

Building spaces for literacy in school: mapping the emergence of a literacy makerspace

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Abstract

Purpose – Building on the growing interest in school-based “making” and “makerspaces,” this paper aims to map the emergence of a literacy-oriented makerspace in a non-selective urban public high school. It examines how competing conceptions of literacy came to be negotiated as students and teachers shaped this new space for literacy practice, and it traces how the layered uses of the space, in turn, reworked understandings of literacy in the larger school community.

Design/methodology/approach – Part of a longitudinal design-research partnership with an urban public high school, the paper draws on two years of ethnographic data collection to follow the creation, development and uses of a school-based literacy-oriented makerspace.

Findings – Using notions of “re-territorialization,” the paper examines how the processes of designing, mapping and building a literacy lab offered space for layered and contested purposes that instantiated more expansive views of literacy in the school – even as it created new frictions. In presenting two analytic mappings, the paper illustrates how mapping can offer resources for people to make and remake the spaces they inhabit, a form of worldmaking that can open possibilities for reshaping the built world in more just and equitable ways.

Originality/value – The study offers insights into how mapping can serve as a research and pedagogical resource for making legible the emergent dimensions of literacy practice across time and spaces and the multiple perspectives that inform the design and use of educational spaces. Further, it contributes to a growing literature on “making” and literacy by examining how informal making practices are folded into formal school structures and considering how this reconfigures literacy learning.

Keywords Adolescent literacies, Community partnerships, Maker movement, Social design research, Socio-spatial literacies, Worldmaking

Paper type Research paper

When educators design school spaces to foster and support adolescents’ literacy practices, the focus is likely to be on the formal spaces (e.g. classrooms and libraries) and activities (e.g. writing assignments) characteristic of school. This paper traces what happened when all school stakeholders (youth, teachers, staff) in a brand-new, resource-challenged, urban public high school dedicated to *making* (Dougherty, 2012) created an informal space to serve



their literacy needs. The school revolved around three interdisciplinary *makerspaces*, each oriented toward a different focus (STEM/STEAM, media arts, community organizing); these environments for making hands-on, inquiry-driven projects are considered generative places for young people to construct and represent knowledge through the creation of material artifacts, often through tinkering, playing and prototyping (Kafai *et al.*, 2014). The question that emerged in the first year of a design research study with this school was: What would a *literacy* makerspace look like?

While the literacy implications of makerspaces are rarely mentioned in the scholarly literature, we worked with community stakeholders to imagine and build, from the ground up, a hands-on, production-oriented, material-focused space revolving around literacy. This article traces the process of envisioning, creating and developing a literacy makerspace from the inception of the idea by students and staff in the school's first year to its revision in the year following. We examine here how literacy became a central concern of school community members as their interests cohered around the design of the Literacy Lab (LL) – a hybrid library, creative writing room, tutoring space, gathering hub and art studio. We also explore how stakeholders' different priorities for the design and use of the space led to contention and debate over how literacy was to be practiced in this school. Rooted in social design research that centers educational equity (Gutiérrez, 2016), this study is situated in a longitudinal project exploring the possibilities and challenges of learning in school-based makerspaces.

In this article, we draw on theoretical resources of “mapping” (Corner, 1999; DeLanda, 2006) to trace how stakeholders imagined and built the LL over time. While researchers have used mapping to trace young people's mobile practices or foster spatial literacies (Taylor, 2017), we are interested in exploring how mapping can function as a generative tool for people to *make* and *remake* the spaces they inhabit. Specifically, we see the praxis of mapping as a form of *worldmaking* (Author, 2015; Goodman, 1978), an activity that involves “creating and building the world as much as measuring and designing it” (Corner, 1999, p. 213). For teaching and learning, the creative process of mapping – spatially configuring materials to represent and construct places for learning – must be understood in relation to school's material constraints, institutional practices and inequitably distributed resources (Comber, 2015).

Importantly, in this study, mapping functioned as both a practice and an analytical tool. As a practice, young people used pens, computers and their bodies to imagine and chart spaces for possible literacy activity. As an analytical tool, we used maps to represent how stakeholders mobilized spaces for diverse ends as competing ideas about literacy were materialized in the design of the LL. We found that the LL allowed for multiple, layered purposes to co-exist, making stakeholders' literacy ideologies legible (and debatable) and eventually supporting more expansive views of literacy as a kind of *making practice* within the school. We draw implications for practitioners and literacy researchers to use mapping as a pedagogical strategy and analytical tool – to spatially configure materials, ideas and people in relationships that open possibilities for reshaping the built world in more just and equitable ways.

Conceptual framework

To trace the emergence of a new literacy makerspace, we sought theoretical and methodological resources for understanding literacies “on-the-move” (Stornaiuolo *et al.*, 2017; Leander, *et al.*, 2010). Such a focus on the networks, flows and connections of literacy practices in and across spaces characterizes the socio-spatial “turn” in literacy studies (Mills and Comber, 2015), which draws on the work of social geographers (Massey, 2005) to

highlight how spaces are dynamically produced through people's practices and within relations of power. Literacy practices, from this perspective, are always produced, distributed and reconfigured in and across social spaces that likewise shape and organize the spaces themselves (Leander and Sheehy, 2004), with discursive elements always intertwined with material dimensions of literacy (Mills and Comber, 2015). Current scholarship on *making* practices in education foreground these material dimensions of learning (Martinez and Stager, 2013), with making defined as a process of "creating or exploring new possibilities through building or experimenting with tools, technologies, and materials" (Lang, 2013, p. 22). However, while schools have begun integrating making into curricula, little is known about how this informal, experiential learning gets folded into existing structures of formal schooling – much less, how power is implicated in the uptake and circulation of making (Vossoughi *et al.*, 2016). This study addresses this gap, partnering with a making-oriented public school to explore how making can be embedded in school spaces in ways that are equitable, collaborative and responsive to multiple stakeholder perspectives – especially youth of color whose voices are not always included in institutional design and decision-making.

To conceptualize the socio-spatial dimensions of people's place-making practices in the school (Comber, 2015), we turned to mapping as a theoretical, analytical and pedagogical tool. Corner (1999) describes mapping as a dual construct: maps are both analogues (roughly corresponding to lived spaces people share) and abstractions (always including some things while omitting others). In fulfilling this dual role, maps open new potentials by "re-mak[ing] territory over and over again, each time with new and diverse consequences" (Corner, 1999, p. 213). We are particularly interested in the potentials of mapping as a practice to *make* and *remake* existing territory, as people create spaces through processes of inclusion, exclusion and boundary-making. By making visible conflicting cartographies and previously unimagined potentials, mapping served as a way to surface competing ideas about literacy, making and school and to trace how students created new spatial possibilities from existing terrain. While many see maps as representations of the lived world, Corner (1999) emphasizes that mapping is a creative, productive activity: maps actually *affect* ideas and geographies through their design. In other words, mapping is a process of creating the world's people inhabit, by "first disclosing and then staging the conditions for the emergence of new realities" (216).

Literacy practices have long been recognized as forms of worldmaking, as people figure their lived worlds through semiotic work (Stornaiuolo, 2015; Holland *et al.*, 1998); mapping, by contrast, is less widely recognized as a tool for worldmaking, despite the semiotic labor required to create new spatial possibilities and boundaries. Drawing on Deleuze, Corner (1999) describes mapping as a process of re-territorialization, as people territorialize space through "the plotting, the drawing out, the setting-up of relationships" and de-territorializing it through "the extraction [or] isolation [...] of parts and data" for new purposes (231). Manuel DeLanda (2006), a leading interpreter of Deleuze, describes territorialization as the hardening that occurs as diverse components congeal into an observable network. DeLanda stresses that such events are not only territorialized in a singular, physical space; these component parts also belong to other assemblages, existing across spatial and temporal scales. In other words: an observable moment in the literacy makerspace cannot easily be untangled from the historical and material processes that have shaped the students, objects and practices that constitute it. Mapping these processes, DeLanda argues, allows us to understand phenomena not as a linear unfolding of events or outcomes, but as a jostling interplay of people, objects and ideas that are layered together in a kind of emergence. Such a process highlights how worldmaking always involves spatial

and temporal transformations entangled with other systems and histories. In our work, mapping this re-territorialization of worlds helps illuminate how competing understandings of literacy inflect the design and use of school spaces – specifically, the literacy makerspace.

Methods

The present examination of the LL at the Collaborative Design School (CDS) is part of a longitudinal study investigating how students engaged in communication, representation and problem-solving practices in the school's makerspaces (Stornaiuolo and Nichols, 2018). The broader study is situated in social design research (Gutiérrez, 2016), characterized by an explicit equity focus and a partnership model of research developed through collaborative theory-building and iterative design. Such a commitment to partnering with youth and community stakeholders, particularly those from nondominant communities, has a long history in literacy research (Kinloch *et al.*, 2016). Social design research foregrounds these partnerships through a co-constructed research design that involves developing historicized understandings and re-mediating systems of learning (Gutiérrez, 2016). This article maps the emergence of the LL at CDS to surface those historicized understandings about literacy and makes visible the ways different community needs can be built into the design process. The research question guiding this paper is:

RQ1. How can mapping the emergence of the LL position us to understand its multiple narratives and histories as a community makerspace?

Research context

A non-selective public high school in a large, urban district in the Northeast USA, CDS opened in 2014 as a design-oriented school organized around three makerspaces. We concentrate here on a fourth, literacy-oriented, makerspace that emerged and developed during the school's first two years of operation. We examine the experiences and practices of 45 students and five teachers and staff members who persisted across both years. The district reported that students from across the city attended the school, with 83 per cent identifying as African American, 14 per cent as Latinx and 3 per cent as white, Asian or other. We began partnership activities with stakeholders before the school was established, with the goal of creating sustainable learning arrangements through mutually enriching relationships.

Data collection and analysis

Data were collected across five design cycles. In each design cycle, research team members met with teachers to organize data collection based on analysis from the previous cycles. Each cycle had a particular goal: not just to examine what emerged but to redesign the labs iteratively to better support student learning. In the first cycle, for instance, a significant finding was that students felt challenged by the literacy demands of the school's model, particularly the online assignments that required relatively sophisticated independent reading skills. Work in the subsequent cycles aimed to address that initial and central challenge.

Data were collected across two academic years (2014-2015; 2015-2016). Observational data include fieldnotes, with research team members recording observations across the four lab spaces most school days over the two years (250 field notes – 90 in Year 1 and 160 in Year 2), as well as audio (67) and video (64) recordings. We collected extensive artifactual data in the labs, including photos of the lab spaces and students' displayed work (491) as

well as students' in-progress projects (329). Interview data included 81 individual and small group semi-structured interviews with staff and students, each an average of 30-60 min (43 interviews in Year 1; 38 in Year 2). We wrote analytic memos about the insights we gleaned in practice and kept detailed notes about our partnership design work.

Pairing DeLanda's (2006) and Corner's (1999) understandings of the territorialization process, we let that philosophical concept guide our methods for this paper (Taguchi and St. Pierre, 2017). Doing so led us to read across the data to examine the ways participants engaged in place-making practices in relation to the LL (Comber, 2015). To trace how participants imagined, designed and built the space and used various mapping techniques to do so, we focused our data analysis on how literacy beliefs and practices were foundational to the socio-spatial construction of the lab (and by extension, the school). We sought to use mapping as an analytic strategy, to help us understand how participants imagined the potential space, its purposes and literacy more generally; how those ideas became concretized in the building process; and how those different ideas became layered with each other in practice. We created two maps to visualize the socio-spatial construction of the LL; one focused on the territorializing processes involved in building the space and one on the deterritorializing processes that destabilized the space (we explain these mappings in the next section).

Mapping the territorializing process

We present here our two analytic mappings to illuminate the physical, material and spatial dimensions of stakeholders' activities in creating and inhabiting the LL over time. First, we present our map of how the space was concretized, tracing the territorializing practices that carved out space from existing territories to reflect the diverse – and, at times, competing – visions of different stakeholders. Next, we offer our map tracing the deterritorializing process as the space was used in multiple, disparate ways, destabilizing people's beliefs about literacy and schooling. We follow how that multiplicity, instead of functioning as a barrier, was key to creating fertile conditions for new student-driven activities and practices to emerge as resources in the school.

Territorializing the space: Building the lit lab

The need for a literacy-focused makerspace emerged early in the school's first year. From the start, the new, open-enrollment program faced a multitude of challenges: 100 ninth graders from across the city, a first-time principal, five new teachers and three support staff members; a beleaguered (and broke) urban school district; few material resources (no books; salvaged desks); an odd spatial configuration (the second floor of a repurposed elementary school building, with unpredictable heating and cooling); and an asynchronous learning model unfamiliar to all. These challenges coalesced in the concern that students were struggling to adapt to the individualized curriculum that was the backbone of the school. Stakeholders initially located the source of these struggles differently: from difficulties navigating digital course assignments and emails; to managing time and resources independently; to interpreting and producing complex texts. However, by December of the first year, everyone had come to pinpoint "literacy" as central to the school's challenges.

In response, members of the research team worked with the community to identify its pressing literacy needs. For most teachers, it was important that students read and write complex academic texts more fluently. For others, the most salient need was human resources – people to support students' literacy development. For students, these were important, but not nearly as pressing as the need for quiet space: they found the flexibility afforded by asynchronous learning often resulted in hectic and crowded classrooms. Most

importantly, students said, they wanted a “chill space” where they could read and work – preferably with a comfy couch. Students and staff alike also identified the lack of materials, especially books, as a frustration. In documenting these emergent needs, the team talked with students, teachers and staff about strategies for addressing them. All agreed a literacy-focused makerspace would cohere with the school’s *making* philosophy while also attending to the other material and academic concerns.

Researchers initiated several pedagogical mapping activities to help stakeholders articulate how diverse literacy needs could be incorporated into the design of a making-oriented space. One activity involved students walking different locales to see how each would address the needs they had identified. In the first room the principal suggested, the LL would have had to share space with an existing school club. Students paced the area, using their arms to designate where imagined bookshelves and furniture might be placed in relation to the materials already present. Some engaged in hypothetical activities – browsing invisible books, writing at an invisible table – to “feel” what it would be like to inhabit the room. But they ultimately concluded that grafting the LL onto the existing arrangement would feel crowded and incoherent. At this point, Mr R, the Humanities teacher who also ran the media lab, offered another possibility: his lab was the size the three regular classrooms; if he condensed his materials to two-thirds of the space, that would leave a sizeable area that could be fashioned into the LL. Students were not sure how this room-within-a-room could be the quiet environment they wanted, so they conducted the walking activity again to test it. They paced off the length of a couch, and kicked out their legs to see how far it could be placed from imaginary bookshelves. Some “sat” on the invisible sofa while others pretended to work loudly in the media lab at the other end of the room. They concluded that sounds would not carry enough to be distracting, but they were still concerned about the lack of dividing walls between each “room.” Standing across the open expanse with arms outstretched, they decided that bookshelves could form an impromptu divider (see [Plate 1](#) for what this eventually looked like). While different than they first imagined, in the end, students agreed that this carved-out space with its porous boundaries offered the most possibilities for meeting the literacy needs of the community.

With a provisional location for the LL identified, researchers organized a second mapping activity, using paper, pens and digital tools to sketch and arrange the materials that might inhabit the emergent space. Mr R and special education teacher, Ms S, took a special interest in this task. As artists and designers themselves, they wanted to ensure that a literacy makerspace would retain a focus on collaborative, arts-based *making*, while also supporting academic reading and writing. In their depictions of the imagined room, they included storage for craft tools and materials, as well as insulated spaces for private tutoring. Students also participated in the activity, arranging possible configurations of furniture and materials on paper and in Google drawings. One student, Cristina, used the latter to sketch a hypothetical model that remixed the collected designs of other students and teachers ([Figure 1](#)). While ostensibly a static image, Cristina’s map marks a momentary congealing of multiple layered histories: needs inventories, walking sessions, noise tests, spatial sketches and the competing imaginaries of multiple stakeholders. This tenuous merging of interests, investments and desires is reflected in her synthesis of the space into “zones of activity” – segments of the room apportioned for diverse purposes: informal gathering (sofa and “sofa chairs”), individual work (computer stations), small group work (“pair table”) and formal group work and instruction (conference table). Teachers and other students weighed Cristina’s map against their own imagined arrangements. All agreed that the key elements they wanted were included in the design’s zoned configuration. In fact, the idea of such “zones” would eventually travel outside the LL and, by the school’s second year,

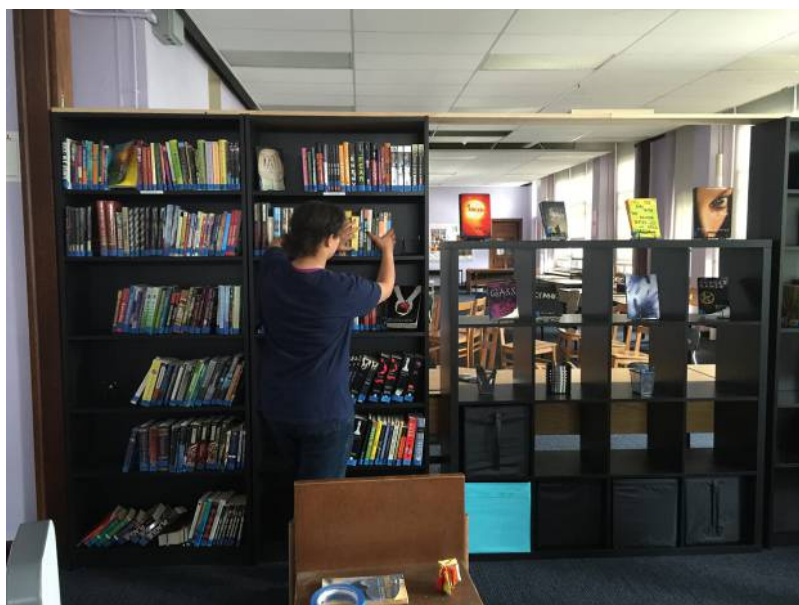


Plate 1.
The bookshelf “wall”

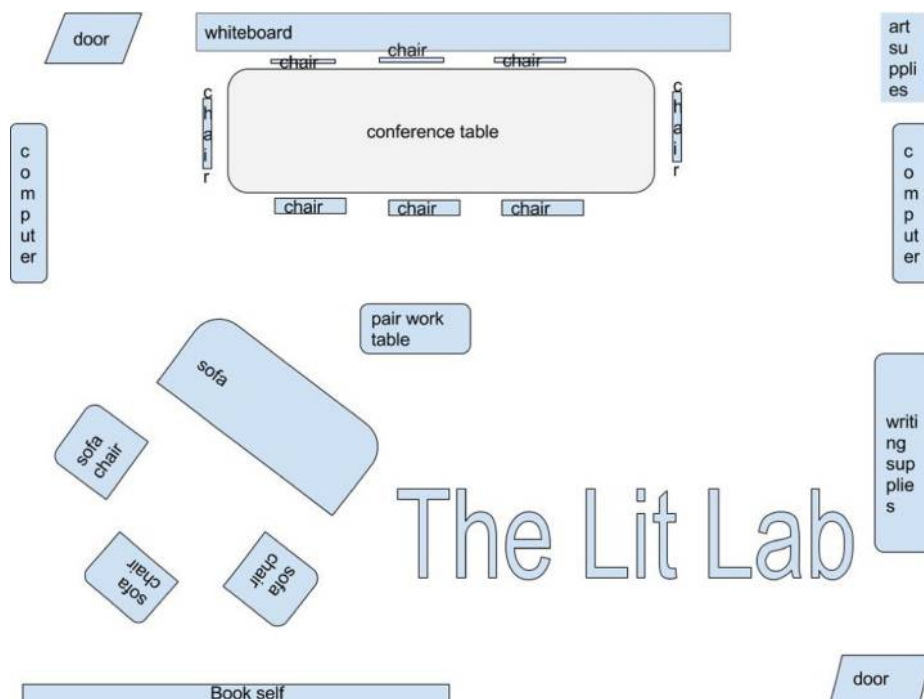


Figure 1.
Cristina's LL map

would be used to organize all of the school's classrooms for individual and collaborative making activities.

Following Cristina's blueprint, the LL concretized stakeholders' imagined possibilities – molding an inherited corner of the school media lab into a new and separate world. The previous maps – embodied, sketched and theorized – took their new material form in April on "Build Day." That morning, the principal, teachers, a dozen student volunteers, staff members and our research team transported materials (donated and grant-funded) from a U-Haul three flights below to populate the emergent space. For much of the day, groups worked together to construct and arrange furniture, sort and label books and organize school and art supplies. Gradually, the abstract shapes on Cristina's map became physical objects that could be touched and moved and used. Students who had been part of the lab's design as it was just a hypothetical idea, now found new meaning in their making as they wrangled shelves and tables into place, exclaiming, "I built that!" By the end of the day, the LL was an inhabitable place in the school, carved from the refractory visions of its community.

As researchers, we were not only interested in how the LL came to take this material shape but also in how the space, once formed, would be territorialized anew, as people found surprising and emergent uses for it. To map such re-territorializations, we diagrammed some ways that stakeholders continued to mobilize the lab for divergent purposes – sometimes within the scope of its intended designs, and sometimes not (Figure 2). This map begins with a base layer: a panoramic photo of the first iteration of the LL after Build Day. Around this image, we arrayed territorializing "moves" that stakeholders made as they put the space to work. For example, while students used the couch, as intended, for quiet reading, the open area in front of it – the same that students

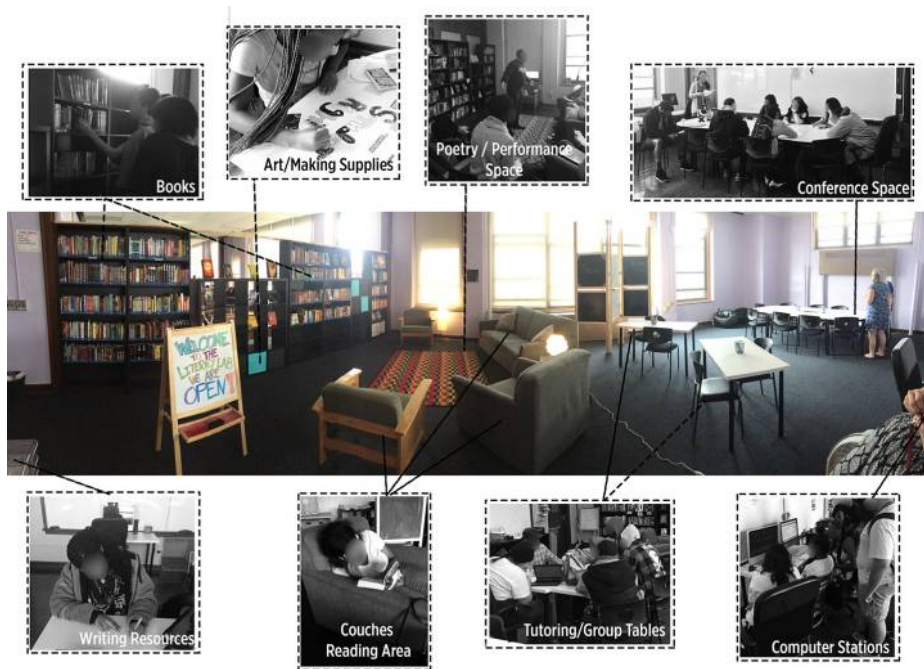


Figure 2.
Analytical Map 1:
territorializing the
space

once measured out with their bodies before any furniture had arrived – now occasionally took on new life as a performance space, where people would read poems and present storyslams. The group tables, likewise, were regularly used for their sanctioned purpose of quiet work and tutoring; however, they also became places where students would interview neighborhood residents when conducting research on the surrounding community. We outlined these uses – planned and unplanned, predicted and unpredictable – in dashed-lines to indicate that there was little fixity in how the LL's zones or resources were brought to life: the same computer-stations that supported independent writing one day could host an impromptu screening of a student-film the next. Importantly, these flexible uses of the LL also reflect how different beliefs about literacy circulated in the space. Where tables, books and couches might, on the surface, signal more traditional forms of reading and writing, students often leveraged these (and other) available resources to infuse more expansive meaning-making practices into the designated literacy space – from poster-making and poetry-reading to video-editing and game-design.

With all of the competing beliefs about literacy inscribed in the space, the LL was replete with possibilities for community members to take up. At the core, however, was a shared belief in the LL as a space for *making* – a place where students could engage in the active, hands-on, iterative work of creating meaning across modalities. Students and teachers regularly talked about the LL as embodying the making ethos of the school. Ms S described the central role the LL played as a community-designed makerspace:

The Lit Lab, to me, has very much been a part of the design-thinking process in starting with the idea and having students come. Educators collaborate and now students are collaborating. It's gone through several prototypes. We're getting user feedback. All of that is intertwined [. . .] Our school is in a design process. I mean, it's such a big part of who we are and really makes us unique. (Interview, 6/21/16)

This process of imagining the potential space and its purposes was crucial for articulating and making visible what literacy represented to different stakeholders. By thinking about the LL as a makerspace, stakeholders collaboratively came to share a similar, if tenuous, vision: that whatever the literacy needs of the school might be, it was an active process that students could meaningfully and tangibly participate in. The concrete task of deciding what books and materials should populate the space helped make visible different priorities for literacy. But even then, the meaning of literacy was not settled. The resources made available by one set of beliefs could still be used for the purposes of another. In this way, while mapping the LL bounded the space for certain uses of literacy, it also established an opening for collective deliberation about *what literacy might become* at the school.

De-territorializing the space: contested literacy practices in the literacy lab

Originally proposed as a support for students' reading and writing, the LL gradually came to be layered with new and unanticipated functions: as a gathering space, art studio, tutoring room, public forum and writing workshop. While these emergent uses allowed for more expansive meanings of literacy to animate the day-to-day work of the school, these were not always harmonious. Competing purposes for the space – and for literacy – sometimes clashed. For example, during the first months of its operation, the research team staffed the LL at the behest of teachers, providing tutoring and impromptu coaching for students. These adult-driven purposes ran counter to those imagined by students, who preferred to use the room to curl up with a book, or collaborate on projects with friends. As such, they often avoided tutoring opportunities, choosing instead to work independently, or with peers – frustrating those teachers who viewed the LL's "quiet space" function as

secondary to its tutoring uses. Over time, as teachers and students' ideas about the space accumulated the LL sometimes strained to accommodate them all. Amid these contested purposes, as the school entered its second year, doubling its student population, the LL would need to become deterritorialized, or remade, to meet the community's evolving literacy needs and expectations.

This *remaking* of the LL meant that initial visions for how literacy would be practiced in the school were both challenged and expanded. In the second year, the principal relocated the lab to the floor above, along with the other makerspaces. While the new room looked similar to the previous one, there were now four walls with an awkwardly placed closet at one end – all of which required students to do some creative reworking of the space. While they replicated “zones” from the LL's first iteration, they opted to transform the large closet area into a group “hangout” space, complete with cushions, lights, wall-hangings and comfortable seating. Because new teachers and students in the second-year cohort had no institutional memory of the LL, they saw the space as open to new configurations that had not been anticipated in its original design. Teachers planned workshops and class-visits to the room, including a speaker series for Black History Month that featured invited presentations from a teen manga author and a comic book store owner. Staff members also began using the space for lunch breaks, parent conferences and meetings with district visitors. As one of the more welcoming spaces in the school, the LL took on new personal and institutional uses as the school continued to grow.

While some of these expanded uses ostensibly had little to do with reading and writing, they nevertheless figured into the ongoing negotiation of how literacy was conceptualized and enacted in the school. Some of the room's emergent purposes – as a hangout space, a communal event space or teacher break-room – were at odds with the initial desire for a quiet area for supporting academic literacies. Some teachers and staff expressed frustration when students used the space to avoid official curricular activities – working instead on event planning, independent reading, or creative writing – and wanted students to receive more explicit instruction there. However, many students saw such informal activities as integral to their academic work. For many, these practices were consistent with the “making” ethos of their courses – and some even found ways to incorporate their tinkering in the LL into more formal projects and assignments. For others, using the space to “avoid” academic work was actually a strategy for finding balance in an asynchronous curriculum that delivered a never-ending flow of tasks throughout the day. From this perspective, such forms of “recharging” could be seen as integral to students' literacy work – even if they did not always appear as such on the surface. These various understandings of literacy were layered together in the LL, sometimes converging into tenuous alignments that allowed competing practices to coexist and other times failing to do so, leading to deadlocks over whose purposes for the space, and for literacy, ought to be prioritized.

To trace some of these competing uses of the space, we created a deterritorialization map (Figure 3) – a way to chart how diverse purposes for the room were layered together in practice. Using a stylized photo from the LL, we listed some of its active and latent components, extending lines from those categories that were animated in the particular moment it was captured. We then classified those lines by color to indicate which were student-uses of the space, as opposed to faculty- or researcher-uses. Of course, these “uses” are relative: had the student being tutored been forced to do so, the same activity might be coded as “faculty-use.” Likewise, our map is limited, temporally, to a snapshot. While the image is characteristic of how the lab looked and functioned most days, any of the latent and active uses we charted might be reconfigured at any instant. Nevertheless, what this map shows is that student uses often predominated the LL – and, crucially, those uses included

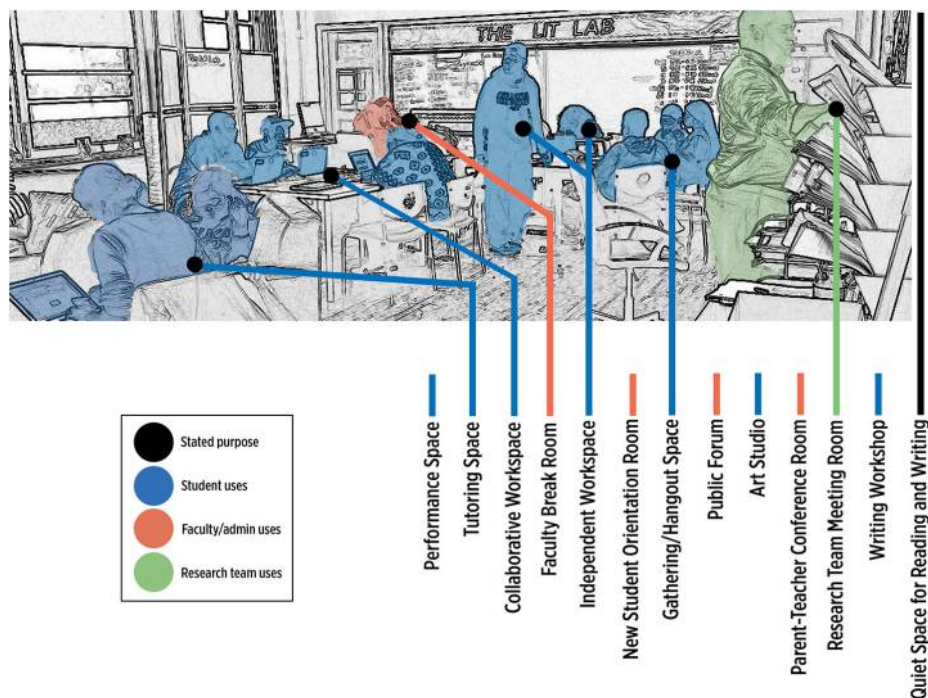


Figure 3.
Analytical Map 2: de-territorializing the space

both traditional academic reading and writing (e.g. tutoring), as well as informal practices (e.g. hanging out) that became bound up with literacy by virtue of their mutual imbrication in the *LL*. In the particular moment represented in our map, the broader contestations over the space were not absent but rather had found a tentative cohesion that sustains “literacy” as a live question, open to emergent meanings and possibilities.

Mapping as tool and practice

This article considers how people actively make meaning as they travel across time and spaces, focusing specifically on how school stakeholders at one new high school engaged in place-making activities to create a literacy makerspace. At the center of place-making in schools is an iterative process of imagining “what might be” and working to bring these possibilities to fruition – a process often constrained by what has come before and by institutional, top-down norms for decision-making. Such place-making tasks are never solitary endeavors: they always involve the mutual enrolling of people, practices, materials and ideas – each with their own contingent histories – to produce an enmeshed space for present and future action (Comber, 2015). In DeLanda’s (2006) terms, this is a process of territorialization, where it is not only individuals jointly creating the worlds they inhabit but also these worlds, in turn, work to shape and reshape the makers themselves. In such a complex and mobile process, it can be easy to lose sight of the ways component pieces create, sustain and reconfigure assemblages to forge new spaces of possibility. We argue here that mapping can make these movements visible in new ways, elucidating how power circulates in the sanctioned and emergent activities that unfold through practice and offering opportunities to expand equitable outcomes for young people, particularly for

students whose voices are not always heard – or listened to in the design of institutional spaces.

In arguing for the promise and potential for mapping as a pedagogical tool, we highlight several implications for educational practice. One affordance is making visible stakeholders' commitments. As Cristina's LL map illustrates, students wanted flexible space for different kinds of literacy activities – both traditional forms and those aligned with the school's making-orientation. Mapping, then, became a heuristic for spatializing and concretizing ideas that might otherwise not have surfaced – requiring Cristina and others to make visible what was important to them (e.g. not just quiet space but places to collaborate and create together). A second affordance is to bring in people's embodied experiences, inviting their whole selves into the process of imagining and designing spaces for learning. Mapping can include a complex combination of representational activities that draw of different semiotic systems, whether that means drawing maps using visual and written tools or performing maps with props and bodies. Finally, we see mapping as a pedagogical activity that can increase stakeholder investment. In the LL, teachers, staff and students saw themselves as having a stake in the space, which expanded opportunities for participating there. Once students felt invested in the space, they hosted book events (e.g. a weekly book club) and literary activities (e.g. launching a literary magazine); teachers too saw the activities in the space as connected to their broader mission, organizing community events and meeting students and parents there. Mapping activities help people make places their own, invested with multiple purposes and visions.

We found that mapping, as an analytical tool, can provide a means of visualizing emergent activity and capturing how literacy becomes intertwined in place-making activities. In this article, we mapped the territorializing process of stakeholders engaged in the worldmaking practice of imagining and concretizing a new space of possibility for literacy learning. Our two maps made visible the multiple and oftentimes conflicting understandings of literacy and how these understandings shaped the space – as well as how the conflicting uses of the space continued to unsettle notions of literacy in the school. As people's uses of the LL stretched the design into new configurations, the room itself accommodated those uses and accrued new layers of meaning as imbricated beliefs about literacy continued to shape and reshape the space. The two maps helped us visualize the process by which teachers and students came to think of literacy as a multifaceted form of *making*, one central to the school's identity, and how students' literacy activities in the LL guided that reframing.

In moving forward with exploring the potentials of mapping for educators and researchers interested in the socio-spatial dimensions of literacy practices, we see several directions. One area for further study could involve the mapped representations themselves. With students, we used embodied and material representations to visualize space; as researchers, we explored how to represent change in ways that captured both spatial and conceptual elements of emergent practice. On both fronts, we confronted challenges in representing complex assemblages of people, material and things in ways that preserve complexity but make legible the flows of practice over time. A second direction involves the potential of mapping for alerting communities and researchers to enduring tensions and inequities. We found that by experimenting with the possibilities of layering available in digital platforms and programs, we could work to recognize, integrate and honor multiple perspectives; this layering process surfaced where the tensions cohered and how those were connected to systemic issues (e.g. in the LL, the tensions cohered around how much autonomy students were afforded in the school space). Finally, we see one future direction as exploring the mobile possibilities

for mapping, using new tools for locating people and things in space and time to create collaborative maps. For example, we see potential for young people in schools to collect data and generate representations about issues they face (e.g. clean drinking water, inedible school lunches, deferred building maintenance) by collectively mapping conditions across multiple schools and spaces. Such practices become pathways not only for representing and interpreting the worlds we inhabit but also of imagining how they might be otherwise – and of working to remake those worlds to be more hospitable and just.

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Further reading

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