PBL BRIEF #3

WPI

Project-Based Learning in the Arts and Humanities

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Briefer Brief

- While PBL has become increasingly practiced in higher education (Beddoes, Jesiek, & Borrego, 2010; De Graaf & Kolmos, 2009), the empirical evidence of effective implementation and impact is largely confined to STEM.
- The balance of scholarship on PBL within the humanities is largely motivated by the claim that the liberal arts requires new models to fit fundamental changes in global society (Selingo, 2020; Marmon, 2015; Borgam, 2009).
- Many digital humanities initiatives use pedagogical strategies similar to PBL, teaching students how to connect concepts across disciplines (Davis, McCullough, Panciera, & Parmer, 2017), collaborate on teams (Terras, 2006; Burdick, Drucker, Lenenfeld, Presner, & Schnapp, 2012), and communicate rigorous analyses in accessible ways (Lawrence, 2013).
- The habits of mind cultivated in studio arts are well-suited to PBL (Hunter-Doniger, 2018) and can lead to greater depth of disciplinary learning (Ghanbari, 2015) and creativity within STEM (Munakata & Vaidya, 2015).

Introduction

Project-based learning (PBL) and similar student-centered, experiential pedagogies are increasingly recognized as an effective vehicle for high-impact practices in colleges and universities.[1] In recent decades, PBL has received particular attention in STEM disciplines as a means of bridging the gap between technical content and a host of professional skills necessary to compete in the global economy.[2] Implementation of PBL and other experiential pedagogies has been found to increase opportunities for student engagement,[3] improve student STEM skills and attitudes,[4] and prepare students to enter high-demand STEM fields after graduation.[5]

There is less research on how PBL serves the arts and humanities, perhaps because PBL is not yet framed as a potential solution to the most pressing issues facing the fields. Liberal arts education has been positioned as providing necessary preparation for a well-considered life by one camp of academics,[6] suggesting an intrinsic value to traditional arts and humanities departments. Others argue that the liberal arts requires new models to fit fundamental changes in global society, focusing primarily on explicitly connecting higher education to career preparation.[7] The balance of scholarship on PBL implementation and impact within the humanities has been largely motivated by the latter.

This research brief focuses on the extant research on PBL in the contexts of the arts and humanities in higher education. Two broad sets of practices that have received attention in the empirical literature are examined: PBL in digital humanities curricula and using the arts and humanities to complement STEM training. The brief then summarizes exemplar case studies on the use of PBL in a variety of disciplinary fields as a guide to further reading focused on pedagogy and student learning.

PBL in the Context of Digital Humanities

Digital humanities uses computational technology to advance the production, consumption, and critique of knowledge in traditional humanities fields.[8] The approach has become deeply embedded in higher education, with dedicated centers, tenured professorships, journals, funding, and other initiatives.[9] Much of the literature focuses on these institutional mechanisms supporting digital humanities and the corresponding influence on humanities scholarship.

Student learning outcomes are less frequently assessed in the literature on digital humanities than faculty scholarship and its production. There is, however, a burgeoning

literature focused on pedagogy in digital humanities.[10] With the rise in technology as a means of authoring, organizing, and consuming information, research on the use of digital humanities in teaching and learning addresses the impact on how students engage and learn in digital contexts.[11] The digital humanities applications in higher education classrooms described in this literature do not always align with the tenets of PBL. However, many digital humanities initiatives use similar pedagogical strategies. Clement (2012) describes the venture of digital humanities as critical consumption of culture, stating that

> project-based learning in digital humanities demonstrates that when students learn how to study digital media, they are learning how to study knowledge production …. A curriculum infused with the pedagogical concerns of digital humanities is a curriculum in which undergraduates learn to think about the cultural work done by and through digital media (p. 366).

Some digital humanists argue that the act of "building" and creating is central to the pedagogy, which makes it suitable to PBL.[12]

Scholarship that attends to the benefits of digital humanities for students describes outcomes similar to what has been found more widely in PBL. Students who engage in PBL through digital humanities projects report a greater number of connections across disciplinary boundaries. For example, students in a mid-level history course at Connecticut College, a small, private liberal arts school, embarked on a project to craft a virtual exhibition of a travel journal from the college's collections. The curriculum guided students in experimenting with digital technologies and conducting disciplinary research to achieve faculty- and student-elected objectives. According to Davis, McCullough, Panciera, and Parmer (2017), students were able to describe connections across key disciplinary content within history and to other classes.

Several scholars argue that students who engage in digital humanities PBL are better prepared for postsecondary success in the workforce. Digital humanities courses often demand collaboration among students in a departure from traditional humanities learning activities.[13] Constructing narratives in a digital space teaches students how to reach nonacademic audiences in accessible forms without compromising the quality of analysis.[14] As leaders in the movement argue, these communication skills are ideal for the expanding sector of jobs that translate across software and product development, on one hand, and customer relations and market influencers, on the other.[15] The promise of postsecondary success can be persuasive to students, who are often motivated to pursue skills and credentials that are attractive to employers.[16]

As with other ways of teaching with PBL, students doing digital humanities activities sometimes struggle with recognizing learning amid struggle; this can render their ability to self-report progress on learning outcomes difficult. In the digital humanities course at Connecticut College reported on by Davis and colleagues (2017), one third of participating students were frustrated with assignment components such as annotation and transcription, which they found tedious. The students in Lawrence's (2013) history of education course experienced "an existential predicament" (p. 116) as they navigated the tension between disciplinary norms for analytic rigor against the public's norms for engaging information in online environments. These experiences echo the student resistance faculty can face in any PBL context while students navigate the ambiguity that comes with authentic learning.[17] Students can be supported in recognizing the value of learning to persevere through PBL with explicit support from faculty members and adequate opportunities for reflecting on both intended and unintended learning.[18]

Enhancing STEM with the Arts: PBL in the STEAM Movement

A wide contingency of educators and scholars have argued the need to leverage the arts and humanities to inject creativity and innovation in STEM, proposing the alternative acronym of STEAM to denote a more integrated and balanced curriculum.[19] The habits of mind cultivated in studio arts are well-suited to PBL, as Hunter-Doniger (2018) illustrates (see Table 1).[20] Infusing the arts into STEM courses through curricula that use PBL has produced some promising student outcomes, though the research is largely limited to self-study designs that limit what we know. Students report greater depth of understanding and retention when asked to apply their learning,[21] which some studies have attributed to the artistic requirements of PBL activities. Ghanbari (2015) studied two STEAM university programs established prior to the STEAM movement. They found that students reported greater likelihood of remembering key science concepts, which students ascribed to the collaborative and applied aspects of PBL they

experienced. Alumni from one of the programs attributed their career pathways to broadened perspectives instilled by the arts components of the program's requirements.

Blatt-Gross (2019) reported on the ability of a PBL-based art appreciation curriculum to assist non-majors in understanding the relevance of art for their lives. By the conclusion of the course, students demonstrated increased skills in explaining, interpreting, and applying relevant art vocabulary. Students also demonstrated increased appreciation for both art and experiential learning. Other practitioner-scholars have found similar effects on their students after bringing the arts into STEM courses.[22]

Table 1. Comparison of Pedagogical Styles

Project-Based Learning	Artistic-Style Pedagogy (Studio Thinking)
Centrality of Projects: Central to the curriculum, it is an essential part of the teaching strategy.	**Develop Craft:** Learn to use tools, materials, and artistic conventions as well as care for tools, materials, and space.
Start with a Driving Question: The driving question encompasses every aspect of the learning; used to solve real-world problems.	**Engage and Persist:** Learn to embrace problems of relevance within the art world and/or of personal importance to develop focus conducive to working and persevering at tasks.
Constructive Investigations: Student inquiry is an essential part of the learning process. Students observe, self-reflect, and reiterate as part of the process.	**Observe:** Learn to attend to visual contexts more closely than ordinary looking requires, thereby seeing things that might otherwise not be seen. **Reflect:** Learn to think and talk with others about an aspect of one's work or working process; learn to judge one's own work and work process and then the work of others.
Student Autonomy: The process has no predetermined outcome. Students complete the process with the teacher's guidance, encouragement, and scaffolding.	**Envision:** Learn to picture mentally what cannot be directly observed and imagine possible next steps when making a piece. **Stretch and Explore:** Learn to reach beyond one's capacities, explore playfully without a preconceived plan, and embrace the opportunity to learn from mistakes.
Real Life (not school-like): Students create solutions to problems and have a variety of different end products..	**Understand Community:** Learn to interact as an artist across the art field and within the broader society. **Express:** Learn to create works that convey an idea, feeling, or personal message.

Note: Reprinted from "Project-based learning: Utilizing artistic pedagogies for educational leadership" by T. Hunter-Doniger (2018), in *Art Education*, 71(2), 46-51. Copyright Taylor and Francis 2018.

One of the primary lessons that the arts can bring to the forefront of PBL in STEM disciplines is the nonlinearity of creativity and innovation. Munakata and Vaidya (2015) leveraged the lab component of Physics I and Classical Mechanics to have students collaborate with students in the art department to sustainably produce short films on sustainability using concepts on energy production from lecture. Students produced a variety of products, including poetry, photographs, and a blog exploring the intersection of science and the arts, beyond the requirements of the assignment. An evaluation of the course redesign documented that students found PBL and teamwork to be valuable. However, at the same time, students did not always know how to make sense of the open-endedness of discovery-based inquiry.

Case Studies of Project-Based Learning in the Humanities

One of the best ways to understand what is possible when implementing innovative pedagogies is to explore what others have done. We have organized a set of case studies of PBL by field of study within the humanities (see Table 2). These articles provide examples of PBL curricula, assessments, and other teaching practices which may be useful in envisioning what PBL might look like in your own institution and classrooms.

Table 2. Case Studies of Project-Based Learning by Humanities Field of Study

Field of Study	Citation	PBL Practices Studied
Art	Ghanbari, S. (2015). Learning across disciplines: A collective case study of two university programs that integrate the arts with STEM. *International Journal of Education & the Arts*, 16(7).	Two university programs that integrate arts with STEM, reside within R1 institutions, & have existed for at least 5 years. One uses a combination of lectures, PBL assignments, & community engagement, offering general education courses and seminars to 175-250 students annually. The other is a college blending art and technology with 3 required courses, internships, and a writing course. The college enrolls more than 3,600 students.
English/ Literature	Manista, F. C., & Gillespie, M. P. (2011). Using enquiry-based learning methods to teach Finnegans Wake to undergraduates. *Arts and Humanities in Higher Education*, 10(1), 85-98.	The authors describe how they used enquiry-based learning – a pedagogy similar to PBL – to give students the tools to explore an infamously difficult text, James Joyce's *Finnegans Wake*.
English/ Literature	Prendergast, R., & Totleben, K. (2018). Course design, images, and the class-curated exhibit. *RBM: A Journal of Rare Books, Manuscripts, and Cultural Heritage*, 19(2), 133-153.	A PBL assignment in a literature course that asks students to curate an exhibit featuring rare, illustrated volumes from the university library. Three models for integrating similar PBL assignments across disciplines are provided.
History	Davis, A. M. McCullough, J., Panciera, B., & Parmer, R. (2017). Faculty-library collaborations in digital history: A case study of the travel journal of Cornelius B. Gold. *College & Undergraduate Libraries*, 24(2-4), 482-500.	A midlevel history course, *Empire and Expansion in East Asia, 1840s-1950s*, that includes a four phase assignment to scaffold student design and production of an interactive, virtual archival project to learn course content and skills.
History	Morais, D. G. (2018). Doing history in the undergraduate classroom: Project-based learning and student benefits. *The History Teacher*, 52(1), 49-76.	Scaffolded projects involved original research on individuals or issues in Trinity University athletics history selected by students and completed during a History of American Sport course.
Modern Languages	Stoller, F. L., & Myers, C. C. (2019). Project-based learning: A five-stage framework to guide language teachers. In A. Gras-Velazquez (Ed.), *Project-based learning in second language acquisition: Building communities of practice in higher education* (pp. 25-47). Taylor & Francis.	Project examples are provided with rich details to illustrate each aspect of a five-stage framework for using PBL to teach language acquisition in university courses. Curricular logistics and alternatives are provided.
Music	Walzer, D. A. (2019). Digital storytelling, reflective teacher inquiry, and student learning: Action research via media technology. In B. Powell, G. D. Smith, & Z. Moir (Eds.), *The Bloomsbury handbook of popular music education: Perspectives and practices* (pp. 429-440). Bloomsbury Academic.	Two sets of curricular examples of digital storytelling activities that leverage PBL, including media-enhanced rehearsals that require students to generate and share original content and student-produced studio reality shows.
Music	Kaschub, M. (2014). Where it all comes together: Student-driven project-based learning in music teacher education. In J. Smith, *Promising practices in 21st century music teacher education* (pp. 125-148). Oxford University Press.	Principles for implementing effective PBL with pre-service music teachers, along with four sample projects for course-based, internship, and workshop learning activities.
Philosophy	Derksen, C. (2019). Reflections on teaching applied environmental ethics in a philosophy course. *American Association of Philosophy Teachers Studies in Pedagogy*, online first DOI: 10.5840/aaptstudies201922237	An environmental ethics course with an assignment to design and produce knowledge for a municipal partner. Faculty reflections yield lessons related to bridging the abstract and the concrete as a core teaching activity.
Religious Studies	Lanci, J. R. (2013). Bridging the "great divide" in undergraduate religion: An experiment in faculty/student collaboration. *Teaching Theology & Religion*, 16(2), 152-164.	This case explores how problem-based learning, which is pedagogically similar to project-based learning, can help connect student and faculty motivations to better engage students.

Conclusions & Research

There are several effects of PBL that hold promise for implementation in the arts and humanities, yet have been under-examined in the existing empirical literature. PBL boosts student motivation and self-efficacy,[23] provides opportunities to practice self-regulated learning,[24] connects content to applications for various stakeholders,[25] and can teach students how to manage team dynamics.[26] However, much of the research that has found benefits of PBL has been in STEM classrooms and programs. The value of PBL within the arts and humanities has been less rigorously established than its potential for enhancing STEM learning. Indeed, PBL has been found to be an effective pedagogy for facilitating interdisciplinary learning,[27] which may be sufficient for those who position the arts and humanities in service of certain fields. Yet not everyone in the humanities agrees that these outcomes or the resulting loss of disciplinary identity are worth the investment.[28] Further research into PBL within the arts and humanities must take this tension into account if empirical evidence of PBL's value is to move this set of fields forward pedagogically.

The Association of American Colleges and Universities takes a perspective concerning liberal education that bridges the tensions facing the arts and humanities.[29] As articulated on a dedicated website, "AAC&U champions the economic and civic value of liberal education, its relevance to students' career aspirations, and its essential role in equipping students for lifelong learning, civic involvement, and personal flourishing."[30] Their series of employer surveys provide a rich data source evidencing the practical value of knowledge and skills earned through liberal education, including the arts and humanities.[31] Future work more directly assessing the potential of using PBL in the arts and humanities might start with their complementary student learning outcomes valued by employers.

There is also little research regarding how best to bring PBL to scale in arts and humanities, even as the discussion within digital humanities and STEAM engage with issues of higher education's future as a social institution. Many of the benefits of digital humanities are discussed at the institutional level, focused on the prospective utility for reviving what Waltzer (2012) calls the "ugly stepchildren" of higher education. An undeniable motivation in the STEAM movement, though one that is not always made explicit, is the need to reestablish reliable funding for arts education.[32] This motivation tends to result in studies that assess the benefits to students in STEM courses and those pursuing STEM careers.[33]

Guyotte (2020) adds a layer to the disciplinary arguments around how the arts are positioned within the STEAM movement by placing their value within the critical issues of the current Anthropocene age. Her philosophy uses transdisciplinarity, relationality, and responsibility as guiding notions to challenge several of the ideologies that sustain the divisions between the sciences and the humanities. The philosophy she presents may provide for an alternative approach to articulating the intrinsic and broadly construed value of the arts and humanities in higher education.

Digital humanities tends to flourish only with substantial resources to support data infrastructure, collaboration, and grant activities – resources infrequently available to digital humanists at small liberal arts colleges.[34] Sochacka, Guyotte, and Walther (2016) captured the transformation required of faculty in both art education and engineering to elicit benefits for students in STEAM courses—a transformation that requires professional development infrastructure. Without greater understanding of the conditions that sustain pedagogical success with experiential, student-centered engagement, investments in initiatives aimed at scholarly productivity are unlikely to bring meaningful educational value to students.[35]

Notes

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[10] Bonds, E. L. (2014). Listening in on the conversations: An overview of digital humanities pedagogy. *CEA Critic, 76*(2), 147-157.

[11] See Dalbello, M. (2011). A genealogy of digital humanities. *Journal of Documentation, 67*(3), 480-506; Klein, L. (2011). Hacking the field: Teaching digital humanities with off-the-shelf tools. *Transformations: The Journal of Inclusive Scholarship and Pedagogy, 22*(1), 37-52.

[12] See Ramsay, S. (2011). *On building*, accessed at http://lenz.unl.edu/wordpress/?p=340; Burdick, A., Drucker, J., Lenenfeld, P., Presner, T., & Schnapp, J. (2012). *Digital_Humanities*. Cambridge: MIT Press; Bonds, E. L. (2014). Listening in on the conversations: An overview of digital humanities pedagogy. *CEA Critic, 76*(2), 147-157.

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[30] See https://www.aacu.org/advocacy-liberal-education-0

[31] See https://www.aacu.org/public-opinion-research

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[35] See Madden et al. (2013) for an illustrative case of a multidisciplinary STEAM program that uses elements of PBL. SUNY Potsdam has collaborated with Lockheed Martin to develop the program. Degrees leverage the university's student-initiated interdisciplinary major to build on a common introductory course on creativity and problem engagement, along with experiential learning during internships and capstone projects; Madden, M. E., Baxter, M., Beauchamp, H., Bouchard, K., Habermas, D., Huff, M., ... & Plague, G. (2013). Rethinking STEM education: An interdisciplinary STEAM curriculum. *Procedia Computer Science*, 20, 541-546.

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