Inclusive & Collaborative Proficiencies Assessment
In Canvas-Based Digital Curriculum

Summary

This document presents and contextualizes an approach to student learning assessment for developing digital research literacies and technical proficiencies in integration with content mastery. It features low-stakes, non-hierarchical formative assessment as a means to develop complex technical and analytical skill sets for 21st-Century scholarship within the general curriculum and to cultivate inclusive peer-to-peer collaborative relationships and work practices among students.

This assessment practice is embedded in a system of hybrid or online instruction that deploys an interchangeable set of digital media and tools within a custom-design 3-unit course template for modular instruction in the learning management system (see Figure 1). The text and illustrations that follow will elaborate the design of this 3-unit course template in the LMS Canvas (at UCLA “Bruin Learn”), using examples from an actual course.

Figure 1.
Assessment

Individual Student Learning

Formative assessment of student proficiencies and related enduring understandings serves as a structural component of the 3 modular units. Students are presented unit learning goals at the outset of the module in the overview page; learning activities are designed to help them achieve the learning goals, and an assessment task for each unit culminates the module. The intention of the assessments is not to contribute to students’ overall grade for the course. Instead, assessments are assigned to determine whether each student has demonstrated full proficiency and verbally articulated their understanding of their own work in reflective statements with reference to the respective framework(s) (e.g., ACRL Framework for Information Literacy).

Assigned performance tasks for the first two units are scored according to a credit/no-credit rubric (see Figure 2, for example), and students are required to repeat submissions until they receive full credit. The final unit work product is assessed for unit proficiencies and graded according to course content criteria. In this manner, faculty can ensure that proficiencies and understandings transfer and develop iteratively from unit to unit, without unwanted “snowball”
effects of missed aspects early in a term hurting students in later work. Simplified, low-stakes assessment also makes scoring easier for instructors, reduces stress for students, and makes intensive, technology- and media-rich project work scalable in the curriculum to medium and high-enrollment courses.

Socially Constructed Knowledge

The premise of this approach derives partly from a social constructivist perspective of learning, which holds that knowledge is constructed socially and can be developed through collaborative creation of work products and active participation in discussions. These ideas are adapted to present-day multimodal knowledge production and communication. Rigorous, articulated assessment of technical proficiencies is critical to ensure that all students are fully competent to conduct interactive multimedia activities with their peers at every stage of a course. Assessment facilitates the formative development of student social-intellectual skills as a precondition for collaborative project work, subjective analytical methods of inquiry, and scholarly communication. In a sequence of iterative, progressive development, students are increasingly exposed to others’ perspectives, whose direct or indirect involvement in their own construction of knowledge they might not otherwise recognize or consider.

Proficiency and Literacy as a Means for Inclusion

The intent of its assessment approach are twofold:

● To increase shared knowledge experiences
● To ensure that no students are either excluded from or ranked within an active setting of collaborative knowledge construction

The overtly graphic and functionally articulated modular structure of the 3-unit template in Canvas clearly distinguishes hands-on, technical, and project-based learning activities from weekly, topical lectures, readings, and discussions. Separate assessment regimes are used in the base course for determining and grading student mastery of content, and in the unit sequence for formative and summative assessment of literacies and proficiencies.

Modular units are designed with learning goals announced at the outset on an overview page and assessed in a final, lightweight assignment. Students are assured in writing and during instructional time that assessment is used solely to determine if they are fully able to complete foundational tasks and clearly express their related understanding in a brief reflective statement. Rubrics are included in assessments to indicate which, if any, proficiencies remain unfulfilled, and students are required to resubmit until they receive a full score.

Rubric categories and scores are binary (yes/no) and not graduated in terms of greater or lesser degrees of fulfillment. In the social context of the collaborative curriculum, it is not important to recognize varying sophistication or nuance of skill and practice. Such graduated indicators are likely counter-productive in developing effective working partner relationships between students. Especially when using technologies, new media content, and emergent scholarly practices, students are attentive to their peers’ capacities and are vulnerable to self-disqualification or
deference in complex and rigorous tasks. “I’m not good at technology” is a common refrain of exclusion. As critically, partial or full student disengagement from complex collaborative workflows in a technology-rich curriculum disrupts the integrity of highly constructed learning design.

Figure 2

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using UCLA digital collections</td>
<td>This area will be used by the assessor to leave comments related to this criterion. 1 pts</td>
</tr>
<tr>
<td>Demonstrates proficiency in browsing, searching, and using materials and metadata within UCLA digital collections</td>
<td>This area will be used by the assessor to leave comments related to this criterion. 1 pts</td>
</tr>
<tr>
<td>Using non-UCLA digital collections</td>
<td>This area will be used by the assessor to leave comments related to this criterion. 1 pts</td>
</tr>
<tr>
<td>Demonstrates understanding of digital collections at GLAM (Galleries, Libraries, Archives, and Museums) institutions; demonstrates proficiency in locating relevant collections and browsing, searching, and using materials and related metadata</td>
<td>This area will be used by the assessor to leave comments related to this criterion. 1 pts</td>
</tr>
<tr>
<td>Linked open content</td>
<td>This area will be used by the assessor to leave comments related to this criterion. 1 pts</td>
</tr>
<tr>
<td>Demonstrates proficiency and understanding of linked open media content through import function</td>
<td>This area will be used by the assessor to leave comments related to this criterion. 1 pts</td>
</tr>
<tr>
<td>Multimedia authorship</td>
<td>This area will be used by the assessor to leave comments related to this criterion. 1 pts</td>
</tr>
<tr>
<td>Demonstrates proficiency in composing a coherent multimedia assignment that includes media in combination with text</td>
<td>This area will be used by the assessor to leave comments related to this criterion. 1 pts</td>
</tr>
<tr>
<td>Visual communication</td>
<td>This area will be used by the assessor to leave comments related to this criterion. 1 pts</td>
</tr>
<tr>
<td>Demonstrates proficiency and understanding of formal design decisions, such as relative image size and placement, on viewer reception of visual communication with media</td>
<td>This area will be used by the assessor to leave comments related to this criterion. 1 pts</td>
</tr>
<tr>
<td>Information Literacy</td>
<td>This area will be used by the assessor to leave comments related to this criterion. 5 pts</td>
</tr>
<tr>
<td>Demonstrates understanding of unit learning goals, subject matter, and inquiry practices in relation to Information Literacy</td>
<td>This area will be used by the assessor to leave comments related to this criterion. 5 pts</td>
</tr>
</tbody>
</table>

Total Points: 10

Literacies & Competencies

Example lesson sequences are proficiency-focused and aligned with the ACRL Framework for Information Literacy. Two ACRL frames explicitly addressed are “Information Has Value” and “Information Creation as a Process.” The sequence design is informed by Wiggins & McTighe’s Understanding by Design (as cited in the ACRL Framework) and uses Bizup’s B.E.A.M., an alternative to the primary v. secondary source distinction for research materials.

The key concepts or “enduring understandings” which the lessons are intended to instill relate to the intellectual and methodological practices for working with digitized collections of items, such as cultural artifacts (rare books and manuscripts, photographs, artworks, ephemera, etc.), or scientific specimens (plants, taxidermied animals, etc.), and draw upon curatorial expertise in the GLAM (galleries, libraries, archives, and museums) professional sector, which is commonly adjacent to colleges and universities, but not actively represented in the undergraduate curriculum.

The focal attention on annotation as a skill and discursive act in many, widely varied technical and historical contexts serves more broadly to re-center marginalized combinatorial practices of
knowledge creation in web-based scholarship, such as collection curation, text-embedded linked media, visual rhetorics, temporal and geospatial argumentation, and non-linear interactivity. To that extent, the activities are informed by historical scholarship of annotation, marginalia, and reading practices, as well as current definitions from the W3C Web Annotation Data model.

Audience

The sequence is intended for undergraduate students at all levels of instruction, with particular emphasis on first- and second-year courses. Integrated hands-on instruction provides students early exposure to scholarly methods of inquiry with authentic institutional collections of digital specimens and cultural artifacts and for scaffolding advanced, upper-division research seminars and capstone projects. Considering prospective instructors, also, as an audience for this document, it is addressed particularly to faculty who are not averse to using digital content, methods, and systems but do not self-identify as having a digital focus to their instruction (e.g., digital humanities).

Curricular Context

The lesson sequence is designed for hybrid (online and in-person) implementation, with active, integral use of the learning management system (LMS). The sequence is fixed as 3-part but is variable in scope and ambition relative to the base course with which it is integrated. For example, the course could be entirely devoted to a scaffolded collaborative research project, or it could be a high-enrollment lecture class with a lightweight series of hands-on digital learning activities on the side. The particular examples presented here are derived from an 80-student lecture course with a substantial digital project component. They illustrate general principles manifest in live curriculum and demonstrate an embedded, multimedia “style” of online delivery.

The learning activities are intended to shoulder the burden of information literacy and technical proficiency instruction in an online environment and thereby alleviate the need for professional development on the part of prospective faculty, guest instructors, or substantial course time allocated for rote technical skills acquisition. The 3-part sequence has informed the design of an LMS template for use by other courses at the university and provides a structure for sharing modular lessons.

Institutional Partners

This work has been advanced under the heading of innovation as part of the University’s adoption of a new LMS, or “Canvas Transformation,” and reflects a broad institutional collaboration at UCLA of staff and leadership from many various units, including the Digital Library Program, Online Teaching and Learning, HumTech, Program in Digital Humanities Program, Center for Advancement of Teaching, and the Public History Initiative, as well as
substantial and generous contributions of thought, energy and instructional time by individual participating UCLA faculty.

Many collaborators guided, informed, and/or contributed to this effort, including:

- Chien-Ling Liu Zeleny: faculty of the example course illustrated in this document (UCLA History and Institute for Society & Genetics)
- Greg Steinke (UCLA Canvas Transformation / Instructional Design); Annelie Rugg (Humtech/Canvas Transformation)
- Muriel McClendon, Tawny Paul, Chloe (History/Public History Initiative/Public History Toolkit)
- Russell Johnson (UCLA Library Special Collections); Anthony Baniaga (UCLA Herbarium)
- Francesca Albrezzi, Wendy Perla Kurtz, Anthony Caldwell, Ashley Sanders Garcia (3-Unit Template / Program in Digital Humanities)
- Dawn Childress (IIIF/Digital Library Program/Library Digital Collections)

Technology

The sequence of learning activities demonstrates and uses the affordances of digital content from the UCLA Library Digital Collection, which is made available openly for research and curricular usage in accordance with the International Image Interoperability Framework (IIIF). IIIF is a standard for delivering images and image sequences (e.g., books) with metadata interoperably over the web, so scholars and other users can study, annotate, and present content from multiple sources simultaneously. For an authoritative description of IIIF, with showcase examples and linked resources, see the IIIF website.

An emerging set of tools and presentation systems developed in response to evolving IIIF usage scenarios for research, intellectual engagement, and entertainment is also deployed here or identified as possible alternatives. As IIIF is the shared product of a growing and changing community of institutions, developers, and practitioners, the commitment to any particular tool and its functionality is deemphasized in favor of a practice (e.g., scholarly annotation) or proficiency (e.g., writing for the web). To that extent, the technologies themselves become interchangeable, much as they support engagement with interoperable content.

Adaptability

The examples and illustrations are drawn from an actual course on the history of medicine. This course is inherently interdisciplinary, as it involves both social sciences/humanities and science. The lesson sequence is readily applicable to a wide array of disciplines that make active use of content sets in the IIIF format. More abstractly, the instructional design principles employed in this sequence do not depend upon IIIF as the format of digital content, nor must the content necessarily be digital at all. It might be noted, for example, that the same 3-unit sequence and specific activities were deployed by the same faculty member in another concurrent course
based upon physical and digital specimens in the university's Herbarium. Lastly, the sequence construct upon which an LMS course template is based can be applied to other, non-object varieties of information analogous to finite collections, such as data sets.

Learning Outcomes

Learning activities are designed to generate evidence of student learning, which is conceived as a combination of demonstrable proficiencies, and foundational understanding. Learning outcomes are cumulative and iterative, taking advantage of a 3-unit modular structure to articulate, instruct, and assess discrete sets of learning outcomes for each unit before advancing to the next.

Unit 1: Collection
- Describe: what a digital collection is; what objects it is comprised of; what metadata is associated with objects; what materials are excluded; how materials were collected, by whom, and to what ends; what comparable materials are accessed in other collections
- Browse, search, and filter items in a collection; locate particular items using various visual and verbal strategies; link and embed content in other contexts; juxtapose content items derived from multiple sources.

Unit 2: Comparative Analysis
- Closely examine primary historical artifacts; select, describe, interpret and draw inferences from details; juxtapose and compare items; annotate details; understand, handle, and manage IIIF content in multiple viewers and presentation systems

Unit 3: Publication
- Share observations, interpretations, and discursive arguments with peers and public audiences; make effective visual-rhetorical and aesthetic judgments in authoring digital multimedia texts. Demonstrate a fundamental understanding of linked, open content and related systems for scholarly analysis and intellectual expression.

Reflection

Various aspects of this composite design have been implemented in several different curricular contexts. Examples are derived from a course currently in process (as of the writing of this draft), which will complete before the final editing of the lesson and may add to our wisdom. Part of the rationale for taking this hybrid flipped approach to instruction is to help future-proof curriculum in uncertain times when students and faculty cannot be certain that a given course will be delivered in person, online, or some combination of both. In the experience of two-quarters of implementation using this approach, students appreciated being able to engage with high-quality original source rich media content interactively in rigorous intellectual contexts, despite constraints to online instruction, and intensive hands-on inquiry with digital objects helped to compensate for lost opportunities to view physical materials.
Lesson Outline

At the risk of redundancy, some of the discussion provided above under various sections, such as Learning Outcomes, will be repeated here in the Lesson Outline. Providing such headings is important to ensure that the information they prompt is considered and communicated explicitly. The Lesson Outline that follows embeds these considerations in a process of lesson design, employing the “backward design” approach of Wiggins & McTighe’s UBD (Understanding By Design). The fixity of structure and procedure should provide flexibility for swapping technologies, methods, and content interchangeably while still addressing the same learning goals.

Preliminary Commitments

IIIF: The lesson sequence presumes a prior home institutional investment in IIIF for digital collections content. This is not absolutely necessary, as IIIF content is widely available globally through sites on many leading academic and cultural heritage institutions. However, a locally held institutional collection with IIIF is likely to be accompanied with support and integrated systems, such as a hosted instance of Mirador or other viewers.

Sequence of 3: this number is non-arbitrary and serves as an ordinal signifier for a functional sequence, akin to a formula, syntax, or dialectic. The three stages, articulated into units of instruction, are devoted to any variation of materials, methods, and products in that order. Here they manifest as Collection, Comparative Analysis, and Digital Project. Committing to all three units allows adequate instructional time and attention to foundational understandings of information literacy (i.e. “information has value,” and “information creation as a process”) in the context of curatorial and collections development work that are essential to subsequent learning goals related to comparative analysis, and exhibiting of content.

Learning Environment (Canvas)

Figure 2.

![Image of a canvas interface](image-url)
The lesson sequence is designed for online/hybrid “flipped” implementation using the learning management system as an integral functional component. In the course example, we used Canvas, which was modified with a course template for a 3-unit modular project added to a base lecture course. Canvas operates on a modular system for managing course content, so it is well-suited for sequencing instruction. Each module is comprised of several component elements based upon the affordances of Canvas and the particular template of the university’s LMS instance:

- Overview page w/ module checklist
- Content page(s)
- Discussion page(s)
- Assignment page

Within these constraints, a “Unit” provides a general description with learning goals on the overview page; presents multimedia content, including text, imagery, and embedded interactive tools and viewers on content pages; conducts interactive learning activities on discussion pages; and culminates in an assessment of proficiencies and understanding in an assignment page with the included rubric.

The course home page graphically represents the modular structure of the course and its relative commitments to weekly lecture and discussion topics and integrated 3-Unit project sequence (see Figure 1).

**Sample Module Sequence**

The 3-unit sequence facilitates the deepening of student understanding of key concepts and proficiencies through a process of iterative recontextualization. In *Understanding by Design*, Wiggins and McTighe explain:

> Understanding is about *transfer*, in other words. To be truly able requires the ability to transfer what we have learned to new and sometimes confusing settings. The ability to transfer our knowledge and skill effectively involves the capacity to take what we know and use it creatively, flexibly, fluently in different settings or problems. (Wiggins and McTighe, 40)

The core proficiency addressed in the sequence is scholarly annotation. Through this series of learning activities, students’ understanding of this practice should transform from a narrowly mechanical and historical conception of annotation as the inscription of brief textual commentary to a passage in a book or an image to a fundamental practice of knowledge production in a networked digital information universe.

The emergent definition of annotation that informs IIIF content and tools is specified in the W3C [Web Annotation Data Model](https://www.w3.orgsWith effectively involves the capacity to take what we know and use it creatively, flexibly, fluently in different settings or problems. (Wiggins and McTighe, 40)

The core proficiency addressed in the sequence is scholarly annotation. Through this series of learning activities, students’ understanding of this practice should transform from a narrowly mechanical and historical conception of annotation as the inscription of brief textual commentary to a passage in a book or an image to a fundamental practice of knowledge production in a networked digital information universe.

The emergent definition of annotation that informs IIIF content and tools is specified in the W3C [Web Annotation Data Model](https://www.w3.org/2017) from 2017:

> Annotating, the act of creating associations between distinct pieces of information, is a pervasive activity online in many guises. Web citizens make comments about online resources using either tools built into the hosting website, external web services, or the functionality of an annotation client. Comments about shared photos or videos, reviews of products, or even social network
mentions of web resources could all be considered annotations. In addition, there are a plethora of "sticky note" systems and stand-alone multimedia annotation systems…

An annotation is considered to be a set of connected resources, typically including a body and target, and conveys that the body is related to the target. The exact nature of this relationship changes according to the intention of the annotation, but the body is most frequently somehow "about" the target. This perspective results in a basic model with three parts depicted below.

The seemingly technical frame of this standard speaks volumes about longstanding matters of knowledge transmission over generations that long predate electronic digital phenomena. Contemporary studies of readership, marginalia, etc., are broadening our collective understanding of societies and cultures through much more inclusive ideas of voice, originality, etc., availed by digitized rare books. Here, however, the expansive notion of annotation represented in the passage from the W3C document points to a range of combinatorial and linking practices that can be taught to students as a key literacy for writing scholarly multimedia texts for the web. This idea and practice are developed in three distinct “settings” (to use the terminology from UBD) or “contexts” that comprise each of the units of instruction.

Context #1: Materials > Digital Collections > UCLA Library Digital Collections

The context of Unit 1 is the digital collection. Students are introduced to the UCLA Library Digital Collections as a general resource. There, they learn how digital collections differ from other sources of library information, such as catalogs of books and databases of periodicals. For most
students, a curricular introduction to digital collections may be the only occasion in 4 years of undergraduate study to learn of their existence. The designated collection for the sample class here is Patent Medicine Trade Cards, curated by Special Collections Librarian Russell Johnson, who was invited to present to the class about the materials, and how and why they were acquired.

Unit 1 learning activities include:

- Browsing the list of collections
- Using visual cues and thumbnails to find, compare, describe, and generalize content in a given collection
- Using the affordances of IIIF content and Universal Viewer, such as deep zooming, inspect sample items for details, visual, verbal, and graphic information (Figures 6 and 7)
- Review metadata
- Learn who collected items, how, and according to what criteria
- Discover other comparable collections and compare what is included, what is excluded, and why

Assessment
The culminating activity for assessment is a simple task of multimedia authorship, comprised of two linked digital images drawn comparatively from UCLA's Library Digital Collections (Figure 4), and another institution’s digital collection (Figure 5) as well as a reflective statement about collections and practices of collecting in relation to one frame of the ACRL Framework for Information Literacy: “Information has Value.”

Context #2: Methods > Comparative Analysis/Annotation > (Mirador/MISE, Canvas, Exhibits.)

The setting in Unit 2 shifts from the external sites of digital collections to the internal pages of the course site in Canvas. The activities begin with a “hook” assignment that asks students to comment upon an image presented on the page without context or metadata. As if it were any
image they might encounter on the web through Google image search, it is, in fact, a detailed fragment of an item held in the collection. See Figure 8.

**Figure 8**

The sequence of activities continues in subsequent modular pages, intended to reveal the depth of possible meanings that can be derived from robust IIIF collection items.

**Figure 9.**

**Figure 10.**

**Figure 11.**
Figures 9, 10, and 11 are presented above in miniature of their full scroll extent to convey the relative balance of content text, step-by-step instructions, imagery, and embedded tools and viewers. (Almost) all of the imagery is linked IIIF content, modified in many instances to focus on particular details, using a single example for students to follow in their own subsequent analyses. Proficiencies developed in the activities, such as close observation of details, and
loading IIIF content in the embedded scholarly viewer Mirador, emphasize manual skills and practices, that is, “thinking with your hands” for transforming students’ habits of mind associated with mobile media, swiping, searching, browsing, etc.

Assessment
The culminating activity for Unit 2 assessment is an exercise in the creation of a zoom-based presentation of a IIIF item from the collection with captions that serve as annotations, using the embedded tool Exhibits., following detailed instructions, as well as a reflective statement. See Figure 12.
Figure 13.

Scalar is a free, open-source scholarly digital authoring platform that presents linked rich media content in long-form text. A project in Scalar is called a book, but its pages of multimedia content can be considered analogous to an academic article, journalistic essay, or term paper. On its viewable surface, Scalar is a medium for illustrated text online, and it can be approached as such by students assigned to create pages or complete books. Using Scalar in curricular projects typically entails a full-term investment of lab time and carefully sequenced technical instruction to ensure that students can navigate the site and produce content effectively. In collaborative projects, full proficiency mitigates against students’ overwriting of peer content and other missteps.
As the final “setting” for student learning in Unit 3 of the sequence, Scalar serves instead as a hands-on instructional medium for demonstrating iterative proficiency development and fundamental comprehension of key learning goals related to annotation and web authorship. Media imported into the platform is linked rather than uploaded. It is annotated at the outset to call viewers’ attention to important details and to help authors make explicit connections between images and text-based argumentation and analysis. See figure 13.

In Unit 3, reference for technical instruction is provided through embedded pages of the Scalar Users Guide, selected and sequenced to develop students’ collaborative projects step-by-step. See Figure 14. Critical steps are scaffolded in Canvas Discussion pages, which enable students to post and share the results of their efforts.
Assessment

Individual student pages comprised of imported media with metadata and descriptions, annotations, body text, title, and an abstract serve as the culminating assessment tool for students in the 3-Unit sequence. Unlike previous assessments, which are formative, the final Scalar project page is graded summatively. Here, students demonstrate proficiencies related to information literacy, authorship for the web, and visual rhetoric, as well as command, of course, topical subject matter. Because students have received fundamental instruction and demonstrated a grasp of the transferable proficiencies from the previous unit before proceeding, the third and final unit is not entangled with concerns about either technical steps or the underlying principles behind them.