Using Understanding by Design to Create a University Orientation Class Grounded in Information Literacy

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Recommended Citation

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Abstract

This article describes the process of redesigning UC1130: Information Literacy for College Research, a class taught at the University of Toledo, in Toledo, Ohio. This redesign was conducted by Jennifer Joe and Wade Lee-Smith, librarians at the university, and facilitated by the University of Toledo's University Teaching Center, Denise Bartell, the Associate Vice Provost for Student Success, and Thomas Atwood, the Associate Dean of University Libraries, who was the creator of the original curriculum for UC1130. The course redesign was motivated by two factors: incorporation of the ACRL Framework for Information Literacy in Higher Education, and the class's inclusion in a FYE Pilot Program.

Keywords: Understanding By Design, Information Literacy, Instruction, First Year Experience

Introduction

The University of Toledo has taught a class entitled, "Information Literacy for College Research" since 2012. The home program, department, and college for the class has changed frequently over this time period due to university restructuring, but it has been taught exclusively by librarians. This class is credit bearing, with students earning credit in the humanities subset of the university's general education classes and is distinct from the information literacy instruction taught by librarians as drop-in guest lecturers in other classes. Its latest iteration is housed in University College and was taught in Fall 2019 in two sections by two university librarians. The course description reads,

> This course will provide information literacy skills specific to accessing sources and materials appropriate for university level

research. Students will acquire a broader knowledge of library services and resources. Additionally, students will learn to apply research logic in order to utilize library catalogs, electronic databases, the World Wide Web, and print resources. By building experiential knowledge, students will gain an understanding of information creation, dissemination, and applications through utilizing various research strategies and scholarly communication. (University of Toledo, 2018, p. 870)

These goals are accomplished through lectures, demonstrations, and various in-class and out-of-class assignments and are assessed through a research portfolio turned in at the end of the semester.

The class was originally designed by Thomas Atwood prior to the filing of the *Framework for Information Literacy in Higher Education*, published by the Association of College and Research Libraries, which has become a guiding document in the creation of information literacy documents, plans, classes, and programs in university libraries. Some additional modifications had been made, both formally and informally since the course was designed, but it was important to the new instructors to assure the alignment of the course to the Framework.

University Orientation at the University of Toledo and the FYE Pilot Program

University orientation has been offered at the University of Toledo in individual departments and colleges and freshmen are required to take it in many programs. These orientation classes can vary, depending on the needs and desires of the program, but a typical class, AR/ARS100, is described in the course catalog as,

> Course will introduce new students to the university and college, provide information on requirements, regulartions [sic], campus resources and career exploration and help students develop academic skills. It is required of all new students. (University of Toledo, 2018, p. 26)

This example is a college-wide orientation class taught by a variety of individuals in disciplines housed in the College of Arts and Letters. Other colleges, especially in the STEM disciplines and colleges with professional programs, such as the College of Business & Innovation, have their own orientation classes designed for students which are discipline specific.

Recently, the Associate Vice Provost for Student Success, Denise Bartell, and an FYE Task Force proposed a pilot study focusing on changing how university orientation would be offered. This proposal involved embedding the elements of orientation in general education classes that already existed in the university. Bartell had implemented a similar program at the University of Wisconsin – Green Bay prior to coming to the University of Toledo and had impressive results, including higher retention through four years (Bartell, Staudinger, Voelker, Graybill, & Yang, 2018). Participants were also, "12 percent more likely to graduate in four years than their peers from similar backgrounds" (Bartell et al., 2018),

in addition to other self-reported benefits. Volunteers to teach sections of this pilot FYE combination course were solicited and two librarians were approached to teach Information Literacy for College Research (referred to going forward by its course designation, UC1130) as part of the FYE Pilot Program. The two sections would be offered among a total of fifteen sections in a variety of disciplines.

Project Team and Planning

The core of the project team consisted solely of the two instructors, Wade Lee-Smith and Jennifer Joe, but the project could not have been completed without a number of other people. The project began at the behest of Denise Bartell, when she discussed the inclusion of UC1130 in the FYE Pilot with Thomas Atwood, who had taught the class previously. He then subsequently asked Wade Lee-Smith and Jennifer Joe in early Spring 2019 to teach the class during the Fall 2019 semester.

Lee-Smith and Joe attended the first information session for the FYE Pilot Program on April 2, 2019. Between this session and other conversations with Denise Bartell and Thomas Atwood, it was clear that the pilot program necessitated the review and potential redesign of the existing information literacy class. In order to achieve this, the instructors for the two sections attended the university's week-long Course Design Institute (CDI) in May 2019. The design institute used Understanding by Design (UbD), also frequently referred to as backwards design, to frame the approach to redesigning the class; while the instructors attended the CDI in part

to receive instruction in UbD, this could be accomplished in other ways depending on an institution's available resources. The Course Design Institute was open to any instructor who wanted to design or redesign a class with guidance from the university's Office of Assessment, Accreditation, and Program Review, but space was limited. There were eleven people in the cohort, including the two librarians. They were the only instructors designing a class for the FYE Pilot Program in the cohort.

Understanding by Design as a Framework

UbD is a way of thinking about teaching that focuses on students, rather than teachers. Wiggins and McTighe (2005) note that a lot of the talk about teaching among educators focuses on what the instructor might want or like but that a more "thoughtful and specific" approach focused on the learner might be more effective in teaching. This approach, taken in the CDI, starts with a big idea––which the facilitator referred to as a big rock (from the big rock parable relayed by Covey, Merrill, & Merrill (1994) in *First Things First*)––which relates the idea that one cannot fit a big rock (idea) in a container (class) if it has already been filled with smaller objects (ideas). Everything that comes after the big idea should connect back to the big idea. From this big idea, the instructor develops their goals, which are "formal" and "long-term" and usually derived from state, institution, or program standards (Wiggins and McTighe, 2005, p. 58). UbD then breaks the big idea down into measurable student learning outcomes (SLOs) using active lan-

guage, after which come assessments that evaluate how well students are working toward those outcomes, and then, finally, aligning course content and teaching methods to support students in the order they will be assessed and to the level at which they are expected to perform (Wiggins and McTighe, 2005).

UbD has become a hot topic in information literacy, with workshops and webinars on the application of UbD popping up with increasing frequency; at the ACRL Conference in Cleveland in 2019, there was a pre-conference workshop dedicated to applying UbD to information literacy instruction. This increase in focus may be due to the publication of the ACRL Framework, the critical orientation of which, it has been noted, naturally draws attention to the concepts of Understanding by Design (Hinchliffe, Rand, & Collier, 2018). While the focus of UbD is to better teach the content so that students will be able to learn it, there have been other benefits as well; Mills, Wiley, and Williams (2019), for example, had success in implementing backwards design in information literacy instruction and found it to be, "an effective way to collaborate with faculty (p.180)."

Applying UbD to an Information Literacy Course for Transformation

From the beginning, it was clear that information literacy and orientation had a common goal for students. The 'big rock' of this class was to provide students with the information and tools necessary for a good foundation in research skills and knowledge of the university so that they would be able to move forward with confidence into other classes. It is hoped that, with this foundation, the playing field will be more level for underserved and underrepresented populations that would typically be at risk for non-completion, replicating the results Denise Bartell had seen at the University of Wisconsin- Green Bay (Bartell et al., 2018). The original paperwork for the course design and implementation of UC1130 had not included a succinct, overarching purpose to the class, so the librarians identified this 'big rock' based on their own experiences with teaching information literacy.

The next step in the process was to identify student-centered goals for the class. The original goal or goals of the class were not explicitly stated in the syllabus or course approval documents, so these, like the big rock, were unique to this version of the class. The two librarians identified six goals, four of which focused on information literacy, and two on orientation.

- *Students will know basic research skills applicable to a variety of information needs.* As an information literacy class, it was important to focus on research skills for the content portion of the class. It was also important from the additional contexts of this class that these research skills should be applicable not only to the research done for this class, but also the research for other classes, regardless of student major, as well as information needs outside of the classroom. Most, if not all, students taking this class were expected to be undeclared majors, so tailoring the class to a specific discipline was impossible as well as unwise.

- *Students will learn how good information seeking behaviors will help them in their daily lives.* The librarians also agreed that having the skills taught with explicit relation to real world information needs would give students more buy-in. It was also unclear when these students, first-semester freshmen, would have research assignments, so tying these skills to non-academic purposes would give students clear opportunities to continue using these skills and keep them fresh in their minds until academic assignments require them.
- *Students will learn how to competently address information needs.* It was the librarians' goal to not only give students an idea of how to do research, but to give them the tools to be able to do it effectively by the end of the course, because they could need these skills the very next semester, or even during the same semester. When they encounter instruction in information literacy after the completion of the course, this information should be a refresher, moving them toward an expert status.
- *Students will understand how information's value is relative to their objectives.* This goal is explicitly part of the Framework and reflects the fact that there are different uses for information. It will also include the fact that students are information generators, both passively (such as their personal data, which is frequently collected both inside and outside the university) and actively (as they continue with their studies and begin making contributions to the scholarly discussion.)
- *Students will appreciate the resources avail-*

able to them outside the classroom. This goal reflects the purpose of orientation. In order to help ensure student retention and wellness, it is imperative that they not only know what help is available to them as they encounter challenges both in their studies and in their lives outside academia, but value that help and use it when necessary.
- *Students will realize their agency in navigating their college journey.* Another part of orientation is making sure students know that they are the only ones who are responsible for what they achieve in college. In association with this goal, the librarians will inform students of the myriad of experiences, opportunities, and support services available to them through the university and related partnerships, and impress upon them the importance of utilizing the resources to make the most of their college experiences.

As is prescribed in UbD, these goals reflect what students need to learn from the class in order to meet the purpose of the class, rather than what the librarians felt was most important to learn from the class. From these goals, learning outcomes were developed.

Eleven learning student-focused outcomes were identified for the class. Seven of these learning outcomes were based in information literacy and four were based on orientation. They have been grouped below according to Bloom's Taxonomy (1956) and are as follows:

Knowledge
Outcome A: Students will be able to identify the research need in a given problem or issue.

Outcome B: Students will be able to identify the resources available to them.

Outcome C: Students will be able to identify first points of contact for resolving common university roadblocks.

Comprehension

Outcome D: Students will be able to discuss the strengths and limitations of information seeking methods.

Outcome E: Students will be able to employ research techniques to answer a given problem or issue.

Application

Outcome F: Students will be able to make use of one or more university resources to solve a problem or gain more information.

Outcome G: Students will be able to plan and develop a reasonable timeline to accomplish course assignments.

Analysis

Outcome H: Students will be able to select appropriate information resources to answer academic, civic, and social information needs.

Evaluation

Outcome I: Students will be able to justify the use of their chosen research techniques in answering their question.

Outcome J: Students will be able to evaluate information found in non-academic online sites.

Outcome K: Students will be able to assess search results for relevance and appropriateness to their research question.

The orientation outcomes for the class (B, C, F, G) were designed to span the first three thinking levels of Bloom's Taxonomy (1956), as the orientation part of class will teach students how to utilize specific skills and resources in the context of the university for immediate benefit; it will be up to them to question and evaluate the efficacy of these sources after they have experienced them. The information literacy outcomes (A, D, E, H, I, J, K) will require students to think more critically about information and give them a foundation for higher level thinking that will be expected in their university classes in the future. All student learning outcomes were based on the existing student learning outcomes for the class and conversations that the instructors had had with the other FYE Pilot Program instructors and the program coordinator, Denise Bartell. While they were reformulated to better reflect UbD thinking and uncover gaps in content, they map to the official learning outcomes designated by University College and the FYE Pilot Program for compliance with accreditation standards and uniformity between the different FYE classes.

The next step in redesigning the class was to think about the assessments that would be present in the class and make sure that they directly correlated with the learning outcomes that had been identified. There were several assessments in the original version of the class that were important to include in the new version of the class for continuity and to preserve compliance with university standards. These assignments included an information literacy self-assessment performed by the students at the beginning of the class and a research portfolio turned in at the end of class; these two assignments were foundation-

al to assessing the efficacy of the course. Several other assignments in the original class were also included to support the students' completion of the research portfolio. These assignments were found to be aligned with one or more of the identified student learning outcomes. Additional assessments were developed to provide support for learning outcomes not covered by the original assignments and to provide more reinforcement for the most important outcomes. These assignments included more reflections and discussion focused on non-academic information needs and assignments assessing students' knowledge and use of student support services. In order to ameliorate the overwhelming effect of this workload on underprepared freshman, some of these assignments are non-graded. A table of these assignments, their descriptions, and their associated SLOs, designated by letter, follows (Table 1.1).

The librarians were then asked by the Course Design Institute to evaluate the order of assessments and plan them against outside constraints, such as the university holiday schedule and likely student workloads. While some major assignments are in the usual places (such as the final two weeks of the semester), other major assignments have been moved to times where students might not be as busy and would be more able to focus on UC1130, as opposed to their other classes. The librarians have also identified a need for more low-stakes assignments throughout the semester to balance the weight of those major assignments and to reinforce certain aspects of the class.

It was only then that the instructors could focus on the content of the course, in direct opposition to the way that classes are typically designed. At least one participant in the Course Design Institute, working alongside the librarians, had been unnerved by the order in which UbD approaches class design. However, it made sense in the context of being student focused that one would start with the goals and outcomes and work from there. This did require some shifting of how information literacy would be taught in this iteration of the class; the librarians chose to split the class into skills-based sessions and critical thinking-based sessions. The first eight weeks

Table 1.1: UC1130 assignments and their associated student learning outcomes.

Assignment	Description	SLO(s)
Information Literacy Self-Assessment	An assessment giving students the opportunity to reflect where they are at the beginning of the class.	B, H
Note Taking Assignment	Demonstration of their ability to take notes in a research context; students can use whatever note taking method they want to make notes on an assigned reading.	F

Information Need Reflection Essay	Students write about a time when they needed information and where they found that information at the time.	A, H
Topic Selection and Timeline Assignment	Students select a topic to research and complete a timeline for how they will accomplish this, taking into account major assignments in their other classes.	A, G
Web Checklist	Students evaluate website resources using a checklist.	E, H, J, K
Database Search Results Reflection Essay	Students evaluate articles and write about the process they used to find those articles.	E, H, J, K
Student Services Matching and Discussion	Students participate collaboratively to match common student problems to the resources available to deal with them.	B, C
University Resource Short Essay	Students write about their experience contacting a university resource, including how that university resource could help them.	B, C, F
Formal Class Discussion	Students participate in a topic-oriented class discussion that requires sources.	A, E, I, K
Information Need Reflection – Part 2	Students reflect on how they would seek information for their decision in the earlier Information Need Reflection Essay now that they have taken the class.	A, B, I
Presentations	Students present on their research process.	A, D, E, H, I, J, K
FYE Reflection Essay	Students write about what they have learned about the university, its resources, and college life.	B, C, F
Research Portfolio	Students find 15 sources on their topic and describe their process for finding, evaluating, and selecting the resources.	A, D, E, H, I, J, K

of the class would be about introducing students to the campus and teaching them how to create a research topic, plan a research timeline, and perform the act of finding resources in their various formats. The following seven weeks were about the ideas embodied in the ACRL Framework, and focused on showing students that research is important, that it is a process, that information can be used for multiple purposes, and that they are entering a conversation that they will be able to contribute to. This last part seemed most important, as the class was designed for underrepresented students who might not inherently understand that they had been invited to the conversation by entering college.

Upon finishing the course design institute, the course plan was not complete; there were several more conversations between the two librarians about the exact content of each class session and which readings should be assigned. Minor modifications to the course structure, session timelines, and exact content continued up until the start of the Fall 2019 semester, when the class was taught. The class will be taught again as part of FYE in Fall 2020; a section of the course was also taught in Spring 2020 but, because of its timing, was not part of the FYE Pilot program. Since teaching is an iterative process, lessons learned from the implementation of this class are being incorporated into the Fall 2020 instruction. At this time, the instructors have relied on guidance from the university Student Disability Services department and accessibility features built-in to Blackboard to accommodate students when necessary. Some of these accommodations will be built into future iterations of the class, such as making sure all handouts are accessible and online where they can be reformatted (e.g., to audio).

Implementation

Classes began on August 26, 2019, with approximately 25 students in each section of the class. Unfortunately, there were not enough responses to the informed consent document to report reliable, statistically viable grading data, but both instructors made ample observation of how class progressed from their points of view. Both instructors agree that Understanding by Design allowed them the ability to organize the class more logically. There was nothing that could be considered filler content, and both instructors could articulate the purpose of each activity, assignment, or lecture in the larger context of the class. When re-writing assignments during the course of the semester, it was easier to ensure that the assignments truly reflected the learning outcomes, because these connections had been made during the planning stage. Upon reflection at the end of class, it is also clear where the deficiencies lie in addressing some of the learning outcomes, even without looking at student grades.

One element of the class that was successful for both sections of the course was the formal class discussion activity. This element brought together the information literacy components and the FYE components in the class. Students were required to use the information literacy skills they had been learning in the first half of the class to find two sources on a topic that the class had decided on. They brought these sources to a class discussion on the topic, where they navigated the expectations of a college level discus-

sion, something that many of them had not yet fully participated in. Virtually all of the students in both classes were engaged in the discussions in their respective classes, and most had found scholarly articles that they were able to reference in the flow of conversation. Those who did not use scholarly articles were still able to participate in the conversation through accounts of first-hand experience with the topics chosen. Both instructors consider this activity to be the most successful part of the class.

Another element that brought hands-on learning to the class was an activity wherein students had to find a book on their research topic in the library. Meeting the goal that students will know basic research skills applicable to a variety of information needs, students were asked to search the library catalog for a book on their chosen research topic that was available as a physical copy in the library. Because the class was taught in a classroom in the library, the students were then asked to find the book and check it out at circulation. These are skills that are frequently overlooked in one-shot classes in favor of searching for articles but are still important to every day knowledge seeking and have application outside of the classroom and research setting. In Jennifer Joe's class, this activity was successful; most of the students came back to class with an appropriate book for their topic, and those who did not had pertinent questions that allowed for more discussion about the activity. Some of the students who had similar topics were even able to help each other. Wade Lee-Smith's class, however, did not take advantage of the active learning opportunity in the same manner; many students came back empty handed, and engagement with

the students after the activity was hard. Ultimately, he found the activity unsuccessful in what he had been trying to convey.

Some elements were unsuccessful in both sections of the class. One such element came from the class session on visual literacy. Visual literacy had not been well covered in the original iteration of the class and had been identified as a 'missing piece' by the instructors. This missing piece affected the goal stating that students will learn how good information seeking behaviors will help them in their daily lives. Visual literacy impacts everyone's lives because the average person sees many images daily that are attempting to convey information, from advertisements to warning signs. In order to teach this class, the instructors relied on experts from another part of the university, who had more experience in visual literacy, to provide a lesson plan. Visual literacy has been an initiative outside of the library for many years, and the instructors felt it prudent to defer to their expertise. The lesson plans available, however, did not meet the true goals of the class for two main reasons. First, they attempted to cover information in far more depth than the students required as freshmen. Second, the active learning elements present in the lesson plan were brief and ultimately unengaging. Because of these two problems, this lesson plan is seen as a failure, though not a failure of Understanding by Design. If anything, it is an example of the necessity of UbD; had the instructors felt freer to create their own visual literacy lesson plan, it could have aligned better to the rest of the course.

It is clear from these examples that though both sections had been designed the same, the two instructors' experiences diverged. Some of

this could be because of the instructors' own styles, but some of it may also be due to the differences in the makeup of the two classes. Jennifer Joe found that the redesign of the class, and incorporating active learning especially, engaged her students in material they might have otherwise found boring. Her class was talkative and sociable from the outset, and active learning gave the students an outlet for this energy. The class discussion was especially successful from an engagement standpoint. Ms. Joe also found the universal design of the class made her more flexible in her teaching, so that when class did not proceed as planned, she was able to compensate more easily. Wade Lee-Smith, however, found that the class discussion, while successful, was an aberration––his class was not as amenable to the active learning concept, and struggled with engagement in many of the planned activities. It is unknown whether or not the engagement level of the students in this class impacted their grades, but the principle of constructive alignment espoused by Biggs (1996), gives a good foundation for the possibility. It is a concept that may be explored in subsequent semesters of this class.

Conclusion

Both instructors ultimately felt that the design concept implement here was helpful in restructuring the class and that the class needed to be restructured to meet both the demands of the FYE Pilot Program and the needs of the incoming generation of students. They would especially like to thank the Course Design Institute for the opportunity to reorganize the class with the

guidance and assistance of others who were more experienced in Understanding by Design.

As for the implementation, it is too early to tell whether or not the class as currently designed will be more successful than the previous design; from the first semester, though, it is clear that with some populations, the mere redesign and addition of active learning will not be enough to engage students. Both instructors, however, understand that teaching is an iterative process and look forward to implementing this design again with some adjustments and will continue to gather data to guide their changes.

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