

Embedded Literacies Committee Final Report

Members: Susan Kline and Susan Lang, co-chairs. Allison Armstrong, Jonathan Baker, Mike Davis, Lynn Hall, David Horn, Chris Manion, Melinda McDonald, David Tomasko, Anna Willow, Kim Young

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Introduction

Several factors contribute to the decision to include three literacies—advanced writing, data analysis, and technology—into the new General Education program. Two of these literacies are currently represented in the present GE, and both were approved as part of the new General Education program. The new program asserted that advanced writing and data analysis are literacies that are meant to be developed throughout a student’s major coursework and higher education experience. In an era of big data, evidence-based policy making, and interconnected societies, data analysis, technology, and advanced writing have all become essential for a contemporary General Education program.

Ideally, these literacies are introduced in the foundations and further explored and developed within students’ major coursework. However, data demonstrates that an escalating number of students are fulfilling foundation requirements elsewhere. In fact, on the Columbus campus, only 20% of first-year students are taking English 1110. These numbers will only increase in the coming years. Thus, to ensure that we enable students to develop and strengthen these vital literacies under the OSU umbrella, we recommend that our GE program include all three of these literacies, whether they be within the major, within the theme courses, or a combination of both. Doing so will enable our students, in the short

term, to succeed in their major program. Simultaneously, they will be equipped to engage in civic life. Finally, these literacies will also impact graduates for the rest of their lives, as they engage in life-long learning.

The importance of these literacies to our students' lives at and beyond OSU mandates that we pay attention to how they are integrated throughout the curriculum. It also mandates that we provide faculty with sufficient resources and support to most effectively teach these literacies and integrate them into courses.

The Embedded/Cross-Sectional Literacies Subcommittee was constituted in July 2019 by the General Education Implementation Committee to examine the role of data analysis, advanced writing, and technology in the new general education curriculum. We began by reasserting the value of data analysis, advanced writing, and technology as significant elements of general education beyond the foundation level courses of the GE.

Our committee began its work by posing several questions related to its charge: (1) What defines a meaningful integration of these components into a course or courses, especially given the streamlined GE requirements?; (2) How do we prepare students and instructors to employ a common vocabulary of concepts about each of these areas?; (3) What should be the design, approval and assessment process for these courses on these subjects?; and (4) How do we give faculty the resources and space to build these elements into either new or existing courses?

This report provides the recommendations that emerged from our deliberations.

Summary of Recommendations

- 1) Our initial recommendation is that advanced writing, data analysis, and technology be referred to going forward as "embedded literacies."
- 2) We recommend that as part of students' general education students take a course (or courses) each in data analysis, advanced writing and technology.
- 3) We recommend three options through which students may satisfy this requirement:
 - a. Faculty may select a required course or courses in their major programs that contain significant instruction in one or more of these literacies and submit the course or courses for approval.
 - b. Major programs may require their students to take approved courses in one or more of these literacies from other units.
 - c. Students may also elect to take a theme course that is approved in one or more of these literacies.
- 4) Programs are encouraged to submit plans that take all three literacies into consideration. That is, advanced writing could be fulfilled via modules in more than one course, or data analysis might be fulfilled by designating a course in another unit. Programs should consider what options best meet the needs of their students while ensuring instruction in all three literacies.

- 5) We propose that a committee of faculty experts, known as the Embedded Literacies Committee, oversee the approval of advanced writing courses, as well as data analysis courses and technology courses. This will ensure that these skills are “offered at the appropriate standard” and “meet GE requirements.” This will also ensure that “majors, college degree programs, or courses within them” incorporate the three literacies in ways that align with best pedagogical practices.

Please note that this recommendation differs from what is outlined in the Policies & Procedures proposal. In that proposal, ULAC-GE would have a subcommittee on Embedded Literacies to assess the “health” of these components within the larger GE. *This proposal recommends that there also be a new panel within ASCC for the approval of courses with embedded literacies.*

What are the Goals and Expected Learning Outcomes for each literacy?

Based on our discussions and research, briefly outlined below, we recommend the following goals and expected learning outcomes for each literacy.

Data Analysis

The current General Education requirements include one course in Data Analysis. This reflects the University’s fundamental position that graduates of The Ohio State University should be competent in analyzing data. The foresight of our predecessors’ work from over a quarter-century ago has proven true as technological advancements have facilitated greater ease to statistical procedures, and the advent of the “Data Analytics” discipline. “Analytics” are now even being used with everything from financial decisions to wellness initiatives. Data usage in our students’ daily lives will persist deep into this century. So will the continued need for our graduates to be knowledgeable of means of handling data. Students must be able to develop skills in drawing conclusions and critically evaluating results based on data. Statistics equips them with these tools through graphical and numerical displays, computational methods and formulas, and overall habits of thinking.

In some fields of study it is more common to utilize qualitative rather than quantitative data. Qualitative research is development of concepts that help us understand social phenomena in natural settings, giving due emphasis to the meanings, experiences and views of the participants (Pope & Mays, 1995). Types of qualitative data include structured text (writings, stories, survey comments, news articles, books); unstructured text (transcription, interviews, conversation); audio recordings and music; and video recordings (graphics, art, pictures, visuals). It is important to equip students in majors where use of qualitative data is common with the statistical tools that can be used to analyze and interpret such data.

Not surprisingly, then, embedding data analysis within a student’s major contextualizes the learning to the greatest extent for our students. Students will not simply learn general formulas or techniques. Nor will applications seem to be less personal for the learner. Embedding the curriculum within the student’s major provides learning of a traditionally challenging subject in a very familiar milieu. This alone will better facilitate the transfer of knowledge.

The current GE expected learning outcomes will still have relevance under this newer iteration for quantitative data analysis. We have also produced a comparable set for qualitative data analysis. The goals and expected learning outcomes for the data analysis requirement are:

Data Analysis Literacy	
Goal	Expected Learning Outcomes
<p>Successful students will meet the goals for <i>either</i> a Quantitative Data Analysis (A) or Qualitative Data Analysis (B) course.</p> <p>Quantitative Data Analysis (A) Goal: Successful students develop skills in drawing conclusions and critically evaluating results based on data.</p>	<p>Successful students are able to ...</p> <p>1.1A explain basic concepts of statistics and probability.</p>
	<p>1.2A apply methods needed to analyze and critically evaluate statistical arguments.</p>
	<p>1.3A recognize the importance of statistical ideas.</p>
	<p>1.4A evaluate the social and ethical implications of data collection and analysis, especially in relation to human subjects.</p>
<p>Qualitative Data Analysis (B) Goal: Successful students develop skills in drawing conclusions and critically evaluating results based on data.</p>	<p>1.1B explain the utility of different approaches to qualitative data analysis.</p>
	<p>1.2B apply key methods and tools in qualitative data analysis.</p>
	<p>1.3B interpret the results of qualitative data analysis to answer research question(s).</p>
	<p>1.4B evaluate the social and ethical implications of data collection and analysis, especially in relation to human subjects.</p>

Advanced Writing

The current General Education requirements reflects the University's commitment that graduates of The Ohio State University should be proficient writers. Our conception for advanced writing reflects that commitment and the belief that writing is a core part of the learning, thinking, and practice students develop to become informed citizens and professionals. We update second level writing by drawing on curriculum designs used by our peer institutions and on research that documents students' need for regular, varied practice throughout the curriculum (Beaufort, 2007; Yancey et al., 2018). Opportunities to develop proficiency in advanced writing are expected as part of a student's major program. Major programs that do not have interest or capacity to develop writing-intensive courses should require a course in writing from another appropriate unit.

Consistent with the approved GE program, we propose a two-staged approach to embed advanced writing in our students' curriculum: a course or courses with advanced writing that students can take as part of their major program (held either in the major department or a designated stand-alone course) or a course with advanced writing in the themes. This plan would fit within the credit requirements of the new GE program and also fits well within the kinds of courses that currently exist in many departments, including second-level writing courses.

We also envision a long-term plan, to be pursued after the GE curriculum has been established, that invites major programs to devise a writing plan to develop their students' writing competencies further in the service of their programmatic goals. This plan could be accomplished in ways that do not necessarily add credit hours to students' major programs.

Advanced Writing	
Goals	Expected Learning Outcomes
Goal 1: Successful students develop advanced skills in inquiry, critical thinking, composing, and communicating for a specific purpose, context, and audience using an appropriate genre and modality.	Successful students are able to ... 1.1 Investigate and integrate knowledge of the subject, context, and audience with knowledge of genres, conventions and rhetorical choices to advance a particular writing objective.
	1.2 Use credible and relevant sources of information, evaluate assumptions, and consider alternative viewpoints or hypotheses to express ideas and develop arguments.
Goal 2: Successful students apply knowledge of writing and research to specific contexts.	2.1 Reflect on how they adapt rhetorical and research strategies they have learned to new contexts.
	2.2 Develop scholarly, creative, or professional products that are meaningful to them and their audience.
	2.3 Evaluate social and ethical implications of writing and information literacy practices.

Technology

Our conception for technology makes a distinction between two forms of technology literacy:

- 1) A *working familiarity* with specific forms of technology, and of their practical possibilities and limitations, in relation to particular disciplinary or interdisciplinary projects.

- 2) A *critical understanding* of technology: an appreciation of the relations between technologies and their contexts (social, cultural, and historical), and of the range of effects and consequences (legal, ethical, political) produced or enabled by particular technologies.

The programmatic goals of the General Education curriculum incorporate the first type of engagement, a working familiarity with specific forms of technology, through the ELOs of the GE seminar (the Bookend Courses) and other courses that introduce technologies that will help support student learning, productivity, creativity, and reflection. The second kind of engagement, a critical understanding of technology, was originally part of the ELOs for each of the three open themes. The following proposal to embed technology literacy in students' general education is therefore based on the understanding that technology *facility* will be covered in the Foundation Courses and in the Bookends (and potentially also

in major courses), while *critical thinking* about technology will be integrated in specific General Education Foundation, Theme, and major program courses.

An understanding of technological literacy as a form of critical thinking is central to research and teaching in many disciplines. Advances in information technology have influenced individual and public values related to transparency, privacy, technology piracy, and illegal use, among others (Calluzzo & Cante, 2004; Kernaghan, 2014). At the same time, research shows that university students exhibit uncertainty regarding ethical technology behaviors and systems use (Calluzzo & Cante, 2004).

Thus it is important to equip students with a critical appreciation of technology and the relationships between technology and society. The goals and expected learning outcomes students to attain basic technology literacy are:

Technology Literacy	
Goal	Expected Learning Outcomes
Goal 1: Successful students develop a critical appreciation of the relations between technologies and their contexts (social, cultural, and historical), and of the range of effects and consequences (legal, ethical, political) produced or enabled by particular technologies.	Successful students are able to ...
	1.1 Critically describe the relationships between technology and society in historical and cultural contexts.
	1.2 Recognize how technologies emerge and change.
	1.3 Evaluate the social and ethical implications of technology.

What options do students have to fulfill these literacy requirements?

We recommend that students should be able to fulfill requirements for each of these literacies in one of three ways.

- 1) Faculty may select a required course or courses in their major programs that contain significant instruction in each of these literacies. Course design specifications and the approval process are provided in later sections of this report.
- 2) Major programs may require their students to take literacy courses from other units. Units may want to form partnerships to ensure there are sufficient resources to handle student demand for particular courses.
- 3) Major programs may have their students take a theme course in one or more of these literacies to satisfy their requirement.

How do we embed these literacies into our courses and major programs?

We believe that the design of courses in data analysis, advanced writing, and technology should incorporate best pedagogical practices regardless of whether or not the course is required in a major program, is an independent course, or is a theme course. We propose that programs should offer and

require courses that involve data analysis, advanced writing, or technology that fulfill particular course design expectations that are presented below and in greater detail in Appendix A.

Data Analysis

Statistics educators advocate the adoption and use of the Guidelines for Assessment & Instruction in Statistics Education (GAISE). The eight seminal elements of data analysis pedagogy that create successful courses are the following:

- Teach statistics as an investigative process of problem solving and decision making.
- Emphasize statistical thinking and literacy over other learning outcomes
- Integrate real data with a context and purpose.
- Emphasize conceptual rather than procedural understanding
- Foster active learning.
- Analyze data using technology rather than by hand
- Focus on supporting student learning with assessments
- Teach an awareness of *ethical issues* associated with sound statistical practice.

Prospective courses can vary in the way the final five bullets are delivered. Of greater importance are the epistemologies and emphases that faculty use to underpin course development and instruction. Faculty should consider the first two bullets as they propose courses for approval.

Advanced Writing

Writing educators contend that the design of courses with advanced writing should incorporate particular pedagogical components (*Framework for Success in Postsecondary Writing*, 2011). We recommend that courses with advanced writing should have these design features (Appendix A):

- Varied opportunities for composing. Students should have assignments that vary in one or more key rhetorical components, such as audience, genre or modality (e.g., visual, oral, written) (Beaufort, 2007). Key rhetorical components can be specified for each assignment and explored by students. For instance, students might compose a particular kind of article or a podcast for a more public venue relevant to the course.
- Transparency of purpose. Students should have course descriptions and assignments that articulate the purpose of the assignments, how they engage students in core skills and knowledge, and specify how assignments will be valuable to students beyond the course.
- Iterative practice (scaffolded assignments, revision). Students should have opportunities to practice their composing or build toward more formal projects from staged, more informal activities (Bean, 2011). This might include opportunities to draft and revise work, or break down a larger project into smaller steps, such as the parts of a scientific report.
- Multiple opportunities and sources of feedback (instructor, peer, additional audiences). Students benefit from collaborative opportunities such as from feedback to inform and guide their composing process. They should obtain feedback from multiple sources, and themselves read, evaluate, and provide feedback for the work of other writers (Bean, 2011). Feedback might also come from sources outside the course, such as sponsors from a partnered organization, or from the students of another course or institution.
- Opportunity to reflect on writing (past, current, or future practices). Students are more likely to successfully transfer their knowledge about writing when they articulate how they apply their

knowledge of writing or how strategies they have learned apply toward their goals and aspirations (Yancey, 2016). Reflective assignments might involve engaging in an end of course reflection, or an informal journal that has students set goals and evaluate their progress toward a final product.

Technology

To demonstrate the development of critical thinking about technology, we propose that a course should include content, assignments, discussions, or other activities that address the following (also see Appendix A):

- Thinking critically about technology use. Students should have the opportunity to discuss and evaluate technologies in a variety of historical, cultural, and social contexts.
- Innovation, development and use. Students should come to appreciate how technologies emerge and change by discussing and evaluating the innovation, development, and use of a variety of technologies.
- Technology impact. Students should recognize the potential ethical, legal, and social impacts of technology. Such knowledge can be facilitated by extensively discussing and evaluating the ethical, legal, and social impacts of a variety of technologies.

What instructional resources are available for faculty training and support?

Designing the curriculum and establishing administrative protocols provide only academic mechanics. Teaching is, indeed, an art form replete with nuances, sensitive moments, and a multiplicity of learning styles and learners. Particularly in courses that may be taken by students from across the University, there should be a consistency in how the departments convey key concepts about data analysis, advanced writing, and technology. We recommend several ways for faculty to obtain pedagogical training and support.

- 1) Across these literacies the University Institute for Teaching and Learning (UITL; uitl.osu.edu) will offer design consultation for instructors who are preparing courses that involve data analysis, advanced writing, and technology. We recommend that the UITL could also provide a clearinghouse for training and support.
- 2) We suggest that UITL could work with partners like the University Libraries, the Office of Distance Education and E-Learning, regional campus colleagues, and interested units to develop a range of teaching endorsement opportunities for faculty.
- 3) Courses submitted for GE authorization will need to have a GE rationale and assessment plan in order for the course to be approved. UITL can also provide resources and support for developing assessment plans.
- 4) To help departments incorporate best pedagogical practices into their courses we have provided rubrics (see Appendix A) for each literacy.

Besides UTIL and the supplied rubrics for designing courses, there are several other ways faculty can obtain resources and support for designing literacy courses that meet GE expectations:

- 1) **For data analysis:** the Department of Statistics and School of Teaching & Learning can also equip instructors with best practices about ways to incorporate the GAISE standards noted in the previous section.

- 2) **For technology:** Ohio State does not currently have a center that is focused on technological literacy and pedagogy. However, there is a working group of faculty in the field of Science and Technology Studies that could serve as a pedagogical resource and potentially contribute syllabi to a database.
- 3) **For advanced writing:** The Writing across the Curriculum (WAC) program at the Center for the Study and Teaching of Writing (CSTW) will create digital space for resources and links about best course design practices. Links will be posted by February, 2020.
- 4) CSTW also plans to develop online short courses on Writing@OhioState, similar to the series on Teaching @OhioState, which will give a brief introduction to basic strategies for writing pedagogy that are particularly related to the ELOs and best pedagogical features for Advanced Writing. It will also feature examples of strategies used by faculty across Ohio State from different departments and teaching contexts.
- 5) WAC at CSTW will also work with partners like the University Libraries, the Office of Distance Education and E-Learning, regional campus colleagues, and interested units to develop a range of [teaching endorsement opportunities](#) for faculty, including intensive workshop series like [Teaching with Writing](#); more flexible, elective workshop series incorporating online, face-to-face, and self-guided options; and opportunities like working with embedded [Writing Associates](#) over one or more semesters.

How can a unit gain approval for its courses that feature embedded literacies? (Structure and Process)

Approval Structure

Please note that this recommendation differs from what is outlined in the Policies & Procedures proposal. In that proposal, ULAC-GE would have a subcommittee on Embedded Literacies to assess the “health” of these components within the larger GE. *This proposal recommends that there also be a new panel within ASCC for the approval of courses with embedded literacies.*

The embedded literacies subcommittee spent much time discussing the various options for approving embedded literacy requirements. We recognize the need to provide a streamlined structure and have factored that into our recommendations. Given that all of the literacies can be satisfied by content embedded in one or more major courses, an independent course, or a theme course with an embedded literacy, the most coherent structure would be to have one panel or committee approve all applications for courses in data analysis, advanced writing, or technology.

The committee would consist of members similar to the current **ASCC** panel committees that contain members from other colleges. This committee, which we would name the Embedded Literacies Committee, would be responsible for approving embedded literacy courses and writing plans.

Programs could satisfy the requirement for data analysis, advanced writing, and technology by developing these skills across several modules in more than one required course. In that case, programs should submit a Literacies Plan along with the syllabi and other requirements to show how the literacy will be developed over multiple courses.

In many cases, programs will only need to make minor revisions to existing courses. In these cases only the course components related to data analysis, advanced writing, and technology will be assessed by the Embedded Literacies Committee.

Approval Process

We would use the current **ASCC** course approval process to authorize GE courses in data analysis, advanced writing, and technology.

- Once a course or writing plan is ready for submission it would be sent to an Embedded Literacies Committee and reviewed using the appropriate rubric in Appendix A. Similar to the current panels, courses can be approved, approved with contingencies or recommendations, or returned for revision.
- In this fashion, Embedded Literacies courses would follow the same path as currently exists for foundations courses. Within the ASCC, disciplinary panels review courses for consideration in the GE.
- Panels would continue to have representation from other colleges in keeping with current practices.
- For the College of Arts and Sciences, any program seeking approval for a literacies component would send a syllabus and application to the Embedded Literacies Committee. If a new course for the themes, the Themes committee would review for that content.
- For non-Arts and Sciences colleges, a course with embedded literacies component(s) would first be approved through the appropriate college's curricular process, then flow to the appropriate Arts and Sciences Curriculum Committee panel for consideration of inclusion in the GE foundations (status quo to current model).
- Courses submitted to the theme committee and for either advanced writing, data analysis and technology could be reviewed simultaneously by the theme committee and the Embedded Literacies Committee. Online advanced writing courses would be reviewed by ASC Tech for best practices.

How will Embedded Literacies be assessed?

We expect that programs will conduct assessments of their embedded literacy courses. Proposed literacy courses would follow the current GE approval process and include the following components for assessment:

1. A course syllabus that follows University syllabus template guidelines.
2. A GE pedagogy description that shows how the course will incorporate best practices for the appropriate pedagogy.

For data analysis, these include:

- How students gain practice in using statistical thinking for problem solving
- How the course emphasizes conceptual rather than procedural understanding of data
- How the course provides iterative practice and active learning opportunities
- How the course teaches the use of technology to assist in data analysis

For advanced writing, these include:

- how students gain varied and significant writing experiences or information literacy skills involving written communication
- how the syllabus indicates the purpose for each written assignment.
- how the course provides iterative practice through revision, scaffolding, or re-purposing

- how the course includes opportunities for feedback on writing and revision
- how the course encourages students to reflect upon their writing knowledge and skill for their future writing.

For technology, these include:

- how students discuss and evaluate technologies in a variety of historical, cultural, and social contexts
 - how students discuss and evaluate the innovation, development, and use of a variety of technologies
 - how students extensively discuss and evaluate the ethical, legal, and social impacts of a variety of technologies
3. A rationale that discusses how each expected learning outcome in the embedded literacy will be met in most of the following: (a) course objectives, (b) readings or lecture-discussions of topics, (c) written assignments and (d) other relevant course components.
 4. An assessment plan which explains how faculty will assess the effectiveness of the course in achieving expected learning outcomes.
 5. Methods of assessment. Methods of assessment should at minimum include direct methods. Direct methods include embedded questions; pre/post evaluations or writing evaluations of student work; portfolio evaluations; performances, and rubric-based evaluations of student work. Indirect methods assess students' opinions or thoughts about their knowledge, skills, attitudes, learning experiences. Examples are student self-evaluations and surveys about what students learned in the course.
 6. Level of student achievement expected for each ELO. Specify the level of student achievement expected for each ELO. For instance, define the percentage of students who should achieve a specified level on a scoring rubric.
 7. Assessment rubrics: We recommend that units develop scoring rubrics to help assess how well students are meeting ELOs reflected in particular assignments. Students are not expected to have acquired all the knowledge, skills, and attitudes/perspectives listed under the various ELOs in order to complete the assignment satisfactorily. At a minimum, students are typically expected to meet Milestone 2 [Benchmark = (1); Milestone (2); Milestone (3); & Capstone (4)].

Please note one final difference between this proposal and the Policies & Procedures proposal. That proposal suggested delaying the roll-out of the embedded literacies as part of the new GE for 1-2 years. *This proposal* recommends that units could and should begin working immediately on submission of a plan for incorporating embedded literacies into their programs. This concurrent roll-out of the embedded literacies with other components of the new GE will demonstrate the university's recognition that those literacies are essential to undergraduate education and allow OSU to keep pace with our Big 10 peers, as Michigan, Minnesota, Indiana, Illinois, Iowa, and Wisconsin already have university-wide literacy programs

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