The art of designing a curriculum optimized for learning transfer

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Abstract

We formed an interdisciplinary faculty learning community (FLC) in response to concerns on our campus that students were not adequately transferring learning from their first-year courses into their subsequent studies. Our art and design curriculum is based on the studio model but also includes a variety of general education courses. This creates the possibility that students and their instructors may perceive "big gaps" between different learning environments. We spent a year exploring these gaps and finding potential bridges between the very different domains in which we teach. Our FLC realized that to better understand the potential for learning transfer in our curriculum, we had to expand the boundaries of our learning community. We did so by creating the *Transfer Sessions Project*, a series of informal conversations that empowered faculty from different disciplines to discover common learning goals and explore how these shared goals could better foster student transfer of learning. These sessions revealed the potential in empowering faculty to compare what students produce in their courses in terms of learning transfer. As our FLC comes to an end, we are working on formally analyzing the artifacts contributed by our participants to fully illuminate potential pathways of transfer that exist -- and could be expanded -- in our curriculum.

As teachers, we all hope that our students will take what they have learned and apply them in other contexts. We also assume, sometimes implicitly, that students bring to our classrooms prior learning, skills, and conceptual understanding that form the foundation of new learning. Educational scholars call this import to and export from different learning experiences "transfer of learning."

Perhaps transfer of learning seems like an obvious goal that any faculty member would -- and perhaps should -- pursue. After all, shouldn't students utilize what they have learned in our courses in their subsequent education, careers, and perhaps personal lives? And yet, many faculty members are unaware of what transfer of learning is (Scharff et al. 2017), and few faculty are actually trained in best practices for making learning transferable (Halpern and Hakel 2003). That students apply what they have learned in one context to new challenges is often assumed but not always documented in research studies (Lobato 2006, Justice et al. 2009). This suggests the need to design curriculum to better foster transfer of learning.

Faculty often express frustration when learning transfer is not occurring in their classrooms. This frustration was voiced at our home institution, Pratt Institute, where the majority of undergraduates study in the fields of art or design. When faculty in the studio majors encountered unexpected gaps in student capabilities, they often asked, "why didn't you learn that in Foundation Art?" As seniors struggled to write theses to accompany their creative work, their professors asked, "didn't you learn to write in Freshman English?"

Such questions make those of us who are involved in the earlier stages of the education of our students uneasy, in large part because we *have* taught students the skills that faculty expect students to have learned in their earlier courses. Why haven't our students effectively transferred what they have learned across the different realms of their education?

Looking into this question was the charge to our Faculty Learning Community (FLC), which formed with support from our Provost's office in the fall of 2016. FLCs have been shown to foster common language and shared inquiry across disciplines, enabling more effective curricular change (Boose and Hutchings 2015). Our FLC included faculty from both studio and liberal arts disciplines, and the full- and part-time ranks. This diversity allowed us to consider why our students might not always be able to transfer what they have learned in one realm of their education to other realms.

For the past three years we have explored how we might use a transfer of learning approach to create a better art and design curriculum for our students. We wanted to research the potential for transfer within our existing curriculum and to help our faculty overcome the most common obstacles to learning transfer, all of which exist to varying degrees at Pratt. Ultimately, we wanted to help create a "culture of learning transfer" among our faculty in the hope that doing so would empower our students to transfer what they have learned beyond each of our classrooms.

Here we share our experience with looking for ways to maximize the potential for learning transfer, focusing on how we expanded our faculty learning community by fostering faculty conversations focused on transfer.

The art and design school as an ideal environment for investigating transfer

Art and design schools tend to emphasize rather distinctive learning environments. Students spend hours in the studio, a space for learning through both instructional and hands-on work in a shared, open environment. The culture of the studio affects the entire institution, and the studio is where many students are most comfortable learning. Even for faculty whose teaching takes place in more conventional classrooms, it is hard not to become enthralled by the passion, creativity, and novelty generated by the studio environment.

But the predominance of the studio in an art and design education also creates particular pedagogical challenges, especially when it comes to facilitating transfer of learning. Art and design students don't just have to master the concepts and craft of their creative field; they also need to develop general education skills and habits of mind based on their studies in the humanities, social science, math, and natural sciences.

Students' educational experience at Pratt Institute involves four distinct domains, each with their own goal and disciplinary perspective (see Figure 1). There are large gaps between and among the four domains of the art and design education at Pratt Institute, creating a strong risk that students will perceive a very large gap -- if not a chasm -- between what they are learning in their studio majors and what they are learning in their other coursework (Schrand and Eliason 2012).
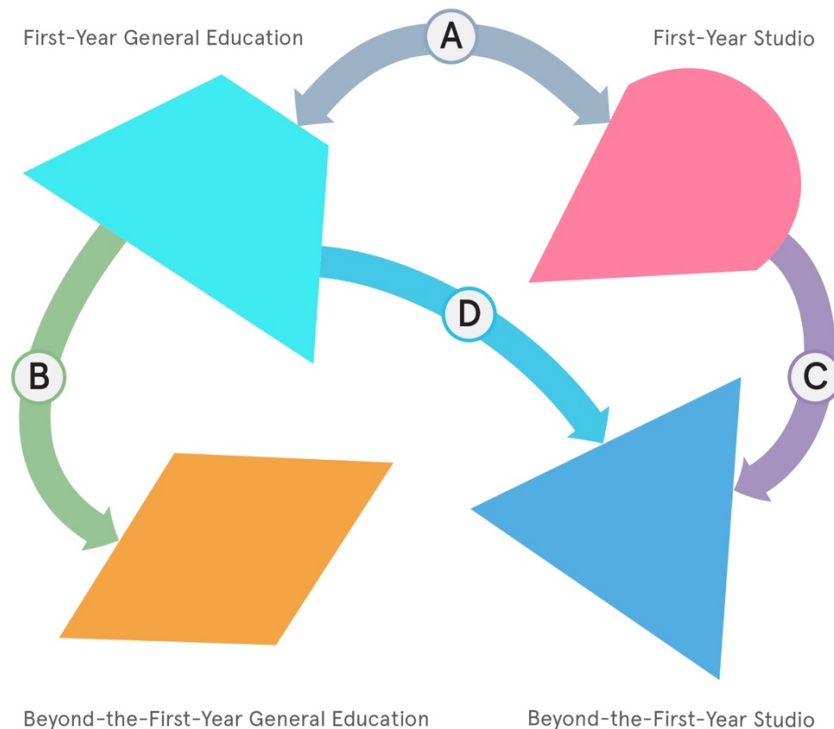

Figure 1: The four domains of the art and design education at Pratt Institute.

Students learn in two different environments: lectures and/or seminars in their general education courses and the studios of first-year Foundation and the art/design majors. Students also experience different environments and expectations as they progress through their education: in first-year general education and studio courses they explore a common set of foundational concepts and practices, but then disperse to a variety of more specific pursuits in their studio majors and elective general education courses. Our FLC sought to understand the potential for transfer between different learning environments experienced simultaneously (A), similar learning environments experienced at different times (B and C), and different learning environments experienced at different times (D).

There are also big gaps between the learning environments that our students experience: the culture of critique in the studio is very different from the more direct instruction of a traditional classroom. Also, the modes of expression that our students are asked to employ differ greatly: studio classes focus predominantly on visual language and material-based explorations, while general education courses honor spoken and written language. And there are big gaps between the learning outcomes we ask our students to achieve: what is considered an achievement in a fine arts painting is very different than what is considered an achievement in an art history research paper.

While challenging (and perhaps a bit intimidating) the "big gaps" illustrated in Figure 1 also open up a host of possibilities when it comes to promoting learning transfer. As we thought about how to make learning more transferable across our curriculum, we saw these gaps as something we wanted to leverage. The most elusive and arguably the most profound forms of learning transfer happen over large gaps in students' educational environments and experiences.

"Far transfer" (Catterall 2002, p.154) requires that students apply what they have learned in one realm of their education to challenges in a very different realm. For example, if our faculty could help a student to apply ideation techniques learned in their design class to pursue the most fruitful thesis for a humanities paper, we have achieved far transfer. "High-road transfer" (Salomon and Perkins, 1989, p. 113) occurs when students are able to abstract what they have learned in one context and apply that abstracted understanding in a very different context. If a student who first learned about racial injustice in a social science course can design an interior space that fosters more equitable interactions, we have achieved "high-road transfer." When the gaps are large the stakes are higher, but the payoffs can be more dramatic.

One approach to bridging gaps is embedding. Art and design curricula have dealt with both the predominance of the studio model and the big gaps between studio and general education by embedding non-studio courses within the larger sequence of studio courses that students take. Some of this embedding is obvious; students learn about the humanities and social sciences through their courses in the history of art and design. They also often take other liberal arts courses that use a focus on art and design to teach general education skills and understandings.

Other forms of embedding are more subtle; many general education faculty members abandon the lecture format in favor of more student-led and open-ended inquiry methods that

resemble the studio. Some of the embedding of studio approaches into general education is encouraged by our students, who tend to reward instructors who are able to bridge these big gaps. Many of us who teach general education courses learned long ago that the best way to get our students to express what they have learned is by asking them to incorporate that learning into some sort of creative work. How we reach our students may be particular to our disciplinary context, but all students need teachers who consider the whole of their education as they design learning experiences and assignments to bridge gaps between disciplines.

Certainly, many similar "big gaps" exist in other higher education settings. But they may be harder to see because most campuses are not unified by a particular educational paradigm. Most general education programs have to serve a student population headed for a diversity of majors, each with their own gaps to bridge as they progress through their education. What makes art and design schools interesting is that these gaps across the educational experience are laid bare, creating an obvious need to design a curriculum that fosters transfer of learning. The unifying educational paradigm of the studio actually makes it easier to see where gaps can be bridged, because most art and design students will experience similar gaps.

Discovering potential transfer pathways

As our faculty learning community first gathered, no one had to explain to us that we were going to have to contend with big gaps. While we were united by a curiosity about how student learning might connect our diverse teaching approaches, that curiosity at first felt like the only thing that we had in common--or at least was the only thing that we *knew* we had in common.

To discover our many actual commonalities, we first had to build bridges between our disciplines. To build these bridges we had to introduce each other to much of what is central to our own work as teachers: the specialized vocabulary we use to describe learning, the particular environments in which we teach, the unique processes and products that we ask our students to explore in our classes, and how we each define transfer of learning.

We spent a year just looking at the potential for transfer in our own teaching by examining specific projects we have designed for our students, and the results were fruitful. We generated a variety of ways of visualizing how a student who happened to find themselves taking classes from each of us might be able to transfer learning between disciplines and across each year of their education. Our main goal was to identify forms of learning that were taught across multiple domains of the Pratt education, imagining how learning might potentially transfer. This led to a series of diagrams that illuminated pathways for transfer between learning experiences in each educational domain (see Figure 2).
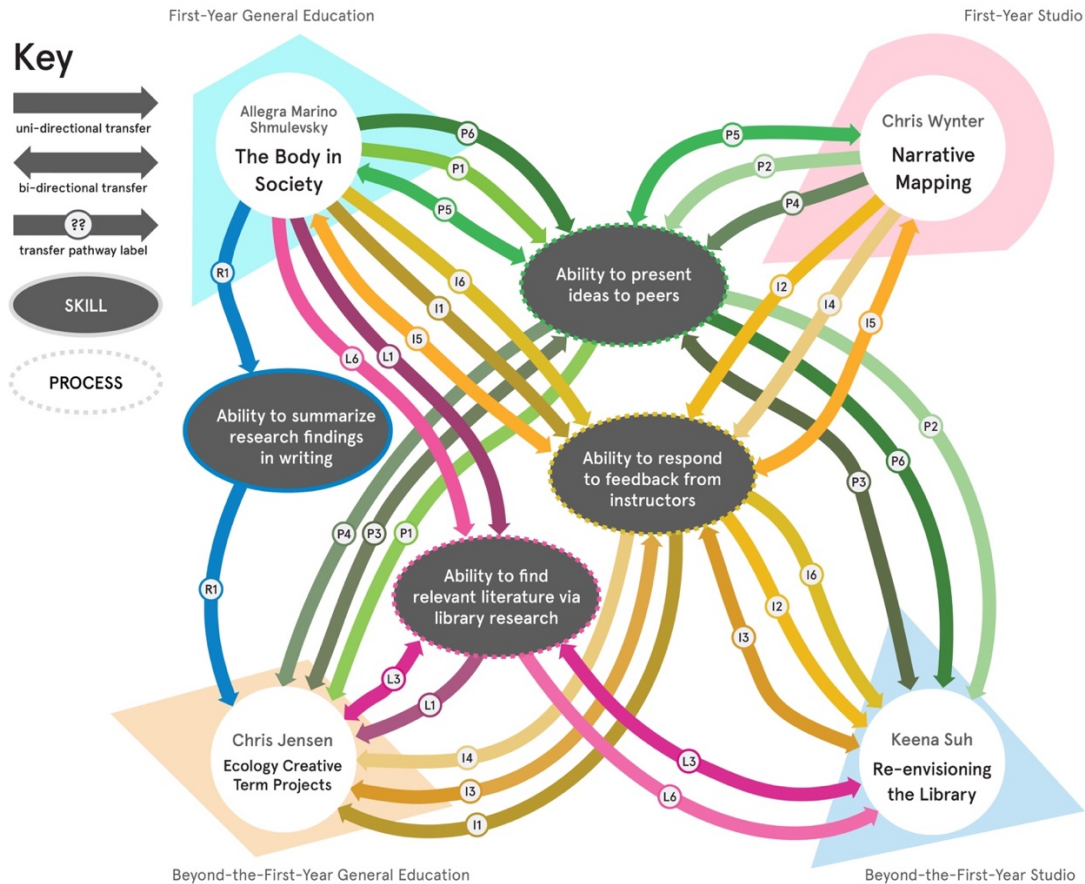
Figure 2: Potential transfer between the four domains of a Pratt Institute art and design education.

Four different forms of learning are identified in this diagram, each with its own connective pathways between domains. Some forms of learning (for example, "Ability to summarize research findings in writing") have more limited transfer potential, whereas as others (for example, "Ability to present ideas to peers") have the potential to be transferred across all domains.

The more we learned about how and what each of us teach, the more apparent it became to us that we had a lot of potential to "teach for transfer." But, eventually, the limitations of our discoveries also became apparent to us: we were but a small group of faculty members peering into the possibilities of a vastly richer learning experience for our students. If we were going to have a real impact, we needed to expand the number of faculty who could get the opportunity to look at what we had been so privileged to see.

We knew that we could not provide the equivalent of our deep, year-long experience, but we wondered whether we could distill our experience into a series of smaller episodes, each giving faculty the chance to discover potential transfer pathways between the learning experiences they foster. We wanted to replicate the intimate, collegial, sharing environment that our FLC had provided to us, and so the *Transfer Sessions Project* was born.

The Transfer Sessions Project

Inspired by the connections made through our FLC, we set off to expand the boundaries of our learning community. We decided that the "big gaps" we had identified across studio and non-studio teaching should be represented in each *Transfer Session*, so we endeavored to bring together four faculty participants, one each from the four domains of a Pratt art and design education-- Foundation Studio (a first-year program), First-Year General Education, Beyond-the-First Year General Education, and the Studio Majors. At each session, faculty were able to share and discuss what they want students to learn in a course they teach in one of the domains, and how that learning can be seen in the work their students produce.

At their best, the *Transfer Sessions* created magical moments during which participants started to make remarkable connections between what they each want to achieve in the classroom. Our assumption, based on our experiences, was that these types of connections can promote the transfer of learning. On numerous occasions, session participants made comments like:

> "Oh, that's what you call this in your field; we use a different term, but it sounds like we want students to understand the same thing."

> "Wow, I never knew that faculty outside of my field were asking students to master that."

> "I can see that what we want students to do specifically is very different, but I can also see that the skill we are each asking students to apply is fundamentally analogous."

It is these spontaneous realizations that we hope that our faculty participants will carry with them, to transfer learning out of these sessions and apply in their own teaching to promote student learning, including transfer of learning.

As one might expect, each *Transfer Session* was unique. A lot of serendipity is involved in bringing four faculty members together based solely on the realm of the art and design educational environment in which they teach. Sometimes a scientist might be sitting next to a painter, sometimes an art historian might be sitting next to an industrial designer. But invariably there were connections to be made, even across the greatest of curricular and pedagogical gaps.

While there were many aspects of particular *Transfer Sessions* that were unique, one thing consistently stood out: faculty members were most articulate about the learning they wanted to foster in their students when they were showing student work. We quickly discovered that a focus on student work provided the clearest window into the potential for learning transfer in our curriculum. What we ask our students to do in our classes is of obvious importance, but the "lesson plan" is often not the most valuable artifact of our teaching. The potential for transfer can be found by looking at what students make.

We consistently saw our *Transfer Sessions* participants become most animated when discussing particular student work, both their own students' work and work produced by the students of other participants. Perhaps it is obvious that the outcome of an assignment is more

important than the assignment itself. But if the goal of making learning transferable is to allow others to see what you are trying to teach, then perhaps student work makes learning most apparent.

This may be especially true when teachers from very different disciplines get together to explain what they want their students to learn. We realized that each of the assignments our session participants presented were designed and articulated in the vernacular of their field, making the prompts they used potentially inscrutable to those from other disciplines. In contrast, student work that was brought to the sessions often directly manifested what students have learned, allowing faculty members to turn to colleagues from other disciplines and say, "look, can you see what the student did there?"

We discovered that one advantage of focusing on student work is that it allows for side-by-side comparison of what students are learning in each other's classes. Because much of what our students produce is visual, their work can literally be placed in sequence to see how learning is transferring. Frequently, after sessions where participants had a chance to explain the learning demonstrated by particular student works, they would flip back and forth between images, making connections between what students had demonstrated in their work for different teachers.

While it is easier to make such connections between images of student work, we found that even work that's not explicitly visual (for example, an analytical art history essay) can be productively compared to look for transfer potential. Figure 3 provides an example of how diverse student work illuminates transfer potential.
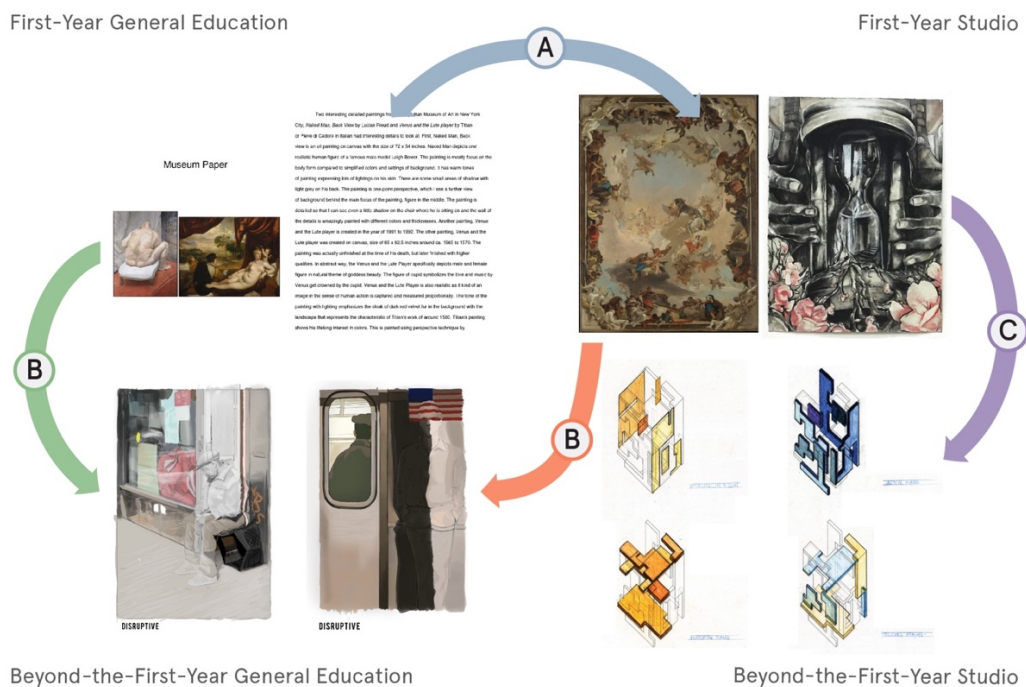

Figure 3: Diverse student work placed side by side to demonstrate the potential for learning transfer.

In this example, a written analysis of spatial composition composed in a first-year *History of Art and Design* course parallels the analysis and application of spatial analysis in a first-year *Foundation Art* course, creating potential for transfer across concurrent learning experiences (A). These learning experiences then have the potential to be transferred in later general education and studio courses, where students are asked to apply the skill of spatial composition analysis in very different creative contexts. Earlier experiences in spatial composition analysis may empower a student to consider how to best use composition to demonstrate the evolved characteristic of camouflage in a later general education course (B) or to perform abstract spatial decompositions in a studio major course (C).

How transfer can be fostered… and why it often isn't

Although relatively small in scope, our *Transfer Sessions* demonstrated the big potential of these gatherings. Our colleagues who chose to participate represented an impressive array of disciplines and a balance of part- and full-time teachers that was reflective of our overall faculty. The realm and kind of teaching of faculty from different disciplines differed greatly. Nonetheless, areas of overlap exist in the form of transferable learning valued and fostered by faculty from different disciplines. When faculty share what forms of learning they value, transferable learning can be aligned, revealing the larger form and structure of the curriculum as a whole. Every time that a group of *Transfer Sessions* participants gathered, there were magic moments of connection and insight, moments that we would love to see happening all of the time on our campus.

But herein lies the real challenge: for the promise of transfer to be realized, more faculty need to be made aware of what their colleagues are teaching, and this sort of information sharing needs to be happening continuously. We reached only thirty-three of our colleagues, a number that we know is far too small to seriously change the way that students experience our teaching and curriculum.

When we consider how much of our own efforts went into recruiting these thirty-three faculty and bringing them together, the task of dramatically expanding our reach seems daunting. There are ever-present logistical challenges in reaching faculty outside of our academic circles (as well as coordinating and scheduling time to get together), but perhaps the deepest challenge is cultural. The faculty who we recruited for our sessions all shared a deep interest in understanding how their students learn and for this reason needed little more incentive than an invitation to get involved.

But to really expand our reach, there needs to be a broader sentiment fostered in our faculty that what happens to student learning after the student leaves a particular course really matters. That sentiment is unlikely to be generated by five members of a faculty learning community working alone or even a slightly larger group of faculty members engaged in single transfer sessions. Creating a curriculum that empowers students to transfer what they have learned throughout the realms and years of their education requires an effort on the part of the entire institution. Empowering students to integrate what they have learned through effective transfer has to become an institutional goal.

Where our exploration of transfer could go

Our Faculty Learning Community has been supported for three full years, a length of time that we realize is generous. In our remaining time together, we know that we have one unfinished task: turning all the information generated by our *Transfer Sessions* into data that can be meaningfully analyzed. In doing so we have to wrestle with some of the trade-offs inherent in our design. These sessions may have been wonderfully open-ended, leading to a lot of great faculty development moments, but as a result there was nothing orderly about the artifacts we collected. We have been sifting through the copious and diverse information that we did collect, trying to see patterns across the ten different sessions we convened. There is a lot of art to this attempt at analysis, and part of that art is deciding what to focus on.

After the sessions were completed, we sat down with all the information we had collected to identify focal questions. A dozen different angles of inquiry could have been fruitfully pursued, but for us a few perspectives emerged as most interesting. For example, the studio learning experience puts a strong emphasis on process, frequently scaffolding projects to teach students how to walk the long road from an initial spark of an idea to a finished product. But we also found that many general education assignments put a similar emphasis on process. Might the processes of developing a concept, or the process of creation, be one of the more important forms of transferable learning in our curriculum?

To answer such questions, we have realized we need to come up with more systematic ways of looking at all the materials that our *Transfer Sessions* participants provided. And that is currently where our work stands, as we try to develop "code books" that will help us make sense of where and how students gain particular abilities. These code books identify specific forms of learning that we are tracing, trying to find threads between the contributions of each of our thirty-three session participants. We expect that this analysis will allow us to present our colleagues with a map that will illuminate potential pathways of transfer that were uncovered during our *Transfer Sessions*.

There are other resources and ways to explore transfer. While we were conducting our inquiry, Pratt established a *Center for Teaching & Learning*, and this new resource has the potential to continue fostering conversations about transfer among faculty from across the campus. Perhaps *Transfer Sessions* can become a regular practice within our institution to help build a culture of teaching focused on learning transfer.

There are also thoughts about where we might next explore transfer. We often asked ourselves whether our focus should be on students or faculty. Although we ultimately turned our gaze towards faculty, we never lost sight of how powerful it would be to consider students' experiences of their education. Asking them what they see as transferable across their education would be valuable; following a group of students longitudinally to see if we can "track learning" across their four years at Pratt would be even more powerful.

A final aspiration is to find a better way to both share what we have learned and to continue to accumulate evidence of how students transfer learning throughout our curriculum. A lot of our insights about transfer have come from looking at samples of sequential student work. The student work collected during our *Transfer Sessions* are a beginning, but we would ideally

like to collect more work, and doing so would require some sort of browsable database. We imagine getting many more of our colleagues to contribute student work to such a database, tagging each work with the kind of learning demonstrated by the student. Such a database would empower our colleagues to both continue and expand our inquiry into how transfer of learning might be optimized across our curriculum.

In many ways, our faculty learning community seeks to make itself obsolete. While it has been incredibly important to consistently pursue our inquiry, we also know that we alone are not enough to create a culture of learning transfer on our campus. If our curriculum is to be optimized for learning transfer, the priorities and practices promoted by our learning community have to find their way into the faculty at large. If we can get the conversation started amongst enough of our colleagues, maybe the conversation will take on a life of its own, fueled by a mutual interest in making what our students learn relevant beyond the place where that learning first occurred.

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