

Integrating Research into Undergraduate Courses: A Review of Two Essential Books

Table 2: Case Studies from *Undergraduate Research in Online, Virtual, and Hybrid Courses* (Hensel 2022)

Title of Chapter	Course/Discipline and Project	Educational Context
<p>Online undergraduate research experience in science, technology, engineering, and mathematics courses</p>	<p>STEM Independent Research Project, Environmental Science; the course is administered through an LMS and contains nine modules to work through</p> <p>Also describes a structured, scaffolded undergraduate research program which includes early experiences (introductory research course and workshop), a bridge to research (recruited into a research-track course), undergraduate research (Research Independent Study course structured as a CURE), and culmination (undergraduate research certificate and a digital certificate for completion)</p> <p><i>Challenge(s):</i> the ability to build this into the curriculum and also bring students into the track</p>	<p>Emory-Riddle Aeronautical University, Worldwide Campus</p> <p>(Private University)</p>
<p>How to incorporate undergraduate online research in a cross-listed, combined undergraduate/graduate humanities and social science course</p>	<p>A cross-listed (for both undergrad and graduate) interdisciplinary (incorporating history and political science) asynchronous course on colonialism</p> <p>Qualitative research paper on the legacies of colonialism, highlighting the relationship between colonization and gender, race, and/or national and/or ethnic identity</p> <p><i>Challenge(s):</i> accessibility to librarian, journals, and ebooks; completing smaller assignments in the sequential order required; peer-review from classmates; time needed on the mentor's side for feedback and meetings</p> <p><i>Success(es):</i> Meetings via phone and video conference platform allowed the instructor to intervene early in the research process for this asynchronous course.</p>	<p>Western New Mexico University</p> <p>(Public University)</p>
<p>Online undergraduate research in behavioral sciences</p>	<p>This chapter discusses how research can be incorporated into individual courses and scaffolded across a curriculum in psychology.</p> <p>Four examples were given as to how to have students be independent creators of original research: serving as a research assistant, conducting a literature review, testing a hypothesis, and working on a team to offer a solution to real-world research.</p>	<p>Washington State University</p> <p>(Public University)</p>

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	<p><i>Challenge(s):</i> ways to connect with students and make sure they felt they were part of the process and not isolated</p> <p><i>Success(es):</i> students being able to present and publish their work</p>	
<p>Undergraduate research and online history courses</p>	<p>The focus of this chapter is on the incorporation of research into lower-level courses in history.</p> <p>It focuses on ways to introduce the importance of primary sources in research. This includes using archives and special collections.</p> <p>This has benefited from technology which has allowed more primary sources to be accessed without having to travel to locations.</p>	<p>Western New Mexico University</p> <p>(Public University)</p>
<p>Conducting undergraduate research in business in the online environment</p>	<p>Instead of discussing one particular course, this article discusses CURE in marketing and data (e.g., marketing principles, marketing, research, and data visualization) in general.</p> <p>Video conferencing, file sharing, video recording, and other business operation/analytics tools, as well as learning management systems are mentioned as key tools providing deep support for undergraduate research, creating possible partnerships with companies and organizations outside a school's functional region.</p> <p>It emphasized the importance of institutional and staff support and preference for video feedback over written feedback from students.</p>	<p>Carroll University</p> <p>(Private University affiliated with the Presbyterian Church)</p>
<p>How action research builds confidence in online early childhood education students</p>	<p>Action research in a capstone course; research-based practices that address the learning outcomes developed through studying the child</p> <p>Action research cycle: observe, research, plan, implement, collect data, reflect</p> <p>Pandemic adaptations: providing preschool services virtually; new ways to connect with families (e.g., parent coach/consultant); working with families to solve learning or behavior issues with their children; new ways to conduct parent conferences via online tools</p> <p><i>Challenges/observations:</i></p> <ul style="list-style-type: none"> • Students were more motivated to complete the project thoroughly when presentation was live 	<p>Brandman University (now University of Massachusetts Global)</p> <p>(Private university with 25 campuses throughout California, Washington, and a virtual campus)</p>

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	<ul style="list-style-type: none"> • compared to prerecorded. • Focus more on the research-based efforts instead of perfect outcomes • Participation has been a challenge. Clearly stated expectations helped. • Breaking down big tasks into small steps helped motivation. • Creativity and persistence made much possible. 	
<p>Online undergraduate research in health professions</p>	<p>The focus of this chapter is an “Applied Behavioral Analysis” graduate program. What is unique is that they adapted a scientist-practitioner model to embed research in the program curriculum and other experiences.</p> <p>Discusses how the curriculum focuses on the application of research into practice</p> <p><i>Challenge:</i> the curriculum is asynchronous and can be hard to find time for synchronous work. This aspect can make communication of opportunities hard for students to find.</p>	<p>Russell Sage College</p> <p>(Four-year private institution)</p>
<p>Designing an asynchronous online capstone research project: public policy, community evaluation, and the interplanetary initiative</p>	<p>The focus of this chapter is a senior capstone course that has been adapted into an online format and builds on previous statistics and research methods courses in the program.</p> <p>Working with instructional designers on campus was crucial for designing this course. The students would do a group project and many of them were not excited to do so.</p> <p><i>Challenge:</i> engaging students in research projects that they are interested in for such a short period of time.</p>	<p>Arizona State University</p> <p>(Public University)</p>
<p>From observers to active participants—transitioning the identity of undergraduate online research students—education</p>	<p>Capstone course that bridges the gap between the subject-matter-rich undergraduate program and the pedagogy-focused credential program. It is offered both in online and on-ground classrooms.</p> <p>Topic: any education topic chosen by student; does not require students to design a research project or collect data but requires them to establish and justify the topics, provide a literature review, and reflect on how the new information fits with what they already know.</p> <p><i>Challenges (associated with being online):</i></p> <ol style="list-style-type: none"> 1. Lack of high-touch engagement 2. Difficult to engage single student in personal conversation 	<p>University of Massachusetts Global (previously named Brandman University)</p> <p>(Private university with 25 campuses throughout California, Washington, and a virtual campus)</p>

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	<p>3. Size of class (20-30) makes it difficult to engage every student in meaningful discussion.</p> <p>Focus: engagement and rigor, discussion forum, continuous feedback</p>	
<p>“What we know must be”—Undergraduate research in an online Shakespeare course</p>	<p>The chapter discusses different projects to embed research into a Shakespeare course, dependent on the type of artifact used. Therefore, many examples are given on assignments and resources available.</p> <p>This chapter takes advantage of technology and how “digital archives democratizes previously niche areas of study and has reduced the need for cost-prohibitive travel,” (152).</p>	<p>Christopher Newport University</p> <p>(Public University)</p>
<p>Fostering relationships and communicating effectively</p>	<p>Multiple courses with the goal of writing a five chapter research project in Special Education after taking elective courses that were geared to identifying a topic area of research.</p> <p>Effective communication was important for collaboration. Importance of creating mandatory check in opportunities. This helped to build relationships in the course and success for students and faculty.</p>	<p>University of Massachusetts Global (previously named Brandman University)</p> <p>(Private university with 25 campuses throughout California, Washington, and a virtual campus)</p>
<p>Virtual showcases of student research/creativity</p>	<p>The chapter discusses an institution that offers 3 virtual showcases for students to present their research (along with 1 in person) and the decisions that were made to host the virtual showcase (e.g., platform used; synchronous, etc.).</p> <p>Chapter provides some best practices to consider when developing a virtual showcase and brings up some interesting concerns about accessibility.</p>	<p>Northern Kentucky University</p> <p>(Public University)</p>
<p>Turning “limitations” into opportunities; historical theater</p>	<p>Discusses two courses that had to be switched online due to COVID: Historical Theatre and Internship in University Archives and Special Collections.</p> <p>Showed that students could do online interviews - cheap and instant archive and performance ethnography in the first course. Also, how students were able to continue archival work without actually being in the location.</p> <p>Some issues were mentioned about doing the performance ethnography in the first version but it seems possible in the future.</p>	<p>Valparaiso University</p> <p>(Private University)</p>

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<p>Virtualizing undergraduate research in the geosciences</p>	<p>This chapter highlights the potential to use earth and planetary data that has already been virtualized and discusses some of these applications and databases can be used in geology courses.</p> <p>Highlights the importance of giving students necessary instructions (e.g., videos, tutorials) in how to use these resources in geology courses. Also, gives good examples of scaffolding of assignments and project to give students more autonomy.</p>	<p>University of South Florida (Public University)</p>