroom observations, cadets learned about toxicology and how to treat and transport patients who were intoxicated or overdosed. The instructor emphasized that, especially when responding to these situations, cadets need to "know your surroundings" because "you pretty much know if they're [the patient] poisoned, intoxicated, or overdosed" upon visual assessment: "look at the bottle, the date prescribed, today's date, the number of pills left, and the dosage amount; put your police hat on." The instructor verbally described what a scene could look like, noting that cadets need to pay careful attention to a patient's environment because a patient might report that she has not been drinking, but "six empty beer cans" may be on the front porch, indicating that *someone* has been drinking. At that point, the responding EMS provider must use his senses to quickly determine if the patient is lying or if someone else drank the beer, because that information will inform an EMS provider's treatment decisions.

During this lecture, cadets were expected to develop their content expertise in treating an intoxicated or overdosed patient. In doing so, cadets were encouraged to develop their sensory and environmental awareness, fine tuning both their multisensory and embodied literacies. Without the information they gathered from embodied and multisensory literacies, they would not be able to enact their

basic and rhetorical literacies to write an effective PCR.

In a way, embodied and multisensory literacies serve as data collecting literacies in this training course—they are methods by which participants gathered information so that they could write, communicate, and use technology to provide patient care. As such, one part of embodied literacy that the EMS workplace helps us better understand is the "interaction between technical documents and bodily, material experience" (Swacha, 2018, p. 263). The technical document—the PCR—reflects, accounts for, and captures the bodily, material experience of a 911 response. It is an artifact that captures a moment in time that helps other people act and continue patient care. Without a well-written, detailed PCR, other stakeholders of a 911 response, like lawyers or other healthcare providers, cannot act.

■ Takeaways and Future Directions

By examining the layered literacies framework in workplace training courses, we can see how this framework applies outside of the TC classroom and to the workplace writing process and product. In turn, we learn that the concept of layered literacies informs other actions related to writing, including decision making and synthesizing data. For example, layered literacies remind us that workplace writing is an ethical activity, and along with it, then, decision making and synthesizing data must be seen as ethical activities that require careful reasoning. In other words, when gathering data through the senses, as Academy cadets do, this data must be gathered ethically and appropriately in order for the corresponding written product—the PCR—to be ethical.

Likewise, literacies are visible in more spaces than a written product and must be tended to throughout the learning process. This process extends beyond one course, and the Academy demonstrates this learning trajectory. Cadets develop their literacies over three years and in different contexts, which include the classroom and various field contexts on ambulances, in simulation training, and in fire stations. Looking at the TC classroom, layered literacies might be scaffolded throughout TC courses and curricula and tended to in a variety of spaces, including in the classroom, service-learning, co-ops, and internships.

Additionally, this research raises important questions for TC instructors to consider, especially related to accessibility and layered literacies. The Academy and the EMS and fire service workplace require cadets and providers to be physically fit, to be capable of completing demanding work, and to be able to hear, see, and speak so they can complete required tasks, like lifting and carrying patients to safety. This physical work is important to their embodied and multisensory literacies, as outlined above, and it requires cadets to be physically able to complete this work. How might we engage students' physically in the classroom while also tending to accessibility? Might embodied and multisensory literacies be developed in ways that do not privilege all senses and physical abilities? How might we integrate sensory and situational awareness into the design and writing pro-

cess while also tending to accessibility? What might a multisensory, embodied, and accessible TC classroom look like?

Ultimately, this piece highlights the complex literacy work required in a first responder training course, and it presents a few ways that training courses facilitate layered literacies development. In doing so, it also demonstrates how two newer literacies, embodied and multisensory, inform TC workplace practice.

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