

UNDERGRADUATE RESEARCH IN ONLINE, VIRTUAL, AND HYBRID COURSES

Proactive Practices for Distant Students

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Foreword by Lynn Pasquerella

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COUNCIL ON UNDERGRADUATE RESEARCH

Sty/US

STERLING, VIRGINIA



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PUBLISHING, LLC.

Published by Stylus Publishing, LLC.
22883 Quicksilver Drive
Sterling, Virginia 20166-2019

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Library of Congress Cataloging-in-Publication-Data
CIP data for this volume pending

13-digit ISBN: 978-1-64267-412-5 (cloth)
13-digit ISBN: 978-1-64267-413-2 (paperback)
13-digit ISBN: 978-1-64267-414-9 (library networkable e-edition)
13-digit ISBN: 978-1-64267-415-6 (consumer e-edition)

Printed in the United States of America

All first editions printed on acid free paper
that meets the American National Standards Institute
Z39-48 Standard.

Bulk Purchases

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Call 1-800-232-0223

First Edition, 2022

INTRODUCTION

Jennifer G. Coleman, Nancy H. Hensel, and Wm. E. Campbell

The goal of this book is to draw attention to undergraduate research in online courses and with distant students. We want to add to the accumulating dialogue about the value of undergraduate research to all students. There is a long history of faculty engaging students in research and a wide net of academics passionate about undergraduate research. There are many articles, national reports, and texts written about the topic across disciplines. Recently, focus has grown about course-based research as a way to reach more students earlier. These activities have been documented at research universities and liberal arts colleges and woven throughout the curriculum at many community colleges. We wish to spotlight the largely overlooked group of online, virtual, and distant students. With the pandemic, we realized we needed to extend coverage to ways virtual and online approaches can also be used to enhance on-the-ground (or on-ground) efforts.

The spark for the book came in 2018 when the three of us connected over this shared interest. That year, Jennifer traveled to four conferences hoping to speak with colleagues about online undergraduate research. Across two psychology conferences, the summer meeting of the Council of Undergraduate Research (CUR), and the annual meeting of the Online Learning Consortium, she came up empty-handed. Jennifer was directed to talk to Nancy, noting that if anyone knew the status of the dialogue, it would be she. Nancy confirmed what was becoming apparent; there was little formal dialogue occurring about online undergraduate research, and we needed to address this quickly. With Bill, we share an appreciation of undergraduate research and desire to facilitate access for all students.

In *Undergraduate Research in Online, Virtual and Hybrid Courses: Proactive Practices for Distant Students*, we start off with foundational chapters about undergraduate research and online, or technology-facilitated, education. The remaining chapters then shift to disciplinary focus, interspersed with some student development and big picture issues. Contributing authors discuss a range of practice-informed expertise, with some who have been implementing these practices for over a decade and others who have pivoted

online due to necessity caused by recent events. Regardless of why or how long they have been using these practices, one theme is consistent across all chapters: There is value in carrying these approaches forward. Whether it is to enhance on-ground practices, streamline efforts, use cutting-edge tools that are superior, allow access to previously inaccessible resources, or an issue of providing new opportunities to remote students who were previously excluded from undergraduate research, these authors are unified in believing in the importance of undergraduate research for distant students.

Outline of the Chapters

One approach to reading this book might be to start with the chapter that is most aligned with your own discipline. We encourage you to examine chapters outside and dissimilar from your expertise, however. Realizing research with new groups of students across new modalities, like online and virtual methods, might require that we do things differently. It can be difficult to reimagine what has worked for us on the ground. And it can be challenging to realize that we can achieve the same success and perhaps even greater experiences by moving away from what has been working well. We hope you might open yourself up to new approaches. Just as many of us have realized that some “pandemic approaches to work” are things we want to carry forward when we return to “normal,” some of these techniques for realizing undergraduate research online and virtually might enrich our current practices moving forward.

The text starts with a look at undergraduate research as an established high-impact practice. Wm. “Bill” E. Campbell provides a comprehensive appreciation of that in chapter 1, “The Power of Undergraduate Research.” He also offers us firsthand testimonials to highlight the student perspective on the value of such experiences. By presenting the wide range of disciplines and conceptualizations of scholarship across many fields, Bill helps us come to a shared understanding of what undergraduate research is. The benefits of undergraduate research activities to students, faculty, and our colleges and universities are reviewed.

In a second foundational chapter, “Online Education and the Need for Undergraduate Research,” Jennifer G. Coleman reviews some history and issues around distance education, including definitions of terms used to describe delivery methods. With a focus on why virtual and online education would particularly benefit from undergraduate research, she argues it is a good fit for online learners and a matter of educational equity. This chapter ends with an overview of ways research can be incorporated into online and virtual courses to meet the course and student learning objectives.

In the remaining chapters, contributors address implementing undergraduate research across the curriculum as well as thematic issues related to the work and its effects on students. Emily K. Faulconer starts with a focus on “Online Undergraduate Research in Science, Technology, Engineering, and Mathematics Courses” in chapter 3. She details a framework for integrating experiences throughout courses in an online engineering program. From her early experiences of failing to draw students in to her fully developed program, Emily provides the reader with a model that could be followed in any discipline.

Integrating research experiences into research courses is challenging enough, but Lydia Huerta Moreno gives us advice about how to do this in a course that is cross-listed by disciplines, in the humanities and social sciences, and by levels, undergraduate and graduate. Her experiences shared in chapter 4, “How to Incorporate Undergraduate Online Research in a Cross-Listed, Combined Undergraduate/Graduate Humanities and Social Science Course,” are convincing that we all can tackle the challenges in our areas.

In chapter 5, Jennifer G. Coleman and Lee William Daffin, Jr. describe “Online Undergraduate Research in Behavioral Sciences.” Both authors come from the field of psychology, which has a strong presence in undergraduate research and online education. In fact, psychology is one of the few disciplines in which we could find publications about how to integrate undergraduate research in online courses. Lee and Jennifer describe what they do in their fully online, largely asynchronous curricula that start in entry-level courses and culminate in applied senior projects.

Andrew S. Hernández III guides us to an abundance of online data sources about a range of topics in chapter 6, “Undergraduate Research and Online History Courses.” Andy explains how archives and special collections continue to grow as digital assets and how increased access benefits educational opportunities for all but particularly low-resources institutions. He engages students with these sources early, using scaffolding to increase students’ critical analysis across courses. He also encourages students to use resources across languages that expand their opportunities.

In chapter 7, “Conducting Undergraduate Research in Business in the Online Environment,” Julio C. Rivera reminds us that the mentoring relationship and outcomes of research experiences are possible online and that online and virtual experiences align with the reality of future work environments for students. He advises us to envision a blended/hybrid approach moving forward.

Action research is a powerful way to have students use research tools as they engage in their disciplines. Julianne Zvalo-Martyn shares “How Action Research Builds Confidence in Online Early Childhood Education Students,”

chapter 8. Education programs faced immense challenges throughout the pandemic. Such programs also share the challenge of a split focus between research and practice at times. Julianne helps us appreciate how her program manages to mentor distant students in both successfully.

In chapter 9, “Online Undergraduate Research in Health Professions,” Lori L. Finn leads us through a similar model in applied behavior analysis. Again, her students are mentored in both science and practice as they engage in the research process. Lori describes required components of her program as well as a range of additional research activities that students are provided. At the core, what she does is broadening students’ awareness about how research is essential to good practice.

Margaretha Bentley describes how she gets students to conduct research while exercising their skills in public policy in chapter 10, “Designing an Asynchronous Online Capstone Research Project: Public Policy, Community Evaluation, and the Interplanetary Initiative.” She has her distant students working in teams, a teaching technique that is well aligned with how technology is used in work settings. Because undergraduate research often involves group collaboration, her chapter offers valued insights for all readers.

In chapter 11, Tami Lincoln describes how she shifts students “From Observers to Active Participants: Transitioning the Identity of Undergraduate Online Research Students.” Across many chapters, we read how scaffolding skills and levels of analysis are important. Tami reminds us that we also have to address the students’ active role in the research process. The role of observer and collaborator might be easy for students to step into, but getting them to move from these secondary roles to being a primary, active creator of research requires more effort. Learning from her trial-and-error experiences can help others be more intentional in their course design.

Similar to chapters that address the volume of online resources available about history (chapter 6) and geosciences (chapter 16), Laura Grace Godwin and David A. Salomon share significant direction for scholars who wish to have their students study Shakespeare. In chapter 12, “What We Know Must Be’: Undergraduate Research in an Online Shakespeare Course,” their extensive resource collection is a gift to scholars, and what they reveal could lead others to mine similar data in their fields.

Chapters 13 and 14 address how technology tools facilitate communication and information sharing. Nicole Nicholson, in “Fostering Relationships and Communicating Effectively: Technological Tools Necessary to Support Undergraduate Research in Virtual Environments,” tells us how she used synchronous meetings and asynchronous approaches in tandem. She offers a valuable way to quantify and document communication and collaboration

such that students are held accountable. That accountability enhances the chance of success in these virtual and online environments.

Shauna Reilly and Samantha Langley-Turnbaugh address “Virtual Showcases of Student Research/Creativity” in chapter 14. When the pandemic closed or reduced capacity at our physical campuses, everyone became familiar with virtual conferences. Many of us now attend our professional conferences virtually and have realized the benefit to our travel budgets and opportunities to engage in communities we couldn’t fit in our schedules before. For colleges and universities that enroll distant students, these technology-accessible events are important to retain in order to ensure equity. We hope this chapter will add to your developing knowledge of how to run such events successfully.

In chapter 15, Kevin Ostoyich, Kari-Anne Innes, and Rebecca Ostoyich walk us through the exciting journey they experienced in “Turning ‘Limitations’ Into Opportunities: Online and Unbound.” These authors are arguably the most surprising converts to online and virtual education. As colleagues who relied on in-person interviews with historical figures, physical archives, and stage acting, moving to virtual and online work was revolutionary. They offer a passionate and compelling illustration about how forced change can open us up to unexpectedly wonderful opportunities.

Joining in the exciting coverage of innovative approaches in other disciplines, Jeffrey G. Ryan tells us about the amazing opportunities to study the geosciences through technology. In chapter 16, “Virtualizing Undergraduate Research in the Geosciences: Freely Available Geospatial Data Resources and Strategies for Their Use,” Jeff provides details about the many online resources that allow students to explore and conduct formal research on inaccessible regions of the world and galaxy.

While the previous chapters were planned before the pandemic, most authors wrote during active stay-at-home orders. We realized that we should open up an opportunity for others to offer glimpses into how they quickly pivoted online. Senior leaders from CUR, Lindsay Currie and Heather Wakefield, tell us in chapter 17 “How CUR Adapted and Evolved in a COVID-19 World.” This chapter describes an effort to support faculty in offering experiences for students, which is exactly the mission of CUR. The pandemic forced CUR to consider new points of access for faculty and program directors who themselves were considering new points of access for students. Moving forward, some of these innovations will be retained, which will broaden inclusion at all levels. The more champions of undergraduate research that CUR can nurture, the more students who can be impacted. Again, we see positive disruption we can celebrate.

When the pandemic hit, we realized that we could not avoid it impacting several elements of this project. In addition to allowing our contributors more time while they adjusted work and personal matters, we also wanted to allow them flexibility in shifting their content if needed. Furthermore, we recruited several authors to write brief pieces that we call pandemic responses. In chapter 18, “Pandemic Responses and Insights,” four contributors reflect briefly on how they pivoted to online and virtual approaches to engage students in research. One contributor helps us consider procrastination, an overarching issue salient for students learning at a distance.

Perhaps a great place to start when reading this volume is the concluding chapter, offered by Nancy H. Hensel. In her concise “Conclusions, Recommendations, and Next Steps,” Nancy summarizes key take-home points from all that the contributing authors shared. Again, she encourages us to consider approaches from other disciplines, in particular those disparate from our own fields of study.

Concluding Thoughts as You Start Reading

As is true with many new ideas, examples of successful implementation can help others adopt the approach. We recruited faculty from across the curriculum who were engaging distant students in robust ways to provide such models. Although empirical validation of approaches was preferred, we realized that, in its infancy, we would be fortunate even to have anecdotal evidence of successful implementation. We hope what you learn from this volume will enrich what you do and allow you to offer opportunities to a larger and broader audience than ever before.

In terms of the pandemic forcing us to consider new ways to reach *all* students and offer more equitable services, we like to think it has been salutary—a positive disruption. People stretched in new ways and to new lengths. We imagine the rebound will not land where we began, but rather, some shift will persist. Early postpandemic outlooks hint at students, faculty, and administrators likely wanting a continued shift toward distant education options. Shape shifting in higher education—changing what we do in form and substance—is not easy. For many institutions, the greatest source of resistance is exactly what was targeted by the pandemic. Our residential educational institutions espouse the value-added elements of on-ground experiences. Some institutions are financially dependent on all dormitory spaces being filled. Transitioning learning to remote modalities is a transformation they cannot afford to make. None of the contributors to this volume claim that on-ground campus experiences should be eliminated and replaced with remote ones. Rather, we convey several basic things: first, that

on-ground experiences can benefit from online and virtual approaches; second, that including remote collaborations and opportunities will enrich students' experiences (and align with the future world of work); and, finally, that ensuring robust undergraduate research opportunities for remote students is feasible and an imperative for educational equity.

Authors' Note

We are grateful to Robin Howard, who served as the director of membership and volunteer strategy and experience at CUR. In her role, Robin served as a resource extraordinaire and helped to make connections among members. At the annual conference in the summer of 2018, it was Robin who brought us together. We are thankful for the connection she helped us make.

