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Manuscripts in the Flesh: Collections-Based Learning with Medieval Manuscripts at the University of Victoria¹

Instruction with primary sources in cultural heritage institutions has shifted dramatically from show-and-tell tours of collections to hands-on learning opportunities. However, how students engage with primary sources, and the effectiveness of primary-source instruction, remains an emerging area of study. There is a growing body of professional literature and online resources supporting primary-source instruction, but there are few studies of the impact of collections-based teaching on learning, or of the sustained use of collections-based teaching across a full academic term. This article discusses experiential learning with primary sources and its remarkable impact on student learning and engagement. The authors share findings from empirical research measuring this impact through the study of a semester-long undergraduate course on medieval manuscripts. Employing a mixed-methodology approach (pre-assessment and post-assessment surveys and reflective journaling), the authors assess learner perceptions and engagement alongside the development of measurable primary-source literacy skills. They demonstrate the effectiveness of collections-based learning with rare and unique materials, particularly when implemented alongside related pedagogical approaches such as collaborative learning methods, pedagogies of care, metacognition, and active learning strategies.

In the basement of the library, I learn to read differently. To pay attention. I surrender to the text; follow scrawled asides, scribbles, marginalia. I let the manuscript guide me. And in the gaps and spaces between words I find pleasure, meaning.

—from Karine Hack, “The Most Beautiful Thing”²

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2. Karine Hack, “The Most Beautiful Thing,” *Grain* 49, no.2 (Winter 2022), 63–9. Hack’s essay partly reflects on her learning experience in the course discussed in this article.

Courses and training sessions that foster engagement with rare and unique materials can provide powerful experiences for students, particularly when those materials are part of a local collection, allowing for continued research access. Pedagogical use of medieval manuscripts in particular can shift perceptions—of history, archives, labour, and special collections—and provoke productive emotional responses in students. These handmade artifacts provide glimpses into the long history of trades (from the butchering of animals to the binding of books), for instance, or they can teach students “to read differently,” as the epigraph above says, to focus on the pleasurable “gaps and spaces” that their materiality inevitably reveals. Usually made from animal skin (parchment) that has been specially prepared for use as a writing substrate, medieval manuscripts are bodily—of, on, and carrying a *corpus*—and they show all the humanness of their making and reading. Parchment flaws, scribal errors and corrections, marginalia left by readers and other users, ownership marks, damage and fragmentation—all can open up worlds while simultaneously demanding new skills and new understanding of knowledge technologies. Harnessing this potential, however, is difficult to do, and even more difficult to prove, codify, and reproduce. How do students learn with such materials? What difference does it make when they can learn hands-on, with items at their own institutional repositories? And under what conditions are the outcomes of such collections-based methods best assessed?

In this article, we provide evidence of the effectiveness of learning with rare and unique materials through study of a semester-long undergraduate course on medieval manuscripts. Our study is the result of collaboration between a faculty member, a librarian and archivist, and a teaching and learning specialist: the course was taught at the University of Victoria (UVic) by Dr. Adrienne Williams Boyarin (Professor of English), designed in consultation with Heather Dean (Associate Director, Special Collections, UVic Libraries), and supported by Dr. Shailoo Bedi (Executive Director, UVic Learning and Teaching Support and Innovation), who recognized it as an opportunity to assess collections-based learning. Boyarin, a specialist in medieval studies, had taught this course several times previously with success by traditional evaluation metrics,³ but our shared objective was to determine *how* and *why* work with primary sources was positively impacting students’ learning and engagement.⁴ We thus began with four broad research questions:

3. These include enrollment statistics, course evaluations, and peer-reviewed publications arising from the course, for instance: Adrienne Williams Boyarin, et al., “Medieval Manuscripts and Fragments at the University of Victoria: An Early Grant of Hubert de Burgh, Constantine the African’s Translation of Isaac Israeli, and a Mendicant Breviary between Italy and Croatia,” *Florilegium* 33 (2016): 193–232; Stephanie J. Lahey, “On the Origin and Provenance of Victoria, McPherson Library, Doc.Brown.4: Sir Thomas Mowbray’s Care of Newnham Priory,” *Florilegium* 33 (2016): 63–91; and Karine Hack, “The Most Beautiful Thing,” 63–69.

4. We follow the definition of “primary sources” in the 2018 *Guidelines for Primary Source Literacy*, produced by the SAA-ACRL/RBMS Joint Task Force on the Development of Guidelines for Primary Source Literacy, <https://www2.archivists.org/sites/all/files/GuidelinesForPrimarySourceLiteracy-June2018.pdf> (pages 11–12).

1. What are student perceptions of working with medieval manuscripts?
2. How does working with medieval manuscripts affect student engagement?
3. Does this experiential learning opportunity influence student perceptions of their learning experience? (If so, how and in what ways?)
4. Is collections-based learning effective?

We applied these questions to the Fall 2018 version of Boyarin's course, taught solely using materials from UVic's collections.⁵ The course, an introduction to medieval European paleography and codicology, provided hands-on experience with medieval codices and fragments dating from the twelfth to the fifteenth centuries. In its final weeks, students were assigned intensive projects: they were asked to work with a UVic manuscript of their choice, in collaboration with Boyarin, and this work culminated in new transcriptions and descriptions prepared according to established scholarly conventions, new identifications of texts, and new bibliographies.⁶ Early course assignments were scaffolded, so that students built the skills needed for their projects throughout the semester. They learned key terminology and tools for physical and textual analysis of medieval manuscripts, but they also developed primary source literacy broadly, including understanding how to find and interpret cultural artifacts, and how to navigate research in cultural heritage organizations.

Students were thus positioned as both learners and co-producers, a model which encouraged them to ascend from lower- to higher-order thinking. That is, when placed within the cognitive domain of Bloom's Taxonomy, students developed from remembering, to understanding, to creating, and they developed metacognitive knowledge as well, that is, "knowledge about cognition in general as well as awareness of and knowledge about one's own cognition."⁷ Through a mixed-methodological approach, using both pre- and post-course surveys and reflective journaling, we sought to understand the role of collections-based coursework in this process, as well as the effectiveness of related pedagogical approaches, such as collaborative learning methods, pedagogies of care, and active learning strategies.

5. This research received ethics approval from UVic (Ethics Protocol Number 18-267).

6. UVic Special Collections and University Archives maintains an inventory of its medieval and early modern manuscript collections, along with linked student contributions, at <https://www.uvic.ca/library/locations/home/spcoll/collections/medieval/inventory.php>. More recent versions of this course have included publications in *Fragmentarium* (University of Fribourg), <https://fragmentarium.ms/>. Due to the COVID-19 pandemic, the Spring 2021 version of the course was run asynchronously, online, and with digitized UVic manuscript fragments, in collaboration with *Fragmentarium*'s Project Manager Dr. William Duba. The resulting publications of student descriptions, transcriptions, and identifications may be accessed from the "Manuscript Studies at the University of Victoria" page on *Fragmentarium*, <https://fragmentarium.ms/courses/uvic>.

7. David R. Krathwohl, "A Revision of Bloom's Taxonomy: An Overview," *Theory into Practice* 41, no. 4 (2002): 212–18, at 214. DOI: https://doi.org/10.1207/s15430421tip4104_2.

Our gathered data explores student perceptions of their engagement in this setting, and our results show an effective learning experience that not only increased primary source literacy but also had a positive impact on student engagement.

Literature Review

How students engage with primary sources is an emerging area of study. There is a growing body of professional literature and online resources supporting primary source instruction,⁸ but there are few studies of the impact of collections-based teaching on learning,⁹ or of the sustained use of collections-based teaching across a full academic term.¹⁰ As others have identified, “research trends... reveal persistent gaps in empirical work, resulting in the need to further expand research approaches and develop methods for collecting data that can support archives and libraries in assessing the effectiveness of engagement strategies, collaborative efforts, and pedagogical approaches.”¹¹ Our study thus contributes to emerging scholarship in primary source literacy, specifically filling gaps identified regarding empirical research and assessment.

While galleries, libraries, archives, and museums (GLAM institutions) have always been important venues for learning, instruction with primary sources in cultural heritage institutions has shifted dramatically in recent decades, from show-and-tell tours of collections to hands-on learning opportunities.¹² This change reflects a broader transformation in higher education towards active learning, that is, towards “anything that involves students in doing things and thinking about the things they are doing.”¹³ Active learning reframes traditional roles for instructors

8. See Patricia Garcia, Joseph Lueck, and Elizabeth Yakel, in “The Pedagogical Promise of Primary Sources: Research Trends, Persistent Gaps, and New Directions,” *The Journal of Academic Librarianship* 45, no.2 (2019): 94–101.

9. More literature around assessment of student learning is accruing, however, including Anne Bahde and Heather Smedberg, “Measuring the Magic: Assessment in the Special Collections and Archives Classroom” *RBM: A Journal of Rare Books, Manuscripts, and Cultural Heritage* 13, no.2 (2012): 152–74; and Morgan Daniels and Elizabeth Yakel, “Uncovering Impact: The Influence of Archives on Student Learning,” *Journal of Academic Librarianship* 39, no.5 (2013): 414–22.

10. A notable exception is Michelle McCoy, who discusses a quarter-long undergraduate project in her “The Manuscript as Question: Teaching Primary Sources in the Archives—The China Missions Project,” *College and Research Libraries* 71, no.1 (2010): 49–62.

11. Garcia, Lueck, and Yakel, “The Pedagogical Promise of Primary Sources,” 96.

12. Chris Marino, for example, compares show-and-tell versus active (inquiry-based) instruction techniques and has assessed the affective impact of each. Notably, students engaged in inquiry-based learning “felt significantly more *confident* handling archival materials; *excited* by the materials; *comfortable* contributing to the discussion; and *appreciative* of the archival materials,” than those in the show-and-tell session. See “Inquiry-based Archival Instruction: An Exploratory Study of Affective Impact,” *The American Archivist* 81, no.2 (2018): 483–512 at 483, DOI: <https://doi.org/10.17723/0360-9081-81.2.483>.

13. Charles C. Bonwell and James A. Eisen, *Active Learning: Creating Excitement in the Classroom*, ASHE–ERIC Higher Education Reports, 1 (Washington, DC: George Washington University Press, School of Education and Human Development, 1991), 2.

and students,¹⁴ so that instructors shift from a “sage on the stage” to a “guide on the side,” and students from passive recipients to active participants.¹⁵ In turn, active learning strategies, including experiential learning (or “learning by doing”), highlight the value of cultural heritage institutions as sites for innovative pedagogical approaches, which might include site visits, community-engaged projects, field schools, or other venues where learners work hands-on and put theory into practice. This approach is of immediate relevance to libraries and archives,¹⁶ and, as we have seen, can open pathways for collaboration between instructors and library and teaching professionals.

Librarians and archivists in particular have developed several important resources to support teaching with collections, including lesson plans and learning objectives incorporating active learning strategies. These resources, however, usually reflect typical teaching in heritage institutions and special collections, such as one or two class sessions, as compared to our study of a semester-long course (though various lesson plans and handouts could be individually incorporated into longer classes). The field has also recently developed clearer expectations of the skills and knowledge students acquire—and require—when working with rare and unique materials.¹⁷ For example, the 2018 *Guidelines for Primary Source Literacy* represent an important step towards articulating “the range of knowledge, skills, and abilities

14. See, for instance, John Dewey, *John Dewey On Education: Selected Writings*, ed. Jean Piaget (New York: Modern Library, 1964); Jerome S. Bruner, *In Search of Pedagogy: The Selected Works of Jerome Bruner, 1957–1978* (New York: Routledge, 2006); Jean Piaget, *Science of Education and the Psychology of the Child*, trans. Derek Coltman (New York: Orion Press, 1970); and Lev S. Vygotsky, *Mind in Society: The Development of Higher Psychological Processes*, ed. Michael Cole (Cambridge, MA: Harvard University Press, 1978).

15. See Alison King, “From Sage on the Stage to Guide on the Side,” *College Teaching* 41, no.1 (1993): 30–5; and Jean Piaget, *Psychology and Epistemology: Towards a Theory of Knowledge*, trans. Arnold Rosin (New York: Grossman, 1971). For an overview and history of constructivism in education, see also Alan Pritchard and John Woppard, *Psychology for the Classroom: Constructivism and Social Learning* (London: Routledge, 2010).

16. Barbara Rockenbach, “Archives, Undergraduates, and Inquiry-Based Learning: Case Studies from Yale University Library,” *The American Archivist*. 74, no.1 (2011): 287–311, at 298. Inquiry-based learning “is an approach to learning which encourages the student or pupil to engage actively and analytically with an investigation or enquiry.... It is learner-centred in the sense that the student or pupil has the freedom to make decisions about the direction their enquiry will take, and to draw on their own existing knowledge or skills in order to extend them.” See s.v. “enquiry-based learning,” in Susan Wallace, ed., *A Dictionary of Education* [online version] (Oxford: Oxford University Press, 2014), DOI: <https://doi.org/10.1093/acref/9780199212064.001.0001>.

17. Several publications provide lesson plans and sample handouts, including, notably, Eleanor Mitchell, Peggy Seiden, and Suzy Taraba, eds., *Past or Portal: Enhancing Undergraduate Learning through Special Collections and Archives* (Chicago: Association of College and Research Libraries, 2012). In addition, the Teaching with Primary Sources (TPS) Collective (<https://tpscollective.org>) fosters a community for anyone who teaches with primary sources: archivists, librarians, teachers, and other cultural heritage educators. See also Anne Bahde, Heather Smedberg, and Mattie Taormina, eds., *Using Primary Sources: Hands-On Instructional Exercises* (Santa Barbara: Libraries Unlimited, 2014); and the open-ended series with case studies maintained by the Society of American Archivists (SAA): *Case Studies on Teaching with Primary Sources*, eds. Kayla Harris and Blake Smith (Society of American Archivists, 2017–), <https://www2.archivists.org/publications/epubs/Case-Studies-Teaching-With-Primary-Sources>.

required to effectively use primary sources.”¹⁸ These *Guidelines* provide instructors with clear learning objectives for collections-based instruction, and several related online resources now show how instructors are implementing them. Extending this work, we used the *Guidelines* as a basis for pre- and post-assessment surveys that gauged the learning of our student participants.

Like others, we engage these developments in higher education and primary-source literacy to contribute new approaches for assessment of the effectiveness and impact of collections-based instruction on student learning.¹⁹ Past assessment methods have varied and included questionnaires, surveys, tests, assignments, and observations.²⁰ The present study builds on the existing literature but seeks to contribute new perspectives in two ways. First, our study incorporates the aforementioned pre- and post-tests, but it also introduces reflective journaling as an additional, qualitative assessment method. Second, in working with a semester-long course based entirely in UVic Special Collections, our study investigates collections-based teaching and learning over a sustained period. Since librarian and archivist-led instruction often takes place in one or two sessions, this study also represents an important collaboration with research faculty. We are responding, therefore, to gaps identified by Garcia, Lueck, and Yakel:

We need more formal evaluation approaches that measure the impact of teaching with primary sources and whether or not the curriculum and activities are facilitating students’ progress toward the acquisition of transferable and higher-order skills that can be used in multiple contexts.²¹

With focus on a full course rather than one or two sessions, this study allows us not only to see and measure the development of “transferable and higher-order skills” over time, but also to pay particular attention to students’ dynamic experience with

18. In 2018, a task force with members from the Rare Book and Manuscript Section (RBMS) of the Association of College & Research Libraries (ACRL) and the SAA published *Guidelines for Primary Source Literacy* (see note 4 above, page 1 cited here). These *Guidelines* build on existing research in this area, notably Elizabeth Yakel and Deborah Torres’s articulation of archival intelligence, “AI: Archival Intelligence and User Expertise,” *American Archivist* 66, no.1 (2003): 51–78.

19. Articles addressing assessment include Chris Marino, “Inquiry-Based Archival Instruction”; Sarah M. Horowitz, “Hands-On Learning in Special Collections: A Pilot Assessment Project,” *Journal of Archival Organization* 12, no.3–4 (2015): 216–29; Merinda Kaye Hensley and Benjamin P. Murphy, “Analyzing Archival Intelligence: A Collaboration between Library Instruction and Archives,” *Communications in Information Literacy* 8.1 (2014): 96–114; and Clare Withers, Diana Dill, Jeanann Haas, Kathy Haines, and Berenika Webster, “A Toolkit for Demonstrating & Measuring Impact of Primary Sources in Teaching & Learning” (2022), Association of Research Libraries– Research Library Impact Framework Initiative and Pilots. <http://d-scholarship.pitt.edu/id/eprint/43013>.

20. See Bahde and Smedberg, “Measuring the Magic,” 152–74.

21. Garcia, Lueck, and Yakel, “The Pedagogical Promise of Primary Sources,” 100.

rare materials in the process.²² Our results show, for instance, that students' experience with medieval manuscripts included significant anxiety and other emotional responses to learning, a result that largely emerged through their reflective journaling. In highlighting the importance of such qualitative data to our understanding of collections-based learning, we align ourselves with Joshua Eyler, following Mary Helen Immordino-Yang and others,²³ who argues that "engagement with our emotions is vital for maximizing learning."²⁴ Positive emotional responses to learning, we note further, are often the result of pedagogical care: that is, a pedagogy that "demonstrate[s] relevance of the material for [students'] lives, their futures, and their own sense of purpose."²⁵

Our quantitative *and* qualitative results, presented below, show that collections-based learning with rare materials not only increased students' primary-source literacy but also activated emotion and cognition, and further that pedagogical care guiding students' early emotional engagement has broad potential for such learning. We designed learning outcomes to clarify the long-term scaffolding of course assignments, and term projects to support the creation of new, publishable resources. Students were aware, as they noted in their journals, that the work they produced had value to them as individuals (e.g., as citable experience relevant to job or program applications) and to future researchers. Boyarin also used collaborative teaching methods—particularly the practice of working alongside students during class hours to correct and augment projects as they progressed—to model the collaborative nature of intensive archival research and accomplish high-quality final products. In other words, our course design and the results of our study, supported by literature on learning with collections and active learning in higher education more broadly, suggest that collections-based learning and pedagogical care are a critical intersection.

Methodology

As already briefly outlined above, our results emerge from a mixed-methods approach. Mixed-methods approaches are defined by Johnson, Onwuegbuzie, and

22. Krathwohl, "A Revision of Bloom's Taxonomy," 212.

23. See, for instance, Mary Helen Immordino-Yang, *Emotions, Learning, and the Brain: Exploring the Educational Implications of Affective Neuroscience* (New York: Norton, 2015); Sarah Rose Cavanaugh, *The Spark of Learning: Energizing the College Classroom with the Science of Emotion* (Morgantown: West Virginia University Press, 2016); Elizabeth A. Linnenbrook, "The Role of Affect in Student Learning: A Multi-Dimensional Approach to Considering the Interaction of Affect, Motivation, and Engagement," in *Emotion in Education*, eds., Paul A. Schutz and Reinhard Pekrun (Burlington: Academic Press, 2007), 107–27; and Luiz Pessoa, "On the Relationship Between Emotion and Cognition," *Nature Reviews—Neuroscience* 9, no.2 (2008): 148–58.

24. Joshua R. Eyler, *How Humans Learn: The Science and Stories behind Effective College Teaching (Teaching and Learning in Higher Education)* (Morgantown: West Virginia University Press, 2018), 238. On the potential pitfalls of pedagogical care, see Richard E. Hult Jr., "On Pedagogical Caring," *Educational Theory* 29, no.3 (1979): 237–43.

25. Eyler, *How Humans Learn*, 244.

Turner as:

research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e. g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration.²⁶

A combination of qualitative and quantitative components strengthens our study's conclusions and recommendations and better helped us to answer research questions that sought to gauge learner perceptions and engagement over time alongside the development of measurable primary-source literacy.

To answer our research questions, we employed an anonymous survey method for pre-assessment and post-assessment to gather data on student perceptions of their own skills and work with rare materials. The same set of questions were asked in pre- and post-assessment and then measured to see shifts in learning and knowledge after the completion of course meetings (see appendix). The quantitative data from the surveys provided one picture of student learning, with measurable differences post-assessment.

Between the pre- and post-assessment surveys, we employed the robust qualitative method of reflective journaling. Journals captured students' personal perceptions as they worked intimately with medieval manuscripts during a nearly four-month term. We understood journaling to have a two-fold function in this study: it both provided an additional method for understanding student learning and reinforced active learning by encouraging metacognition, that is, "the process of 'thinking about thinking,' or reflecting on personal habits, knowledge, and approaches to learning."²⁷ As education scholars have noted,

[P]ractices congruent with a metacognitive approach to learning include those that focus on sensemaking, self-assessment, and reflection on what worked and what needs improving. These practices have been shown

26. R. Burke Johnson, Anthony J. Onwuegbuzie, and Lisa A. Turner, "Toward a Definition of Mixed Methods Research," *Journal of Mixed Methods Research* 1 (2007): 112–33, at 123.

27. See "Encouraging Metacognition in the Classroom," Poorvu Centre for Teaching and Learning, Yale University, <https://poorvucenter.yale.edu/MetacognitioninClassrooms>. The importance of metacognition in learning is reflected in the inclusion of metacognitive knowledge in the 2001 revision of Bloom's Taxonomy. As Krathwohl writes in his "A Revision of Bloom's Taxonomy," 214, metacognitive knowledge is "a distinction that was not widely recognized at the time the original scheme was developed," and represents "knowledge about cognition in general as well as awareness of and knowledge about one's own cognition." For metacognition in relationship to learning and memory, see Thomas O. Nelson and Louis Narens, "Why Investigate Metacognition," in *Metacognition: Knowing about Knowing*, ed. Janet Metcalfe and Arthur P. Shimamura (Cambridge: The MIT Press, 1994) 1–26.

to increase the degree to which students transfer their learning to new settings and events.²⁸

The journals supported metacognition throughout the course, including students' reflections on how their emotions influenced their learning experience, and on how their learning might transfer to new settings after the conclusion of the course. They allowed students to respond to working with a collection "as a meaning-making process" and to discover "the detailed connections of [their] activities" so that "experience [was] made explicit."²⁹

To support this process, students were given ten prompts for reflection over the duration of the semester; these were designed to both engage our research questions and provide guidance for real-time engagement. To this qualitative data, we applied content analysis for repeated themes. Our analysis allowed us to see that students' emotional engagement with collections-based learning was concomitant with their awareness of their own learning, their sense of community and continuity beyond the classroom, and their increased primary source literacy.

Students opted into our study by taking the anonymous pre- and post-assessment surveys at the beginning and end of the course and by journaling their experiences weekly or biweekly in response to our prompts. Twenty-three students attended the first class meeting and took the starting survey. Of the nineteen students who completed the course, fifteen took the post-assessment survey and maintained journals.³⁰ The pre- and post-surveys were conducted online, and journaling happened in the classroom (with about twenty minutes provided at the end of each meeting) and at home. Journals were numbered and maintained by library staff. An assistant transcribed all handwritten journals.

Results: Qualitative Findings

Journal prompts were distributed weekly in the first half of the course (during initial encounters with manuscripts) and then bi-weekly in the second half of the course (during work on intensive projects). The ten prompts asked students to reflect on:

28. John D. Bransford, Ann L. Brown, and Rodney R. Cocking, ed., *How People Learn: Brain, Mind, Experience, and School: Expanded Edition* (Washington, D.C.: National Academy Press, 2000), 12.

29. Carol Rodgers, "Defining Reflection: Another Look at John Dewey and Reflective Thinking," *Teachers College Record* 104, no.4 (2002): 842–66, at 845; John Dewey, *Democracy and Education* (New York: Free Press, 1944), 70 (quoted in Rodgers, "Defining Reflection," 848). Rodger's article re-examines Dewey's evolving definitions of "reflection" in light of active learning and increasing demands for codifiable assessment of teaching effectiveness.

30. Since the surveys and journals were anonymous, we include all responses in our analysis, regardless of course completion. And, since our work is primarily a qualitative study of participant perceptions of their learning—in total, students wrote 66,384 words of reflection in their journals—we are not striving for statistical validation.

| TABLE 1 Code Application by Theme, Organized by Journal Prompts | | | | | | | | | | |
|--|---------|----------------------|------------------|---------|-------------------|-----------------|----------------------|------------------------|------------------|-------|
| | Anxiety | Critical Reflexivity | Digital Literacy | Futures | Language Learning | Archival Labour | Learning Reflexivity | Physiological Response | Positive Emotion | Total |
| Week 1 | 11 | 1 | 0 | 0 | 8 | 2 | 6 | 7 | 11 | 46 |
| Week 2 | 9 | 0 | 2 | 1 | 8 | 2 | 11 | 8 | 14 | 55 |
| Week 3 | 12 | 0 | 2 | 2 | 6 | 0 | 14 | 7 | 5 | 48 |
| Week 4 | 2 | 9 | 0 | 1 | 1 | 4 | 9 | 2 | 8 | 36 |
| Week 5 | 4 | 0 | 19 | 0 | 0 | 4 | 2 | 8 | 6 | 43 |
| Week 6 | 1 | 5 | 7 | 0 | 0 | 2 | 8 | 2 | 6 | 31 |
| Week 7 | 1 | 12 | 0 | 0 | 0 | 7 | 5 | 1 | 2 | 28 |
| Week 9 | 5 | 0 | 0 | 1 | 2 | 4 | 7 | 0 | 6 | 25 |
| Week 11 | 3 | 2 | 0 | 1 | 1 | 5 | 9 | 1 | 7 | 29 |
| Week 13 | 0 | 1 | 0 | 13 | 10 | 6 | 13 | 1 | 5 | 49 |
| Total | 48 | 30 | 30 | 19 | 36 | 36 | 84 | 37 | 70 | 390 |

Week 1. their initial encounters with old, handwritten materials;

Week 2. their first experiences transcribing and working in a reading room;

Week 3. frustrations with and/or knowledge gained through early course assignments;

Week 4. the creators of medieval books and links between medieval and modern creators;

Week 5. the use of digital surrogates versus material manuscripts;

Week 6. what a manuscript communicates through physical characteristics alone;

Week 7. the role of historical empathy in archival research and labour;

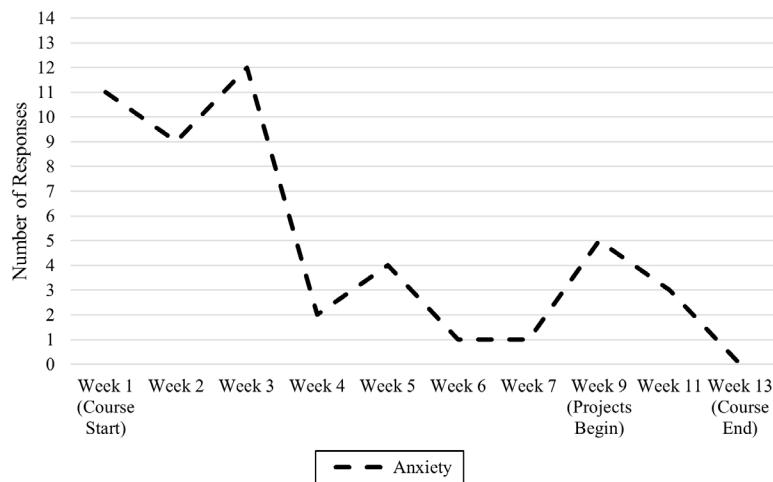
Week 9. their initial plans for their term projects;

Week 11. our collections-based course design; and

Week 13. their overall course experience, including whether their interest in archival studies, archival research, or language learning had increased or decreased.

We found that nine repeating themes emerged in the resulting student reflections: anxiety (e.g., fear, worry), positive emotion (e.g., pride, joy), physiological response (bodily or tactile experiences), learning reflexivity (explicit reflection on the learning process), critical reflexivity (higher-order thinking on history or culture broadly), language learning (desire to know more languages), digital literacy (ability to note substantive differences between physical and digital primary sources), archival labour (comments on the labour of archivists and scholars who rely on archives), and futures (reflections on future career or educational possibilities). These nine themes occurred 390 times in total within the fifteen journals in our dataset and often overlapped (see table 1).

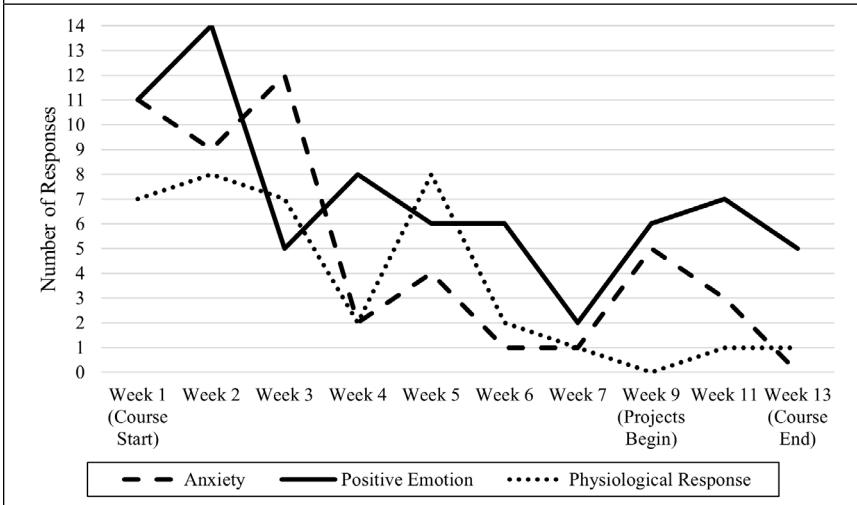
FIGURE 1
Anxiety vs. Course Progress



In our analysis, we arranged responses to align with our ten prompts following the chronological progression of the course, coded by excerpt (that is, not by individual words or phrases, nor by full responses), and accounted for overlaps (that is, an excerpt might have more than one theme). The most frequently occurring themes were learning reflexivity (84 times), positive emotion (70 times), and anxiety (48 times).

Anxiety was prevalent in the first three weeks of the course, with thirty-two of forty-eight recorded anxiety responses occurring in these weeks. From the fourth week on, however, anxiety fell, with sixteen anxiety responses spread throughout the remaining weeks of the course and zero recorded in the final journal entries (see figure 1). When anxiety was recorded, a typical comment was “I’m always stressed about how much I should be handling [these] materials.” One student noted “an extreme fear of damaging the materials, as they are very old and valuable.” Another student recounted “recurring nightmares” that happen “the night before I have planned to work... ‘in situ’... in special collections and... various invaluable objects crumble to dust in my shaking hands.” This last is an example of how physiological responses noted in student reflections (in this case disturbed sleep) overlapped with participants’ emotional responses, whether positive or negative. Typical of such responses are notes of “eyes becom[ing] fatigued” or worry about having “steady enough hands.” One student declared that the manuscripts “gave me a headache and made me want to cry.” While this kind of evidence might suggest the type of anxiety that inhibits learning, such mixed anxiety-physiological responses decline in the second half of the course and, also, overlap with positive emotions (see figure 2).

FIGURE 2
Correlation of Anxiety, Physiological Response, and Positive Emotion



One of the strengths of a full-semester study is that we were able to observe decreasing anxiety over time. When anxiety stems from feeling overwhelmed, especially in trying to adapt to new expectations and classroom structures, it can manifest as an emotional state, unpleasant feelings of tension, or concerns about bad things happening,³¹ or it can show up as a reaction to stressful situations, real or imaginary, causing feelings of uncertainty.³² Students may cite the fear of making mistakes or not being perfect as reasons for struggling to learn something new or unfamiliar.³³ In our study, however, students' anxiety coexisted with positive emotion, and, we argue, gave way to higher-order thinking.

Though student accounts of positive emotions, like their accounts of anxiety and physiological response, peaked in the first month of the course (twenty-five of seventy such responses occurred in the first two weeks alone), positive emotions continued with relative frequency thereafter. They occurred regardless of prompt, and in overall frequency second only to the more amorphous (and more explicitly prompted) theme of learning reflexivity. Participants regularly juxtaposed their expressions of anxiety with experiences of "love," "thrill," and "pride" in their work. One student noted "simple awe" after the first class meeting—which featured a gallery of medieval and early modern items—while another exclaimed, "[T]oday was the first time I actually got to see...manuscripts in person! I'm amazed by how

31. Paul D. Eggen and Donald P. Kauchak, *Learning and Teaching: Research-Based Methods*, 2nd ed. (Boston: Allyn and Bacon, 1993).

32. Francisco Cano et al., "Students' Self-Worth Protection and Approaches to Learning in Higher Education: Predictors and Consequences," *Higher Education* 76 (2018): 163–81.

33. John Biggs, "The Reflective Institution: Assuring and Enhancing the Quality of Teaching and Learning," *Higher Education* 41 (2001): 221–38.

beautiful they are.” In later weeks, students began to note “satisfying” work and even “comfort” with their objects of study. One commented, “I’ve developed a sense of rapport with the manuscript I’m working with”; another, “[My] transcription has been progressing steadily, and is more satisfying and fun than frustrating.” Where anxiety overlapped with positive emotion, learning reflexivity was also in relief, as in this excerpt:

I feel like it is truly remarkable just how much information we can and should gather from manuscripts.... However it seems daunting at times. It feels as though you have to have a plethora of background and knowledge before you can truly begin to dig deep. How can we tell what animal it [the parchment] is and what region it came from without first knowing the history and tendencies of most countries?

In this reflection, though the student moves from a positive emotion (it *feels* “truly remarkable”) to anxiety (“it seems daunting”), the remarks that follow show that they understand the complexity and open-endedness of the learning process.

Indeed, we see these emotional responses in general—both anxiety and positive emotion, along with their physiological manifestations—as constituent of engaged learning. As Immordino-Yang has put it, the “fundamental role of emotion in cognition” is key to why people learn and what they remember: “When educators fail to appreciate the importance of students’ emotions, they fail to appreciate a critical force in students’ learning.”³⁴ Our participants’ emotional experiences were dynamic: emotions peaked early in the course, with anxiety and related physiological responses declining after the first few weeks, while positive emotions then occurred with relative regularity.

The intersection of student emotions and pedagogical care, as noted in the literature review above, was especially evident in journal responses, particularly during the late stages of the course when students were prompted to reflect on their overall experiences. These reflections emphasized a sense of continuity, of learning beyond the classroom, and showed a correlation between positive emotions and higher-order thinking (note our *italics*):

I take ...*pride* and care in my final project because I am contributing to the *scholarly universe* and students in *the future* will perhaps use the work. This way of looking at the collections and the manuscripts [as] *scholarly community* in general makes it seem far more noble and far less selfish. I *enjoy* it.

34. Immordino-Yang, *Emotions, Learning, and the Brain*, 40.

I feel a sense of *pride* and *stewardship* in transcribing these manuscripts. ... The connection with the scribe, who copied the text I have worked on, is that we both are, in a way, *keeping the text alive*.

I have a greater sense of the *connection* between others who have interacted with the manuscripts.

[I am] thinking of the library and archives as an expression of historical contexts[:] general attitudes and individual decisions ...have governed each manuscript since [its] creation. It's helping me restore *a sense of continuity* to library material.

The collection based collaborative approach ...takes an edge off of the class as a whole and makes the focus ...on general application and *contribution* on and [sic] to *collective knowledge*.

I am *excited* ...to create new resources and tools for future students. The privilege of being able to *contribute* to the current scholarly work is very exciting. This project actually feels significant to me ...like I am doing *something meaningful* and something that will be appreciated.

In these responses, positive emotion allows reflection on a broad sense of community and continuity, the result of collaborative work with the instructor and other students. Participants emphasize “connection,” “stewardship,” the “scholarly universe and students in the future,” their ability to contribute to something larger than themselves, and their sense of history. These emphases intersect with positive emotions (e.g., pride, enjoyment, self in relation to others) and higher-order critical awareness (e.g., long, historicized views of interactions with material objects).

Reflective learning—whether recorded in journals or not—requires both interaction and continuity.³⁵ When our participants reflect on their learning process in relation to ideas of community, history, and continuity, it is a good indication of effective learning. Specific forms of factual or technical learning emerge in, or perhaps because of, this context: that is, journal reflections also show a real understanding of lessons taught. For instance, students noted that “a digital surrogate is often not a sufficient substitute for working in situ with a manuscript,” and that some areas of research—like “collation and binding,” “details like colours and corrections,” or the “flesh and hair side” of a piece of medieval parchment—were best approached

35. See Carol Rodgers, “Doing Dewey,” *Occasional Paper Series* 32 (2014): 77–92, at 80–1. See also Rodgers, “Defining Reflection,” 842–66.

with the material object at hand. They also showed an increased understanding of archival labour: students commented, for example, that rare and unique objects of study have gone “through such an intense and laborious process just to be here,” or reflected on their “increase in respect for the labour of MS [manuscript] production and books, but also an increase in respect for archival systems, private collections, small miracles, and the combined effects of these...forces in preservation.”

Students further highlighted their processes of critical *unlearning*, that is, the unlearning of assumptions and awareness of their own lack of knowledge.³⁶ One noted, for instance, that “I think the mainstream assumption is that you have to wear gloves when you handle anything, so to find out that’s mostly untrue is sort of mind-boggling.” Another commented, “I used to think cavemen used cave walls, Egyptians used papyrus, then white people used paper and forced this on everyone else.” In the latter case, acquired knowledge of writing surfaces uncovered (and interrupted) a prior racialized, colonial assumption about book history.

Awareness of the need to learn other languages also occurred in student responses in both the early and later weeks of the course (thirty-six times in total). In the final week of class, ten different students engaged the “futures” theme by noting their plans to undertake language courses. For example, “This [course] has increased my interest in learning other languages a lot”; “I have ... decided that I definitely need to take some Latin courses and even [M]iddle English”; “I do hope to complete further language courses in the future”; “Latin was always a language goal and now I realize I need it more than ever.” The implications of these responses are profound. While we might expect those who do archival research to have some degree of requisite language knowledge in place, our data suggests that exposing students to collections *before* they have that knowledge—which is possible when the focus is on objects rather than text content—might encourage enrolment in language courses and even recruitment to graduate programs or careers that value multilingual knowledge. In the final two weeks of the course, participants noted that “the ability to work in situ gave me extremely useful skills that will be impressive to grad schools...[and] increased my likelihood of pursuing this [type of] career”; or, simply, “Am really getting interested in this type of work long term.”

The importance of emotions, active learning, and pedagogical care to these larger-scale outcomes is neatly expressed by one student’s course-end reflection:

36. See Erica McWilliam, “Unlearning How to Teach,” *Innovations in Education and Teaching International* 45, no.3 (2008): 263–9. While the title specifies teaching, this article discusses unlearning for both teaching and learning, suggesting, for instance, that “useful ignorance” creates new learning possibilities, or that “to learn is to be confused, uncertain, and to fail frequently” (268).

[The collections-based design] certainly increased my investment in the course.... My drive to accomplish has definitely been bolstered by an urge to participate. I also have a sense of, almost, “learning by play.” Not that I don’t take my schoolwork or the collections seriously, but the hands-on practice we’ve been getting with the material is fun and engaging in a way that reminds me of childhood learning.

“Childhood learning,” for this student, is “hands-on,” playful, and “fun.” Adult and higher education are rarely categorized in this way, but “play can also be a means of understanding or a way of coming to know something” for adults.³⁷ Abstract and critical thinking skills emerge through play,³⁸ and play experiences allow for new learning to take place.³⁹ As we can see in this student’s response, the associated learning process is an engaged one.

In summary, our analysis of the qualitative data gathered through journaling shows nine overlapping categories of student perception and learning, with “learning reflexivity” (that is, explicit reflection on the learning process), “positive emotion,” and “anxiety” top among them. The data associate emotional and physiological responses with students’ perceptions of working with medieval manuscripts and suggest that early experiences of anxiety can make way for primary source literacy and critical reflexivity, particularly in a caring environment that “demonstrate[s] relevance of the material for [students’] lives, their futures, and their own sense of purpose.”⁴⁰ At the end of the semester-long course, students recorded an increased desire to learn new languages and pursue careers in research, libraries, or cultural heritage, as well as a critical awareness of historical context and positionality. In assessing the effectiveness of a collections-based course model, the journals suggest a very effective learning experience, in line with research on emotion, (meta)cognition, and active learning.

Results: Quantitative Findings

The questionnaire delivered to students at the beginning and end of the course measured actual and perceived knowledge of medieval manuscripts, research tools, metadata, cultural heritage institutions, and experiences with collections-based learning. The same sixty-five questions were used pre- and post-assessment to enable comparison of responses before and after the course (see appendix). These questions,

37. Lanie Melamed, “Play and Playfulness in Women’s Learning Development” (PhD diss., University of Toronto, 1985), 123.

38. See Vygotsky’s work on these topics, for example *L.S. Vygotsky’s Pedagogical Works: Foundations of Pedology*, vol. 1, trans. David Kellogg and Nikolai Veresov (Singapore: Springer, 2019).

39. Neal E. Miller and John Dollard, *Social Learning and Imitation* (1945; rpt., London: Routledge, 2000).

40. Eyler, *How Humans Learn*, 251.

while largely quantitative (using a five-point Likert scale), did include some qualitative queries. As noted above, we organized our questions around the 2018 *Guidelines for Primary Source Literacy*'s broad learning objectives, namely, that a person with primary source literacy can conceptualize; find and access; read, understand, and summarize; use and incorporate; and interpret, analyze, and evaluate. Qualitative questions, like the journal prompts, pertained to students' perceptions of collections-based learning. The pre-assessment survey was administered during the first class meeting, and the post-assessment survey was distributed by email upon course completion. Despite differing numbers of responses (twenty-three took the first survey, while fifteen completed the second), comparison of pre- and post-assessment responses indicates that student knowledge developed dramatically across all areas identified in the *Guidelines*. We attribute this growth to active learning and pedagogical care, the duration of a semester-long course, and the presence of opportunities for metacognitive reflection, including journaling and experiential learning with manuscripts.⁴¹

When asked questions about finding and accessing manuscripts in the first survey, most students did not know how to locate descriptions of medieval manuscripts at UVic Libraries and other cultural heritage institutions, nor how to read the descriptions they could locate.⁴² Questions related to common terminology found in medieval manuscript descriptions confirm this: apart from "scribe" and "script," most students were unfamiliar with vocabulary used to describe manuscripts and incorrectly defined "recto" and "verso."⁴³ By contrast, at the end of the course, the majority expressed ease with locating medieval manuscripts and either agreed or strongly agreed that they understood how medieval manuscripts are described, could correctly define "recto" and "verso," and, except for one student, were comfortable with vocabulary commonly found in metadata.⁴⁴ Likewise, prior to the

41. Since it is difficult to measure the overall impact of journaling on our mixed data, one of our broad recommendations, further discussed in the conclusions below, is that journaling be included in collections-based course models, while the pre- and post-assessment surveys are most useful in the context of this study alone.

42. For example, in response to "I am comfortable locating descriptions of medieval manuscripts at UVic Libraries," 8% (2 students) responded Strongly Agreed and 13% responded Agreed (3) pre-assessment, whereas 73% (11) Strongly Agreed and the remaining 26% Agreed (4) after the course. To "I understand how manuscripts are described," 4% (1) Strongly Agreed and 21% (5) Agreed at the start of the course, whereas 53% (8) Strongly Agreed and 47% (7) Agreed by the end.

43. Pre-assessment, 39% (9) correctly identified recto and verso whereas 100% (15) correctly identified these terms after the course. At the beginning of the semester, the majority answered No regarding whether they know the meaning of the following terminology: catchword 82% (19), manicule 91% (21), exemplar 83% (19), 65% flesh-side (15), hair-side (16), facsimile 65% (15), rubricator 82% (19), hand 52% (12), ruled 57% (13), foliated/unfoliated 52% (12), quire/gathering 65% (15), bifolia 74% (17), singleton 87% (20), fly leaves 78% (18), pastedowns 91% (21), watermark 39% (9), provenance 65% (15), and origin 14% (3).

44. In the post-assessment survey, 100% (15) noted that they understood the terminology cited in note 43 above, with the exception of mancule 93% (14), facsimile 73% (11), and foliated/unfoliated 93% (14). It should be noted, however, that Boyarin did not use facsimiles during the length of the course and used the word "surrogate" to describe digitized manuscripts.

course students were not comfortable with creating transcriptions and descriptions according to standard conventions, whereas by the end of the course all expressed comfort with this work.

Similarly, at the start of the term, most students did not know how to request a manuscript from Special Collections and were uncomfortable with library and archival terminology in general, such as “shelf mark” and “accession number,” although the majority did know what a “call number” is (likely due to the common use of this term across academic as well as public and school libraries). When asked about physical handling of collections, there was some variation. In reply to “I feel comfortable handling rare materials,” for instance, ten students either strongly agreed ($n=4$) or agreed ($n=6$), while seven students either disagreed ($n=5$) or strongly disagreed ($n=2$), and six ($n=6$) students neither disagreed nor agreed. The student journaling described above provides insight into students’ initial anxiety and dynamic emotions around handling of rare materials, and this is reflected in pre-assessment responses. While some expressed comfort handling materials in the pre-assessment, it is interesting to note that the majority nonetheless answered that they did not know how to use snakes ($n=17$) or book cradles ($n=14$), tools frequently used to support rare materials during research, nor how to use a watermark reader or a UV light, common tools for analysis of rare materials. At the end of the course, however, the majority understood physical handling of manuscripts using snakes and cradles, as well as tools for analysis, such as a watermark reader, and all understood how to use a UV light.

Questions relating to reading, understanding, and summarizing manuscripts evaluated students’ confidence working with manuscript texts, including the language of the text, as well as historical variances, such as scripts, dating, and dissimilarities in orthography (such as abbreviations, punctuation, and spelling). The majority, 74% ($n=17$) of students, did not feel comfortable identifying different scripts prior to taking the course, compared to all respondents ($n=15$) expressing comfort with different scripts by the end of the course. When questioned whether they understood medieval and early modern dating practices (such as golden numbers, dominical letters, and regnal year), as well as the difference between dated and datable manuscripts, the majority expressed an understanding of these dating practices by the end of the course, except for golden numbers. When asked about abbreviations, the majority either disagreed 57% ($n = 13$) or strongly disagreed 17% ($n = 4$) that they could identify abbreviations in manuscripts at the beginning of the course, whereas all students either strongly agreed 53% ($n = 8$) or agreed 47% ($n = 7$) in their ability after completing the course.

The majority of students 78% ($n=18$), further, did not know what resources to consult to interpret abbreviations at the beginning of the course, whereas 100%

($n=15$) reported knowing resources to consult afterwards. Students also developed confidence with medieval and early modern punctuation systems, with all agreeing (47%, $n=7$) or strongly agreeing (53%, $n=8$) that they understand punctuation variations, as opposed to the beginning of the course, when they neither agreed nor disagreed (35%, $n=8$), or disagreed (35%, $n=8$). Interestingly, comfort with spelling differences remained fairly consistent before and after the course, with the majority of students agreeing (61%, $n=14$) or strongly agreeing (13%, $n=3$) that they were comfortable with spelling variations at the start, and agreeing (47%, $n=7$) or strongly agreeing (53%, $n=8$) at the end. This consistency could be linked to previous experiences with spelling variation in other classes, even when not working directly with manuscripts (e.g., in editions with scholarly apparatus). The questionnaire also asked students to consider their ability to identify provenancial marks and manuscript types, including a bull, charter, roll, breviary, and book of hours. Students went from discomfort with this terminology to a high degree of confidence.

Throughout the course, students were introduced to the physical attributes of manuscripts, such as writing supports, bindings, and the flesh and hair side of parchment. Few were comfortable with these attributes prior to course participation. Post-assessment surveys, however, show that their ability to interpret, analyze, and evaluate manuscript features increased. Asked about their comfort with incorporating manuscripts into a research-based argument, as well as with identifying manuscripts relevant to a research question, students expressed much greater comfort at the end of the course. To evaluate skill sets involved in using manuscripts in research, students were also asked about citing manuscripts and descriptions as well as their understanding of copyright. In these cases, the majority went from no knowledge of citation and copyright practices to understanding scholarly expectations in these areas. Invited to consider their comfort with identifying the author, audience, and original purpose of a manuscript, as well as the life of a manuscript over time and the impact of cultural heritage institutions, some initially had a degree of confidence in identifying audience, but by the end of the course the majority were comfortable identifying those involved in the life of a manuscript. The question of who created a manuscript was an outlier: 83% ($n=19$) did not know how to identify manuscript makers at the start of the course, and, while more students (53%, $n=8$) expressed comfort with this by the end, a number (47%, $n=7$) still expressed low confidence in this area. In both the pre- and post-assessment survey, all students agreed manuscripts can be damaged over time, and by the end all agreed that they understood various ways in which a manuscript may be damaged.

Asked about cultural heritage institutions, and to consider the range of human biases and interventions informing collections and cataloguing practices, the

majority, both pre- and post-assessment, agreed that such dynamics exist; the majority also recognized that there are silences and evidence of power relationships in historical records.⁴⁵ More nuance and growth, however, is evident in their responses to questions about historical empathy: by the end of the course, all knew what historical empathy was and either agreed (27%, $n=4$) or strongly agreed (73%, $n=11$) that they have empathy for historical actors, including those who have created, used, and collected manuscripts. At the beginning, the majority (70%, $n=16$) were unfamiliar with historical empathy. In post-assessment, however, students' written definitions of historical empathy were remarkably more sophisticated. Definitions at the beginning of the course included: "What even is this term?" and "I feel like it must be having empathy for events that previously occurred ... but I'm not sure enough to say." Responses at the end of the course, by contrast, included "Historical empathy is the practice of understanding the conditions, context, and constraints under which people lived in history, and adjusting my judgement and analysis based on that understanding," and "Historical empathy is the realization or acknowledgement that historical manuscripts and/or authors were a product of their time and thus carry the biases and rhetoric which were relevant to the time."

Our survey further prompted students to consider why researchers would work with manuscripts and digital surrogates, and to reflect on what they liked and disliked about working with manuscripts, including the challenges of related scholarship and research in special collections. Interestingly, in both the pre- and post-assessment questionnaires, the aspects students liked about working with manuscripts—their tactility, material qualities, and connection to the past—aligned with what they disliked, that is, their concern about causing damage to fragile material. By the end of the course, however, students were less afraid of handling manuscripts and identified the tactile experience as essential. For example, one student wrote:

SO PHYSICAL!!!! It requires a different kind of attention that allows for hyperfocus, which is very beautiful. Honestly I just loved really sitting with something, paying attention to it, being hyperpresent [sic] to its body. A lovely kind of work to do.

45. These are among the few data points aligned pre- and post-assessment, an unintended outcome that may relate to the broad Canadian context, such as the impact of the Truth and Reconciliation Commission of Canada, and the work of post-secondary institutions (including UVic) to move towards indigenization and decolonization. The prior humanities-based learning of this sampling of students may also pertain: given the theoretical underpinning of the humanities, which encourages students to identify biases and question power structures, these students likely had exposure to such concepts in previous coursework. Nonetheless, participants were not necessarily aware of how these dynamics operate in heritage institutions or archives specifically.

Students also identified other qualities they enjoyed, including contributing to scholarship, problem solving, and detective work. As one student noted: “You know you’re contributing to the scholarly and cultural nexus of the world and feel that you are widening everyone’s perspectives and giving everyone more resources by doing the work you are doing.” As corroborated by their journals, by the end of the course anxiety over damaging materials declined, and students were connecting their work to a broader community and taking pride in their developing contributions to scholarship.

When considering the challenges of working with manuscripts, students initially reiterated the fragility of rare and unique materials, as well as anxiety over understanding the languages of their primary sources. By the end of the course, they were more specific in identifying challenges: they listed abbreviations, minims, missing or obscured provenance, fading ink, and the complexity of applying learning to objects that are inherently unique and can defy a standard scholarly approach. The challenges of working in special collections included the hours available and the need for students to consult the same manuscript concurrently, due to UVic’s limited collection size. Initially, they also identified research protocols as a potential barrier, but these were not a concern by the end. Considering why researchers would want to work with original manuscripts, responses again focused on the tactile quality of manuscripts, and, in both the pre- and post-assessments, students noted physical qualities that require the primary source, including inspection of bindings, marginalia, and damaged text. They also emphasized the importance of *in situ* analysis of material qualities. For example, one student noted that the physical manuscript is necessary “[i]n order to examine features such as erased text, pen strokes and damage which are not always accessible digitally.” Both pre- and post-assessment, students identified the benefits of working with a digital surrogate if the original is too fragile and for improved accessibility. In post-assessment, some also noted the benefits of digital tools such as magnification.

Finally, students were asked about their career and academic ambitions, to gauge how the course might have impacted future decisions. By the end of the course, a greater percentage of students expressed interest in working in cultural heritage institutions (56% shifted to 73%) and pursuing a graduate degree involving research with rare and unique materials (43% shifted to 73%). In other words, as their journals also suggest, students not only developed new skill sets and gained confidence but also saw how their new abilities might be transferable to future endeavours, whether academic or career oriented.

The notable differences between our students’ perceived and concrete knowledge in the pre- and post-assessment surveys vary from other studies using a similar

methodology.⁴⁶ Among factors impacting these distinctions is the duration of the learning process. A semester-long course, as we have emphasized above, provides a time frame in which to both scaffold learning and allow students to apply new knowledge, and this time frame likely accounts for much of respondents' increased knowledge post-assessment. By contrast, when Sarah M. Horowitz applied a pre- and post-test to measure students' experience with document analysis, the results proved inconclusive. One challenge Horowitz identifies is the short time frame of traditional special collections instruction:

While students did spend time with original primary materials and were provided with examples of how to analyze them, many students visited special collections only one to three times. It may be that this is not enough time and exposure to create significant learning.⁴⁷

While one to three sessions provide a limited time frame for learning—or at least for identifying what learning has taken place—there are ways that instructors can collaborate to ensure learning is scaffolded and reinforced elsewhere in a given course. Michelle McCoy, for instance, also reports on a course that provided two special collections sessions: through collaboration with the instructor, these sessions became part of a broader, scaffolded introduction to primary source literacy. McCoy observes that “The phased approach to primary materials research methods...was instrumental to the overall educational experience and to the management of student use in the reading room.”⁴⁸

A key finding of our research is that a scaffolded approach, with every session taught in special collections and the incorporation of experiential learning opportunities, allows students not only to learn and apply new knowledge but also to have their learning and knowledge more accurately identified and measured. Garcia, Lueck, and Yakel identified this potential in their research, noting that “there remains an opportunity to integrate primary sources into instruction using a scaffolded approach that offers students opportunities to practice skills that gradually increase in complexity and difficulty.”⁴⁹ Our research also shows that, within an extended time frame with just such scaffolded activities, drawing students’ attention to their learning process through metacognitive reflection reinforces a learning framework in which students develop higher-order skills, build confidence, and are aware of their learning over the duration of the course.

46. Such as Horowitz, “Hands-On Learning in Special Collections”; and Hensley and Murphy, “Analyzing Archival Intelligence.”

47. Horowitz, “Hands-On Learning in Special Collections,” 223.

48. Michelle McCoy, “The Manuscript as Question,” 55.

49. Garcia, Lueck, and Yakel, “The Pedagogical Promise of Primary Sources,” 99.

Conclusions

Our mixed methodology—journaling used to foster student reflection, along with pre- and post-assessment surveys—provides meaningful insight into student learning in a collections-based course. Further, our study confirms Horowitz and McCoy's suggestions that sustained learning with a phased approach provides instructors with opportunities to collaborate with archivists, scaffold new skills, create meaningful assignments, and more accurately measure learning. With sustained work in special collections, students dramatically increase their knowledge of rare and unique materials and their primary source literacy. They show increased interest in graduate programs, and they demonstrate higher-order thinking about labour, historical empathy, and book history. They experience emotional responses in line with established studies on learning and emotion, and they communicate their own learning processes effectively. In other words, active learning with special collections is highly engaging, and students' learning processes are not solely intellectual. While Western medieval manuscripts present features not generally found in other materials (such as Latin, unfamiliar dating systems, and complex abbreviation systems), we expect that many types of rare and unique materials might be used to corroborate our findings.

Since primary source literacy, capacity for archival research, and language knowledge are standard metrics by which students are judged to be prepared for advanced research in graduate programs, our study has implications for collections-based learning models in humanities and social science undergraduate curricula. Our qualitative data suggests that introducing students to archival research before they have relevant language skills may impact enrolment in language courses and recruitment to graduate programs or cultural heritage careers. Exposed to archival methods and special collections, students readily see the potential for future work with primary sources and more fully imagine what archival research entails. This potential critically intersects with pedagogical care: positive emotional responses and reflective learning are most likely to occur when students think their work matters beyond the classroom. Course designs that encourage what we have called “futures” therefore seem fundamental to effective learning in special collections and archives.

For those who wish to undertake further studies or employ experiential, collections-based learning models, we strongly recommend the use of journaling as a course component. Over the length of our study, it became apparent that students' journals were not only supplying us with qualitative data but had become integrated into the learning process. The insights that student journals provided suggest that they were a constituent element of successful student engagement. We also recommend learning frameworks that go beyond single sessions or short modules and are integrated into a full-term course. In addition, we recommend collabora-

tive approaches—between student and instructor and among faculty, archivists, and learning specialists—to ensure that learning activities are mutually beneficial and, ideally, provide opportunities for students beyond the classroom. When activities and assignments are part of a larger institutional context, or provide opportunities for contribution to a larger scholarly community, engagement increases.

We hope, further, that our findings will demonstrate to colleagues and library and university administrators the value of partnerships between faculty and librarians, of special collections as important sites for active learning, and of the very real value of collections in student learning and success. Our collaboration stemmed from a shared interest in primary source literacy, and included course design, student publication hosting, incorporation of guest panels on careers in cultural heritage, and ongoing consultation to ensure assignment compatibility with institutional priorities. A major goal of our work has been to encourage similar partnerships on other campuses. Our findings should illustrate for administrators and library donors how special collections staff and collections have a direct and positive impact on student academic success. Even a small collection of rare materials can support active learning and, in turn, help to justify continued collections development.

Finally, while we were able to demonstrate the effectiveness of collections-based learning, we also acknowledge what cannot be measured through our research. Working with rare materials can have a lasting influence on students' lives. The epigraph that opened this article is from Karine Hack's essay on a similar manuscript studies course with Boyarin, published six years later. The essay movingly reminds us that "impact" is not always quantifiable. In Hack's case, the practice of working with *manuscripts in the flesh* meant more than we ever imagined, and we will leave you with her words:

In the basement of the library I learn to hold medieval manuscripts. I am twenty-one and this is the final year of my English Literature degree. Here in the basement, my finger traces the curls of c's and d's and e's. I memorize scripts and scribal hands; decipher flourishes from dashes from Latin abbreviations for God. *Domine, Domine, Domine, Deus*. Day after day I decode: this is how he spells *wrecchidnesse*, this is how he writes *kinges*. Week after week, month after month, I bring my gaze to skin. Spellbound in the library, I transcribe letters till they bloom into words, sentences—meaning. Fingers to skin, I commune with ancient bodies.

Appendix: Pre- and Post- Assessment Questionnaire

1. I know what resources (books, journals, online resources) support my work with manuscripts.
2. I know where to look for answers when I have a question about the manuscript I am working on.
3. If you have a question about a manuscript what resources (people, books, databases) do you consult?
4. I am comfortable locating descriptions of medieval manuscripts at UVic Libraries.
5. I am comfortable locating descriptions of medieval manuscripts held at cultural heritage institutions.
6. I can find digitized copies of manuscripts online.
7. I understand how manuscripts are described.
8. The recto is the _____ side of a leaf (please fill in the blank).
9. The verso is the _____ of a leaf (please fill in the blank).
10. I know what a shelf mark is.
11. I know what an accession number is.
12. I know what a call number is.
13. I understand how to request a manuscript from Special Collections.
14. I feel comfortable handling rare materials.
15. I know how to use a watermark reader.
16. I know how to use a UV light.
17. I know how to use snakes.
18. I know how to use a book cradle.
19. I can identify what writing support a manuscript is written on.
20. I know what the following words mean:

Origin
Provenance
Watermark
Pastedown(s)
Fly leaves
Singleton
Bifolia
Quire/gathering
Codex
Foliated/unfoliated
Ruled
Hand
Script

Scribe

Rubricator

Facsimile

Hair-side

Flesh-side

Exemplar

Manicule

Catchword

21. I am comfortable using and exploring manuscripts.
22. I can identify different languages in manuscripts (English, Latin, French, Italian, Spanish, German).
23. I can identify abbreviations in manuscripts.
24. I know resources to consult in order to interpret an abbreviation.
25. I am familiar with the following manuscript types:

Book of Hours

Breviary

Roll

Charter

Bull

26. I can identify a notarial signature.
27. I can identify different scripts.
28. I can distinguish between the flesh-side and the hair-side of parchment.
29. I can read words that are spelled differently than they are today.
30. I understand differences between medieval and modern punctuation systems.
31. I understand a variety of medieval and early modern dating practices.
32. I understand the difference between a dated and datable manuscript.
33. I can describe a manuscript according to standard conventions.
34. I can transcribe a manuscript according to standard conventions.
35. I can identify different medieval and early modern bindings.
36. I can identify provenancial marks in a manuscript such as ownership inscriptions and former call numbers.
37. I understand how to use manuscripts to make a research argument.
38. I know how to cite a manuscript.
39. I know how to cite a description of a manuscript.
40. I am aware of issues around copyright and permissions in relation to manuscripts and archival collections.
41. I know what type of manuscripts may be relevant to my research question.
42. I can identify, generally, who made a manuscript.
43. I can identify, generally, who the audience was for a manuscript.
44. I can identify, generally, whose life was impacted by a manuscript.
45. I can identify, generally, for what purpose a manuscript was created (i.e., literary, legal, etc.).

46. I understand that manuscripts may be damaged over time.
47. I know of examples of how manuscripts may be damaged over time.
48. I understand the extent of the human labour involved in acquiring, describing, and making available manuscripts and other rare materials.
49. I understand a range of human biases and interventions that impact collections and cataloguing practices.
50. Collections in cultural heritage institutions reflect and reinforce societal power structures.
51. Libraries and archives reflect the time periods and institutional structures in which they operate.
52. I understand that there are silences and evidence of power relationships in the historical record.
53. I understand how research with archives and rare materials impacts the historical record.
54. I have empathy for historical actors, including those who created, used, and collected manuscripts.
55. I know what historical empathy is.
56. Why would a researcher work with an original manuscript?
57. Why would a researcher work with a digital surrogate of a manuscript?
58. I am interested in pursuing a career in a cultural heritage institution (archives, libraries, museums, galleries).
59. I am interested in research based on working with materials in a cultural heritage institution (archives, libraries, museums, galleries).
60. I am interested in pursuing a graduate degree involving research with rare and unique materials/medieval manuscripts.
61. What do you like about working with manuscripts?
62. What do you dislike about working with manuscripts?
63. What are the challenges in working with manuscripts?
64. What are the challenges in working in Special Collections?
65. Has this course changed your perspective on cultural heritage institutions (archives, libraries, museums, galleries)?