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Now You See It: Using Documentation to Make Learning Visible in LCs

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Abstract

The practice of documentation is discussed as a means of making learning visible in the LC classroom. A documentation heuristic consisting of a four-stage cycle was used to capture, analyze and report what Bass and Eynon (2009) refer to as the “visible evidence of invisible learning” (p. 5). A variety of documentation samples are presented and examined in terms of what and how students integrated their learning individually and collectively over time. Documentation can prove to be a challenging pedagogy and professional development activity however, due to the time and effort required to enact the process. Despite these challenges, the author concludes that documentation can deepen student learning through revisiting and reflection. It can also improve assignment design and teaching through more precise scaffolding relative to the integrative moves students make as they construct knowledge. Finally, documentation can fulfill multiple functions, including that of a pedagogical practice, assessment strategy, and research method.

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Cover Page Footnote

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Introduction: Making Learning Visible

While discussing the implications of four years of findings from The Washington Center's *Online Survey of Students' Experiences of Learning in Learning Communities*, Malnarich, Pettitt and Mino (2014) issue a call to action of sorts, encouraging LC practitioners to continue their focus on integrative assignment design, pedagogical scaffolding, and LC assessment, specifically what students are learning from one another. They remind us that

...within the LC classroom the *theory* that knowledge is socially constructed is implemented through the *practice* of collaborative learning: the focus is on who is in the classroom (not just the nature of the curriculum), and on the curriculum as a means to encourage connected, relational, and constructed knowing. (p. 14)

Given the many ways LCs are constructed and practiced throughout higher education, what does this “connected, relational, and constructed knowing” look like? And more importantly, why make this kind of integrative learning visible?

Miller (2005) asserts that instructors must think through what integrative outcomes “will 'look like' in enough detail to be able to separate the high-quality work from the lesser, and to explain their judgments in ways that will help students to improve” (p. 11). Boix Mansilla (2005) agrees that a student's thinking must be “made visible” in order to make a valid assessment of integrative understanding. In *Capturing the Visible Evidence of Invisible Learning*, Bass and Eynon (2009) describe the “intermediate processes” or “the steps in the learning process that are often invisible but critical to development.” They go on to explain:

All too often in education, we are focused only on final products: the final exam, the grade, the perfect research paper, mastery of a subject. But how do we get students from here to there? What are the intermediate stages that help students develop the skills and habits of master learners in our disciplines? What kinds of scaffolding enable students to move forward, step by step? How do we, as educators, recognize and support the slow process of progressively deepening students' abilities to think like...scholars? (p. 5)

It's my contention that in making the *how* as well as the *what* of learning visible in learning communities, documentation can serve as a valuable teaching, assessment, and research tool by capturing the “visible evidence of invisible learning” of both individual and collective student learning. Consider the

following quote from Vecchi (1996), a teacher in the Reggio Emilia early childhood schools where documentation originated:

We feel it is necessary, once again, to deny the assertion that learning, and how we learn, is a process that cannot be seen, that cannot be activated and observed, leaving the school with the sole task of eliciting learning and then verifying it after the fact. What we are interested in is precisely an attempt to see this process and to understand how the construction of doing, thinking, and knowing takes place, as well as what sort of influences or modifications can occur in these processes. (p. 156)

Documentation is, however, more than capturing and preserving a moment in time, more than a “recovery mission” of what students did in the classroom. According to Rinaldi (2001), “Documentation is not about what we do, but what we are searching for...” (p. 83). It is an attempt to revisit, reflect on, and integrate learning over time. For Rinaldi (2006) one of the main purposes of documentation is to facilitate listening, a critical component of any learning community; thus, her idea of a “pedagogy of listening” involves connecting people and ideas. The following examination of our documentation efforts at Holyoke Community College describes how students integrated their learning and collaborated across a variety of LC contexts, classrooms, and activities such as writing, seminar, field-based laboratories, stage performance, service learning, project presentations, and peer review.

Documentation as “Visible Listening”

According to Rinaldi (1994), documentation is the process of gathering evidence and artifacts of what happens in the classroom. She further explains that

documentation is not only the process of gathering evidence and artifacts, but also a physical collection of evidence and artifacts, the reflection on and analysis of the collection, and the presentation of that collection, or part of it, in a way that makes children’s learning visible to the children, to the teachers, to other adults including families and visitors. (p. 2)

So how is documentation more than a record of classroom activity? The power of documentation, as practiced by the internationally renowned schools in Reggio Emilia, Italy, is the focus on inquiry-based learning and teaching, the reflection on and analysis of evidence of student learning, making these findings visible, then going public and eliciting feedback from students, teachers, and

others. The documentation process is guided by five practice principles, which are further described in the publication, *Making Teaching Visible* (Project Zero, 2003, p. 13):

1. Documentation involves a specific question that guides the process, often with an epistemological focus (focus on questions of learning).
2. Documentation involves collectively analyzing, interpreting, and evaluating individual and group observations; it is strengthened by multiple perspectives.
3. Documentation makes use of multiple languages (different ways of representing and expressing thinking in various media and symbol systems).
4. Documentation makes learning visible; it is not private. Documentation becomes public when it is shared with learners, whether they are children, parents, or teachers.
5. Documentation is not only retrospective; it is also prospective. It shapes the design of future contexts for learning.

As Rinaldi (2001) argues, “Documentation can be seen as visible listening: it ensures listening and being listened to by others. This means producing traces—such as notes, slides, videos—to make visible the ways the individuals and the group are learning” (p. 4). Some of the elements of documentation include the following: conducting careful observations, developing questions and tentative answers about how and what students are learning, collecting evidence of individual and group learning, interpreting observations and evidence in relation to these questions, inviting others' interpretations, using the information to guide future teaching, and starting all over again (Giudici, Krechevsky, & Rinaldi, 2001). Documentation can also take many forms: observation notes, conversation transcripts, audiotapes, narratives of students' responses to a prompt, photographs or videos of individual and group learning, and student/faculty analyses or reflections on student work.

While there is no one “right” way to document student learning, we developed a *Documentation Heuristic* to facilitate the process and provide faculty with some documentation guidelines, including key features, principles, practices, and examples. This heuristic, summarized in Table 1, consists of a four-stage documentation cycle that embeds the five practice principles identified above. In keeping with Rinaldi's (2001) characterization of documentation as the “pedagogy of listening,” each stage in the cycle is described as a “pedagogy”. In each stage, practitioners are guided by a series of questions that delineate the steps to consider as they examine the key elements of integrative and interdisciplinary learning.

Table 1: Documentation Heuristic

Stages	Guiding Questions
Stage 1: Asking Questions or <i>The Pedagogy of Inquiry</i>	<p>Consider how documentation can help you to address a particular question you have about student learning in LCs:</p> <ol style="list-style-type: none"> 1. Select a guiding question: What's worth documenting? Does the documentation focus on learning, not just something "we did"? 2. What kind of student learning do you want to make visible: integrative learning, disciplinary grounding, embodied learning, socially-situated or collaborative learning? 3. Why do you want to make this learning visible—what is the purpose of the documentation?
Stage 2: Capturing Learning or <i>The Pedagogy of Listening</i>	<p>Consider how you might capture student learning and make it visible:</p> <ol style="list-style-type: none"> 1. What technology might you use to capture student learning: observation and note taking, audio recording, video recording, a combination of technologies? 2. What might be the context of your documentation: individual and/or collective student learning, a particular assignment or series of assignments over time, the LC course as a whole, or a program context, e.g., comparing student performance across courses? 3. How might you engage students as co-researchers or co-documentarians?
Stage 3: Perceiving Patterns or <i>The Pedagogy of Discovery</i>	<p>Consider what student learning is visible now that wasn't before:</p> <ol style="list-style-type: none"> 1. What did you experience while engaged in listening to and observing your students? What did you expect to hear and see? What did you actually hear and see? 2. What seems to be documented? What interpretations can you draw? What concrete components of documentation support what you're seeing? Does the documentation promote conversation or deepen understanding about some aspect of student learning? 3. What else might have been documented if you had chosen to do so? Are there any surprises that could lead you in different directions?
Stage 4: Going Public or <i>The Pedagogy of Collaboration</i>	<p>Consider the story you might tell as you represent, report, and share your documentation:</p> <ol style="list-style-type: none"> 1. What media might be useful for "going public" with your documentation? 2. Who is your audience (e.g., students, faculty, administrators), and how might you elicit their feedback? 3. When is an appropriate time to share the documentation with your audience? How will you "revisit" and reflect on the documentation with your students? 4. What artifacts can you assemble to present a more complete representation of student learning?

As faculty know from their own practice, LC work is premised on viewing teaching and learning as a collaborative and constructive process and valuing

students as producers of knowledge, however preliminary. One critical aspect of documentation, then, is the focus on formative rather than summative assessment—capturing ideas to be exchanged, built upon, and reproduced for ongoing use during the semester. The examination and discussions of the documentation always begin with students. The primary goal is to improve learning. Faculty input is sought when the documentation goes public beyond the classroom, as in the case of in-house professional development venues and conference presentations. The goal here is to improve teaching. While faculty acted as the primary documentarians in most of the samples that follow, student roles did vary from that of "responders," as they revisited and reflected on the documentation itself, to that of "co-documentarians," as they created the documentation sample in collaboration with faculty.

The Difference That Documentation Makes

Aside from producing what some might refer to as “promotional pictures” of students and faculty together in the LC classroom, what difference does documentation make? The heart of this work was an attempt to “capture” integrative learning and teaching in action and to deliver professional development to LC faculty by embedding documentation in the classroom. For the many students and faculty who participated, documentation made visible *what* LC students learned and *how* they integrated that learning in a variety of course contexts and assignment activities. Whether it is cataloging the conversational strategies used in seminar or capturing a few crucial embodied learning moments on stage, documentation can help us *see* more clearly those *invisible* steps in the learning process that Bass and Eynon (2009) claim are critical to student development. In this way, documentation can have a fourfold impact on LC pedagogy and practice.

Impact 1: Metacognition via Revisiting and Reflecting

First and foremost, documentation can provide students an opportunity to revisit and reflect on their learning, resulting in metacognitive moments that often transcend the particulars of any assignment. For example, the *Link Aloud* (Mino, 2007/2013) was an effort to identify the “precise mechanisms” of integration students used to make interdisciplinary connections in their writing. It provided a visual and auditory representation of interdisciplinary learning, preserving the student voice in writing and conversation by combining two signature methods from cognitive psychology—concept mapping and verbal protocol analysis, e.g., *Think Aloud*. Consistent with the relational philosophy and practice of learning communities, the *Link Aloud* became a conversation about an “interdisciplinary object,” specifically, a sample of student writing. In this way it was not just a data

retrieval procedure but also a collaborative reflection on interdisciplinary learning, and thus an opportunity for discovery via *guided reflection*. The students who participated in the Link Aloud reported that the documentation experience itself was integrative, punctuated by significant moments of discovery. Here is one representative student comment:

I think the best term for the [Link Aloud] experience was revelatory. I came to see my entire project in a new light and obtained a clearer understanding of what worked and did not work in my writing. Some of this came not from your responses, but just from the active rereading of the work.

The Link Aloud procedure can potentially be translated into a classroom context in a variety of ways. Interdisciplinary conversations—whether individual student conferences, small group team presentations, or large group discussions—can be captured and documented by audio and/or videotape and then revisited through guided reflection. Students then become co-investigators inquiring into the epistemology of the interdisciplinary classroom and asking: What constitutes collective interdisciplinary knowledge? What kinds of linking mechanisms do students use in interdisciplinary conversations? How does collective knowledge (of an interdisciplinary kind) develop?

In another example, documentation from the *Teen Spirit* learning community captured students in the act of integrating their learning beyond cognition, demonstrating that *embodied learning* is not only a valid means of knowledge production but can also function as a gateway to deeper integration of course material (Sandoval & Mino, 2013). The documentation presents examples of embodied learning, i.e., knowledge constructed from the interaction of self with the physical and social environment, with thick descriptions of student work derived from samples of student writing, seminar, videotaped performances, and student self/peer assessments. For example, in a seminar on “identity statuses” (Marcia, 1980), students began by testing their understanding of the theory by applying it to their own life experiences but fell short in their understanding of the interdisciplinary threshold concept of identity statuses as *transitional states* (Meyer & Land, 2003), as evidenced by their self-references as “identity achievers” or “moratoriums.” It was only in the context of the two-person scene that students were able to enact their understanding of the transitional nature of identity statuses live on stage. Unlike the performance of understanding that Bass (1999) describes as “a mimicry of mastery” (p. 3), when learning is embodied, the performance is the understanding. In one student's post-performance self-assessment, he recounts, then signifies, the transitionality of his character's identity statuses: “So my character *moved from foreclosure into his*

current state of moratorium, marked by his anger and confusion in terms of how to treat the loss of something so central to his identity.” Once again, it was documentation that made students' embodied learning visible and identified the crucial intermediate learning processes—such as improvisations and rehearsals—that set the stage for this embodiment to take place.

Documentation can also capture students in the act of constructing knowledge collectively: “In seminar you could formulate ideas that haven’t quite formed yet...with the thoughts and instincts of others...fascinating to hear the ‘coming to’ of ideas and insights in a unique construction of many minds” (*Demythologizing the American Frontier* student). In a descriptive study of the kinds of conversations LC students engaged in during seminar, a variety of seminar conversations from four different learning communities were documented using the Link Aloud methodology, i.e., concept-mapping and audio/video excerpting. A preliminary typology for classifying seminar conversations was created and a series of pedagogical strategies were suggested for documenting the seminar.

To illustrate, in response to Jill Lepore’s, *The Name of War: King Philip's War and the Origins of American Identity* (1999), students engaged in a seminar conversation labelled as “recursive” because, after moving away from their initial question and theme on the moral culpability of bystanders, they returned with a specific example from the text to complicate their previous understanding. In the first part of the conversation, students conducted an exploratory probe of the text to answer a question or to find, confirm, or refute an idea. But as that strategy became less productive, students engaged in a feedback loop of sorts, returning to the original thesis or theme but with a variation or elaboration. And although the integrative moves made by individual students frequently punctuated the conversation as they explored the text, they did not lead to deeper understandings. Rather, it was the conversational strategy of recursiveness that students used to collectively construct knowledge that gave the seminar its deeply integrative character. I've been documenting students engaged in a variety of “exploratory” seminar conversations ever since, and even when these conversations depart from what Peter Elbow (2008) calls “the believing game” to take what Mercer (2000) describes as a “disputational” turn, students can become more informed and intentional about agreeing or disagreeing with each others' positions as they clarify, condition, and complicate their understanding of what it means to understand a text critically.

Impact 2: "Intermediate Processes" that Foster Integrative Learning

Faculty accounts of their participation in the documentation process indicate that we have made significant progress toward improving student learning in LCs by focusing on the “intermediate processes” that can foster integrative learning.

Using data from a student survey, faculty interview, and video excerpts of students engaged in peer review, "Peer Review Matters" documented how students evolved their peer review stance from a "authoritative" one that was prescriptive to a "collaborative" one that was writer-centered (Lockhart & Ng, 1995, p. 633). What makes this documentation so significant is that both the faculty (at least initially) and the research literature contested the efficacy of using peer review with ESL students and English composition. Yet the documentation clearly showed which peer review stances in particular and under what conditions students were able to integrate ESL and English process writing outcomes. Faculty now use peer review as a standard practice, introducing it early and providing extensive scaffolding throughout the semester.

In addition, documentation may help faculty discover and/or uncover interdisciplinary threshold concepts that may be unique to learning communities and perhaps, identify where students are encountering troublesome knowledge, i.e., procedural, epistemological, or emotional "bottlenecks" in their attempts to master interdisciplinary material (Middendorf & Pace, 2004). For example, in "Seamless Integration, Visible Development," faculty documented how students integrated literature and science to change their ecological understanding over time across three domains from self to others and to place. Using students' written reflections, excerpts from students' essays, and video excerpts of students conducting hands-on labs and peer teaching, the documentation made visible how students' use of literature to contextualize and "contemporize" science became a cognitive and emotional pathway for learning, applying, and transferring science knowledge. One student's reflection, excerpted below, prompted the faculty to require a "literature-science connection" in all assignments:

Hearing the sounds of birds calling, insects chirping and buzzing, water gently rippling, the soft whistle of the breeze, and the swaying of plants made the world a real place that I want to take care of, be able to enjoy for the rest of my life, and be able to let others who come after me enjoy it. Science describes the functionality of the natural world very well, but the sheer feeling of the world in all its magnificence is something only transcendentalists and "non-civilized" people really grasp.

"*The Wire* End-of-Semester Student Reflection" provides another example of how faculty revised an assignment, in this case to include more peer-to-peer conversation. The documentation features a pre/post interview assignment regarding students' perception of crime. The project documents how students' ideas changed as a result of disciplinary grounding in theory from criminology and economics, classroom conversations, and peer-to-peer reflection. All students

reported complicating their understanding of crime, moving from simple, individualistic explanations to complex, socio-economic understandings. And while theory, i.e., disciplinary grounding, was critical to deepening students' understanding of the causes of crime, it was also the conversations with classmates that directly shaped, enhanced, and expanded their ideas:

My ideas haven't changed completely, they've just been enhanced. When it comes to what has influenced my idea of crime it's always been what's surrounded me. My neighborhood, my mother, now this class. I see crime so much more logically now knowing about the different social theories that cause people of different race, class, gender, and economic position to commit crimes.

In yet another example of assignment and even course redesign, the "Gaia Meets Psyche Seminar on the *Tao*" documented how students constructed knowledge collectively and how that knowledge is culturally situated. The documentation presents writing excerpts from students' seminar papers, email exchanges with international Chinese students, and video excerpts of the American students in seminar. When American students asked about the influence of the *Tao Te Ching* on Chinese culture, they were "caught off guard" by their Chinese counterparts' inquiry regarding the influence of the *Bible* on the US government. One student elaborates about this shift in focus:

I learned that my Chinese colleagues certainly have a broader understanding of American culture than I do of China. I learned how difficult it can be to pose questions about a culture's belief system without being disrespectful. And how easy it is to critique another's while ignoring my own.

Another student offered this insight: "In a culture that seems so different from our own, a great piece of literature has brought us both to the same place." Cross-cultural collaboration has now become a centerpiece of this LC in terms of course design, learning activities, and assessment.

Impact 3: Documentation as Assessment

From a programmatic standpoint, documentation can function as a critical assessment strategy for making integrative learning visible across course contexts, over time, and between the classroom and the community. HCC faculty began to experiment with documentation as assessment while participating in the *National Project on Assessing Learning in Learning Communities* sponsored by The Washington Center. One of the goals of our project, "Mapping the Terrain of

Integrative Learning in Learning Communities,” was to use documentation to create a multi-purpose digital gallery of LC course portfolios, student projects, and faculty scholarship. The primary purpose of the gallery was to “embody” the LC experience by enabling LC students and faculty to document, disseminate, reflect on, and revisit LC course materials. Over a two-year period, faculty created a series of documentation snapshots at each LC course level (e.g., developmental, general education, and honors) and for each type of LC model (e.g., interdisciplinary LCs, coordinated studies programs, and service learning). Audio and video documentation was used to map both student performance and faculty assessment.

The most significant learning for our campus team was the recognition that we needed an interdisciplinary conceptual framework like that described by Boix Mansilla, Miller and Gardner (2000) to inform our integrative learning and teaching practices. Before our involvement in this National Assessment Project, I would characterize our LC work in terms of high integration but low interdisciplinarity. The integration took a variety of “common sense” forms, for example, information integration, integrated perspectives, and experiences, but the interdisciplinarity could best be described as “soft”—neither intentional nor explicit. By documenting how faculty used the *Integrative Course Design Heuristic* and *Collaborative Assessment Protocol* (created by the Washington Center), we began to realize the ways and means of interdisciplinarity in terms of course and assignment redesign, and more integrative assessment practices. Documentation makes students’ experience as learners visible to teachers and to students themselves in ways that can inform and support what happens next in the classroom. Here is one HCC faculty member's reflection on documentation as assessment:

Another step in the assessment process is viewing the documentation. Seeing the project as a collection of video excerpts in this way has been helpful. The clarity of the issue of “presentation,” or lack of it, is a bit startling. While working with the class on this project, it is difficult to step back and see the larger picture. Viewing it on this document has allowed me to do that. The information the students gathered is good, as is the poster, which was reviewed by both faculty and students. The presentation is the weakest area of this project. Now that we know this, we can further refine the project to include the importance of technique when information is being disseminated.

The methodology and findings from these documentation snapshots currently inform our program-wide approach to assessment, which now includes using documentation as one essential strategy for assessing what and how students learn in different LC course contexts. This work also gave us a clearer

vision of how to scale-up LC assessment from the course to the program level. On one hand, disciplinary grounding can be equivalent to Student Learning Outcomes (SLOs) at the course and departmental level. For example, one of our SLOs for Psychology—“students should be familiar with the major theoretical approaches, findings, and historical trends in psychology”—can also be described as “knowledge” in terms of disciplinary grounding. On the other hand, interdisciplinary understanding as described by Boix Mansilla and Duraising (2007, p. 219), “the capacity to integrate knowledge and modes of thinking in two or more disciplines or established areas of expertise to produce a cognitive advancement—such as explaining a phenomenon, solving a problem, or creating a product—in ways that would have been impossible or unlikely through single disciplinary means,” can be represented in the form of General Education Outcomes (GEOs), e.g., analytical and critical thinking, communication, and cultural diversity. In fact, the documentation of the integrative-interdisciplinary dimension of LCs has provided an explicit form and function to our otherwise generic institutional learning outcomes. We therefore revised our LC proposal form to include a section on identifying the relevant SLOs and GEOs so that we can map where our LCs are located in the general education curriculum during the academic year.

Impact 4: Documentation as Professional Development

As with the scholarship of teaching and learning, so too with learning communities. As a research practice, documentation can invigorate cross disciplinary conversations and expand the *LC Commons* into a “trading zone” of the kind described by Huber and Morreale (2002): “It is in this borderland that scholars from different disciplinary cultures come to trade their wares—insights, ideas, and findings—even though the meanings and methods behind them may vary considerably among producer-groups” (p. 2-3). By making the *how* as well as the *what* of learning visible, documentation can provide a powerful tool for capturing, analyzing, reflecting on, and disseminating primary samples of student learning. Thus, documentation can serve to re-orient faculty to an inquiry-based approach in the classroom where “teaching problems” (Bass, 1999) become professional development opportunities for improving instruction, assignments, and course design. One HCC faculty member put it succinctly, “As educators we should strive to gain deeper meaning through discovery, inquiry, and sharing of techniques.” It is important to note how documentation can effect a sometimes subtle but significant shift in how participating faculty perceived themselves and their classrooms, best illustrated by the following comment from a humanities faculty member involved in a number of documentation projects.

I'm a teacher and a writer. I never thought of myself as a researcher or a theorist. My classroom too has changed. It's more like a learning

laboratory now, where what my students and I do together is data to be carefully considered, then acted upon.

LC course templates, assignment heuristics, assessment protocols, and now documentation—these LC tools of the trade have provided us a rich foundation for a professional development program at the course, program, and inter-institutional levels. In addition to incorporating these materials into our LC resource kit at the course level, we have made these tools the centerpiece of our annual program retreats. They have also featured prominently in our inter-institutional collaborations with a number of sister colleges in the Commonwealth.

Table 2 (next page) provides a summary of the eight documentation samples from the LC classrooms discussed above, highlighting what was documented, the kind of learning made visible, and the improvements in teaching that followed. Each of the documentation projects described here is unique in terms of the LC class, students, faculty, assignments and learning activities sampled, and each is represented using a variety of electronic media, including *Merlot Multimedia* and *Prezi*. Taken together, they reveal how documentation can be a means by which students deepen their learning and faculty improve their teaching.

Table 2: Summary of Documentation Samples

Documentation Sample	Focus of the Documentation & Student Role	What Was Made Visible	Improvements in Teaching
<u>Link Aloud: Making Interdisciplinary Learning Visible & Audible</u>	Case study of seven "LC Scholars" from a variety of 2 nd year interdisciplinary LCs Student role = co-documentarians	How students used 12 precise mechanisms of integration in their writing to make interdisciplinary connections	Integration requirements are made more explicit by embedding a variety of "mechanisms of integration" in assignment descriptions, writing prompts, and assessment rubrics.
<u>Seminaring: Making the Collective Construction of Knowledge Visible</u>	A series of audio and video-taped seminar conversations from four different 2 nd year interdisciplinary LCs Student role = co-documentarians	How students engaged in "exploratory talk" and used a variety of "conversational strategies" in seminar to construct knowledge of an integrative kind	Students are provided with seminar training on "exploratory talk" and the kind of behaviors that enhance and/or detract from group learning; different "conversational strategies" are modeled by instructors for different purposes.
<u>Mapping the Terrain of Integrative Learning in LCs</u>	Case studies of the collaborative assessment of integrative and interdisciplinary learning across a variety of LC courses and levels Student role = responders	How students integrated their learning in a variety of LC contexts and assignments and how faculty assessed their work using the <i>Collaborative Assessment Protocol</i> developed by The Washington Center	Assignment descriptions and assessment activities are re-designed to make integrative and interdisciplinary outcomes explicit; instructors scaffold student integrative learning more intentionally at formative and summative stages.
<u>Learning Beyond Cognition: Embodying Integration</u>	Student work from a variety of assignments, including seminaring and stage performances from the 2 nd year <i>Teen Spirit</i> , interdisciplinary LC Student role = responders	How students used embodied learning to understand the interdisciplinary threshold concept of "transitionality" from seminar to stage	Improvisation is the "go-to" strategy used for "enacting" often abstract disciplinary and interdisciplinary concepts.
<u>Seamless Integration, Visible Development</u>	Student work from a variety of assignments, including writing, field-based labs, peer teaching, and individual/peer-to-peer reflections from the 1 st year <i>Sustainability</i> , interdisciplinary LC Student role = responders	How students integrated science and literature to change their understanding of sustainability over time, across three domains: from self to others and to place	Literature is now used in all assignments to contextualize and "contemporize" science, thus acting as a cognitive and emotional pathway for learning, applying, and transferring science knowledge.
<u>'Gaia Meets Psyche' Seminar on the Tao Te Ching</u>	A seminar conversation on the <i>Tao Te Ching</i> supported by email exchanges between American and Chinese students Student role = co-documentarians	How students' collectively constructed knowledge (in seminar) that was culturally situated	The course has been redesigned to "internationalize" the curriculum by coordinating a variety of integrative assignments among American students and students in China.
<u>The 'Wire' End-of-Semester Student Reflection</u>	A pre/post interview assignment on attitudes toward crime in the 1 st year <i>Keep the Devil Down in the Hole</i> , interdisciplinary LC featuring "The Wire" HBO series Student role = responders	How students' ideas about crime changed as a result of disciplinary grounding in theory, classroom conversations, and peer-to-peer reflection	The assignment was modified to make integration explicit by focusing on theory as a pathway for both disciplinary grounding and integrative leverage between disciplines.
<u>Peer Review Matters</u>	Peer review used in process writing by students in an ESL and developmental English interdisciplinary LC, <i>All About Food</i> Student role = responders	How students moved from an "authoritative" to a "collaborative" peer review stance over the course of the semester	Peer review is now a standard practice; students are provided extensive training on a "collaborative" peer review stance; students practice "scaffolding sub-strategies, e.g., instructing, clarifying, reacting.

Conclusion

The act of documenting is also an act of teaching, learning and research and can be a richly integrative learning experience in itself for students and faculty alike. As Rinaldi (2001) explains, “The documentation itself becomes the 'stuff' of understanding—ideas, theories, hypotheses, feelings, deductions, intuitions, etc.—the processes involved in coming to know; and the 'object' being documented becomes a product and process of research” (p. 87). Learning community classrooms, like the Reggio Emilia Schools, should become sites of “pedagogical research” (Krechevsky & Stork, 2000):

Teachers in Reggio Emilia see themselves as building knowledge through rigorous documentation of children's learning experiences. They are collectively engaged in an ongoing process of posing hypotheses and gathering data through careful observation, documentation, and interpretation. In this way, they use practice to create theory. (p. 66)

While surveys and/or facilitated discussions can present opportunities for “uncovering complexity” regarding student learning experiences that are less visible, e.g., how integrating ideas across courses lead to new insights (Malnarich, Pettitt, & Mino, 2014), documentation can directly address the questions posed by these authors and literally catch students in the act of, performing:

...the moves involved in developing integrative habits of mind and the nature of this activity: Is the activity solitary and/or collaborative? Is it dependent on each student as meaning maker and/or part of a community's negotiated understanding? (p. 21)

Taking a cue from the ACC&U and Carnegie Foundation's *Statement on Integrative Learning* (2004), we still need to shed some light on how and in what contexts LCs foster “students' abilities to integrate learning—across courses, over time, and between campus and community life.” For example, regarding integrative learning *across courses*, what integrative habits of mind do LC students transfer across LCs and between LCs and their stand-alone courses? Regarding integrative learning *over time*, what is the developmental sequence of interdisciplinary understanding from developmental to college level and honors LCs? Regarding integrative learning *between campus and community life*, how do students practice the art of knowing as doing, connecting their academic and classroom lives to their lives in the community? Finally, we need to discover how students themselves perceive interdisciplinary learning outcomes and what learning problems they encounter in developing and demonstrating

interdisciplinary understanding.

In a similar way, documentation can catch LC faculty in the act of team-teaching as they support collaborative and integrative learning and design interdisciplinary curriculum and integrative assessment activities. What can we learn from the complex classroom interactions and consequential impacts of LC teaching and learning made visible? In short, finding out more about learning and teaching can help LC faculty improve the activities and relationships that nurture it, resulting in better LC courses and increased success for all students. Given the focus on multi-media documentation, however, a major challenge ahead is how to incorporate these data-gathering and reporting technologies unobtrusively and efficiently into daily classroom life so students and faculty come to use documentation as part of their natural learning process in learning communities.

In conclusion, the emerging evidence suggests that documentation can be a multi-dimensional pedagogical practice that also functions as an assessment strategy as well as a research method. For me, documentation has become an invaluable multi-purpose tool in the LC classroom and program, extending to both students and faculty the opportunity to integrate their learning and teaching through the use of a versatile and integrative approach.

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