REL Pacific Ask A REL Response

Online Courses; College and Career Readiness

May 2020

Question:

We are looking for information about virtual internships, specifically, or virtual work-based learning (WBL), more broadly.

Response:

Following an established REL Pacific research protocol, we conducted a web-based search for resources related to virtual internships and virtual work-based learning (see Methods section for search terms and resource selection criteria). We first focused our search on studies in the Pacific and other indigenous contexts for greater relevancy to our partners in the Pacific region where available; however, we included studies with more generalizable findings due to the limited amount of research available in these contexts. Because the requestor's area of focus is also on engineering education, we searched for research specific to that topic as well.

References are listed in alphabetical order, not necessarily in order of relevance. Descriptions of the resources are quoted directly from the publication abstracts. We have not evaluated the quality of references and the resources provided in this response. We offer them only for your reference. Also, our search included the most commonly used research resources, but they are not comprehensive and other relevant references and resources may exist.

Note: In response to COVID-19, the 10 Regional Educational Laboratories (RELs) have collaborated to produce a series of evidence-based resources and guidance about teaching and learning in a remote environment, as well as other considerations brought by the pandemic. To access a full list of these resources, visit https://ies.ed.gov/ncee/edlabs/projects/covid-19.

Research References

Bayerlein, L. (2015). Curriculum innovation in undergraduate accounting degree programmes through "virtual internships." *Education & Training, 57*(6), 673–684. https://eric.ed.gov/?id=EJ1069327

From the abstract: "Purpose: The purpose of this paper is to discuss major criticisms of traditional undergraduate accounting programmes and to introduce virtual internships as a curriculum innovation that addresses these criticisms. Design/methodology/approach: The main aim of the paper is to inspire curriculum innovation in accounting programmes though the introduction and discussion of virtual internships as a contemporary teaching model. Findings: The paper provides a detailed outline of the virtual internship model, its advantages and disadvantages, and its development in practice. Originality/value: The paper is likely to be most relevant for academics in undergraduate accounting programmes because it provides a practical guide to the development of this curriculum innovation."

Bayerlein, L., & Jeske, D. (2018). Student learning opportunities in traditional and computer-mediated internships. *Education & Training, 60*(1), 27–38. https://www.emerald.com/insight/content/doi/10.1108/ET-10-2016-0157/full/html

From the abstract: "Purpose: The purpose of this paper is to provide a student learning outcome focussed assessment of the benefits and limitations of traditional internships, e-internships, and simulated internships to evaluate the potential of computer-mediated internships (CMIs) (e-internships and simulated internships) within higher education from a student perspective. Design/methodology/approach: The paper undertakes a systematic conceptually based assessment of the extent to which CMIs are able to replicate the cognitive, skill-based and affective learning outcomes of traditional internships. In addition, the key limitations of traditional internships from a student perspective are identified, and the potential ability of CMIs to address these limitations is assessed. Findings: The findings of this paper highlight that CMIs are able to replicate most of the benefits of traditional internships, whilst concurrently addressing many of their limitations. However, the current paper also identifies a number of important limitations for student learning in CMIs, and provides advice that aims to assist students in maximising their learning outcomes in these situations. Originality/value: The paper is the first to provide a systematic student learning outcome focussed comparison of traditional internships and CMIs. In addition, the paper establishes the high potential of simulated internships for student learning in higher education, and provides students, higher education providers and researcher with learning outcome focussed criteria sets that enable the empirical evaluation of CMIs in future research. "

Beckem, J.M., II, & Watkins, M. (2012). Bringing life to learning: Immersive experiential learning simulations for online and blended courses. *Journal of Asynchronous Learning Networks, 16*(5), 61–70. https://eric.ed.gov/?id=EJ1000091

From the abstract: "Higher education institutions are under significant pressure to provide affordable, sustainable approaches that will prepare their students with the skills they will need after graduation to achieve success in the 21st Century workplace. Digital Media

Simulations are among the new technologies that have emerged with the promise to help institutions better prepare students by providing them with valuable experiential learning opportunities that are easily scalable, reusable, and uniquely suited to enable instructors to assess students while simultaneously providing them with authentic student-centered learning journeys that increase student engagement. This paper shares data from one Digital Media Simulation episode piloted by two cohorts of undergraduate business students at the State University of New York (SUNY), Empire State College. Results from this pilot demonstrate that Digital Media Simulations effectively increased student engagement and promoted deeper learning."

Chen, J., Huang, Y., Lin, K., Chang, Y, Lin, H., Lin, C., Hsiao, H. (2020). Developing a hands-on activity using virtual reality to help students learn by doing. *Journal of Computer Assisted Learning, 36*(1), 46–60. https://eric.ed.gov/?id=EJ1239763

From the abstract: "This study combined virtual reality (VR) technology, the 6E (Engage, Explore, Explain, Engineer, Enrich, and Evaluate) model, and STEM (Science, Technology, Engineering, and Mathematics) education to develop a hands-on activity aimed at helping students to achieve "learning by doing." The participants were 162 tenth-grade students, divided into the Experimental Group (hands-on activity using VR technology) and the Control Group (hands-on activity via lectures). Using sequential analysis, this study investigated how the hands-on activity influenced the students' behavioral patterns in learning. The results showed that all of the students' learning performances and hands-on abilities were enhanced. Moreover, the students who used VR technology achieved both significantly better learning performances and hands-on abilities, indicating that VR might be able to help the students understand abstract scientific concepts and build mental models, which they used to internalize and organize knowledge structures. Furthermore, this study discovered that the students who learned using VR technology formed a cyclical learning pattern, starting with a group discussion (G), moving on to solving problems (S) and developing a product (D), and then going back to another group discussion. However, the students who learned via lectures produced a linear learning pattern in the order of G → S → D."

Chesler, N. C., Ruis, A. R., Collier, W., Swiecki, Z., Arastoopour, G., Williamson Shaffer, D. (2015). A novel paradigm for engineering education: Virtual internships with individualized mentoring and assessment of engineering thinking. *Journal of Biomechanical Engineering, 137.* https://vtb.engr.wisc.edu/wp-content/uploads/sites/733/2017/01/Chesler2014.pdf

From the abstract: "Engineering virtual internships are a novel paradigm for providing authentic engineering experiences in the first-year curriculum. They are both individualized and accommodate large numbers of students. As we describe in this report, this approach can (a) enable students to solve complex engineering problems in a mentored, collaborative environment; (b) allow educators to assess engineering thinking; and (c) provide an introductory experience that students enjoy and find valuable. Furthermore, engineering virtual internships have been shown to increase students'—and especially women's—interest in and motivation to pursue engineering degrees. When implemented in first-year engineering curricula more broadly, the potential impact of engineering virtual internships on the size and diversity of the engineering workforce could be dramatic."

Linder, K. E., & Hayes, C. M. (2018). *High-impact practices in online education: Research and best practices.* Herndon, VA: Stylus Publishing. https://eric.ed.gov/?id=ED591747

> *From the abstract:* "This volume offers the first comprehensive guide to how high-impact practices (HIPs) are being implemented in online environments and how they can be adjusted to meet the needs of online learners. This multi-disciplinary approach will assist faculty and administrators to effectively implement HIPs in distance education courses and online programs. With a chapter devoted to each of the eleven HIPs, this collection offers guidance that takes into account the differences between e-learners and traditional on-campus students. A primary goal of 'High-Impact Practices Online' is to share the ways in which HIPs may need to be amended to meet the needs of online learners. Through specific examples and practical suggestions in each chapter, readers are introduced to concrete strategies for transitioning HIPs to the online environment that can be utilized across a range of disciplines and institution types. Each chapter of 'High-Impact Practices Online' also references the most recent and relevant literature on each HIP so that readers are brought up to date on what makes online HIPs successful. The book provides guidance on how best to implement HIPs to increase retention and completion for online learners. This book contains the following chapters: (1) First-Year Seminars (Jennifer R. Keup); (2) Common Intellectual Experience (Jason D. Baker and Michael Pregitzer); (3) Learning Communities (Kathy E. Johnson, Amy A. Powell, and Sarah S. Baker); (4) Writing-Intensive Classes (June Griffin); (5) Collaborative Assignments and Projects (Robert John Robertson and Shannon Riggs); (6) Undergraduate Research in the Humanities (Ellen Holmes Pearson and Jeffrey W. McClurken); (7) Undergraduate Research in the Sciences (Kevin F. Downing and Jennifer K. Holtz); (8) Diversity and Global Learning (Jesse Nelson and Nelson Soto); (9) eService-Learning (Jean Strait and Katherine Nordyke); (10) Internships (Pamela D. Pike); (11) Capstone Courses and Projects (Zapoura Newton-Calvert and Deborah Smith Arthur); (12) ePortfolios (Jennifer Sparrow and Judit Török); and (13) High-Impact Practices and Library and Information Resources (Stefanie Buck). The conclusion, Future Directions for High-Impact Practices Online, was written by Kathryn E. Linder and Chrysanthemum Mattison Hayes. Contains a section about the editors and contributors. An index is included."

Roy, J., & Sykes, D. (2017). A Review of internship opportunities in online learning: Building a new conceptual framework for a self-regulated internship in hospitality. *International Journal of E-Learning & Distance Education, 32*(1), 1–17. https://eric.ed.gov/?id=EJ1154622

> *From the abstract:* "The primary purpose of the article was to build a framework for an innovative approach to online internships after examining best practices in hospitality internships. Learning the ins and outs of an industry virtually, using contemporary internship methods strengthens the student's expertise and better prepares them for future workplace environments. Researchers find value in the virtual component of the internship experience, yet, none of them connect the use of the virtual experience to one that is conducted on the ground as well. Existing self-regulated learning models and virtual internship models do not integrate a ground-based component. Existing hospitality internship frameworks do not incorporate a distance learning component. The increase of virtual internships is beneficial to developing student confidence, building relationships, and mirroring their real-life experience

in the workplace. Furthermore, real-world experiences can be more important for online students when they graduate and go into the workforce. Thus, a new framework had to be created to integrate distance learning with ground-based internships in the hospitality industry. Schools using this model will enable students to gain valuable experience and interviewing skills, build confidence and professionalism to seek and find an internship that is germane to their passion."

Ruggiero, D., & Boehm, J. (2016). Design and development of a learning design virtual internship program. *International Review of Research in Open and Distributed Learning, 17*(4), 105–120. https://eric.ed.gov/?id=EJ1108403

From the abstract: "Incorporation of practical experience in learning design and technology education has long been accepted as an important step in the developmental process of future learning designers. The proliferation of adult online education has increased the number of graduate students who are in need of a practical internship placement but have limited options due to work and family obligations. An international virtual internship program provides opportunity for non-traditional students to participate in a practical experience regardless of their physical location and other obstacles."

Theelen, H., Willems, M.C., van den Beemt, A., Conijn, R., & den Brok, P. (2020). Virtual internships in blended environments to prepare preservice teachers for the professional teaching context. *British Journal of Educational Technology,51*(1), 194–210. https://eric.ed.gov/?id=EJ1240989

From the abstract: "This study investigated to what extent virtual internships in teacher education were able to reduce Preservice Teachers' (PSTs) professional anxiety. Simultaneously, this study investigated how virtual internships in blended learning environments were evaluated by PSTs in terms of technological, social and educational affordances. PSTs followed virtual internships during two different Educational Pedagogy Master's courses (27 and 16 participants) in a teacher education programme. A mixed methods design was employed, consisting of pre- and post-test questionnaires, a focus group interview and individual interviews. A significant decrease was found in PSTs' professional anxiety after having followed Virtual Internship 2. PSTs reported they obtained a more realistic image of teaching and felt better prepared for teaching in practice. Furthermore, regarding technological affordances, system usability was considered between acceptable and good. Concerning social affordances, PSTs appreciated collaboration within the virtual internships. As an educational affordance, it appeared that learning from videos with authentic classroom events is a good preparation for the professional teaching context. According to the PSTs, the scenarios within virtual internships could be improved in terms of authenticity and personalisation by offering more details and background information. The results of this study imply that virtual internships can be useful assets for teacher education."

Additional Organizations to Consult

Perkins Collaborative Resource Network. "Work-based learning toolkit." https://cte.ed.gov/wbltoolkit/

> *From the website:* "This tool kit will provide state and local program administrators with information regarding the key components of work-based learning (WBL), an instructional strategy that enhances classroom learning by connecting it to the workplace. It offers guidelines and resources related to creating a state WBL strategy, engaging employers, collecting data, and scaling effective programs."

Methods

Keywords and Search Strings

The following keywords and search strings were used to search the reference databases and other sources:

- "virtual internships" AND "Pacific"
- "virtual work-based learning" AND "Pacific"
- "virtual internships"
- "virtual work-based learning"
- "virtual" AND "work-based learning"
- "experiential learning" and "virtual"
- "virtual internships" AND "engineering"
- "virtual internships" OR "virtual work-based learning"

Databases and Resources

We searched ERIC, a free online library of over 1.6 million citations of education research sponsored by the Institute of Education Sciences, for relevant resources. Additionally, we searched the academic databases Google Scholar and PsycINFO.

Reference Search and Selection Criteria

REL Pacific searched ERIC and other academic journal databases for studies that were published in English-language peer-reviewed research journals within the last 10 years. REL Pacific prioritized documents that are accessible online and publicly available, and prioritized references that provide practical information based on peer-reviewed research for the education stakeholders who requested this Ask A REL. Sources included in this document were last accessed in May 2020. Methodological priorities/considerations given in the review and selection of the references were:

- Study types—randomized control trials, quasi experiments, surveys, descriptive data analyses, literature reviews, etc.
- Target population, sample size, study duration, etc.
- Limitations, generalizability of the findings and conclusions, etc.

This memorandum is one in a series of quick-turnaround responses to specific questions posed by educational stakeholders in the Pacific Region (American Samoa, the Commonwealth of the Northern Mariana Islands, the Federated States of Micronesia, Guam, Hawai'i, the Republic of the Marshall Islands, and the Republic of Palau), which is served by the Regional Educational Laboratory (REL Pacific) at McREL International. This memorandum was prepared by REL Pacific under a contract with the U.S. Department of Education's Institute of Education Sciences (IES), Contract ED-IES-17-C-0010, administered by McREL International. Its content does not necessarily reflect the views or policies of IES or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.