ACADEMIA | Letters

Experiences Spanning Decades and Boundaries Through Remote Online Learning and Teaching

Paul D. Guild, University of Waterloo

Abstract

Six academic learning experiences are outlined, together spanning four decades and, in one case, crossing three international borders. Each has some relevance to remote online learning and teaching, originating in the mid-1970s and some continuing with current capabilities and opportunities. Summarized are key "lessons learned" and several hypotheses for testing toward increasing the viability of new delivery formats. Many supporters of past initiatives are acknowledged.

Background

Globally, educators on a broad spectrum have been surprised by the impact of COVID-19 in 2020. Suddenly, the necessity of remote online delivery introduced new challenges to students and instructors alike. The intent of this letter is to encourage course developers and instructors to explore novel ways to structure and deliver high-quality pedagogy and thus inspire distance educators to take calculated risks to apply imaginative and innovative approaches, extending the reach from classrooms to where ever that the Internet provides links. The hope is to foster evidence-based teaching and learning, with systematic scientific hypothesis testing and objective assessments.

Academia Letters, January 2021

Corresponding Author: Paul D. Guild, guild@connect.uwaterloo.ca
Citation: Guild, P.D. (2021). Experiences Spanning Decades and Boundaries Through Remote Online Learning and Teaching. *Academia Letters*, Article 123.

Table 1: Six Experiences with Online Learning and Teaching

1	**Online Learning in 'Organizational Behavior' (with teaching assistant (TA) Umair Shah, 2007-15)**	**Summary of Learning Outcomes**
	This large undergraduate course (~ 400 students/year) tried to accommodate popular demand; despite parallel classroom-based versions, each online offering was > 20% oversubscribed. 'Adult learners' from the community comprised 30% of these students, the remainder was from varied campus-based undergraduate (in 2nd, 3rd and 4th years) programs in University of Waterloo's (UW) six faculties: engineering, mathematics, science, arts, environment and health. This delivery format is attractive to on-campus undergraduates for flexibility of schedule and location e.g., able to complete optional courses during co-op work-terms.	• Dr. Shah is now the contractual instructor for this course. • Successful distance-delivered courses will be embraced by students who perceive otherwise unattainable benefits. • Intellectual property rights (IPR) of content creators must be protected under guidance anchored in institutional policies. • Occasionally, overzealous mid- to low-level administrators may claim control and will need to be checked by policy protecting IPR. (References 4 & 9).
2	**Online Master's Degree in 'MOT@Distance' (with Dr. Clifford Blake, 1996-2000)**	**Summary of Learning Outcomes**
	Focused on Management of Technology in Management Sciences at UW, the author served as the founding director for this online master's program. It appealed to mature students, often working in technology-based firms, who 'learned as they earned'. Geared to part-time study, from the outset, enrolment ranged from 70-110 students (mean ~90), with three intakes per year. This initiative succeeded due to encouragement and financial support from UW's VP-Academic and Provost, Dr. James Kalbfleisch. It became a full-cost-recovery program.	• Small beginnings with a few committed academic colleagues (such as Blake) and enlightened administrators (such as Kalbfleisch) can make or break larger initiatives at the scale of an online master's program. • Oppositely, without ongoing support from colleagues and administrators, such initiatives can lose sight of the shared intent and collapse from benign neglect (Reference 4 & 5).
3	**Shared North-South Hybrid Experience in 'Management of Technological Innovation' (MOTI) (with TA Enrique Diaz de Leon, 1995)**	**Summary of Learning Outcomes**
	In UW's Management Sciences, the author planned and instructed this online graduate course which combined a hybrid face-to-face group of learners (n=20) in Waterloo along with small groups of graduate students (n=10 x 2) in the Whitman School of Management at Syracuse University (USA) and Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM in Mexico). This course used Internet infrastructure to produce an audio-video-graphic link that afforded the opportunity to bring diverse international perspectives to course topics.	• Dr. Diaz is an ITESM professor and administrator. • Senior administrators with clear academic vision are key enablers for this form of collaboration over international borders; the three institutions deliberately fostered such shared learning (Endnotes 1-3). • Students who value diversity of life experiences and varying perspectives on global issues will drive demand for such opportunities for shared learning.
4	**Shared East-West Hybrid Experience with MOTI (with TA Richard Smith, 1993-94)**	**Summary of Learning Outcomes**
	The author, with strong support and technical advice from the TA, planned and instructed this online graduate course that combined a face-to-face group of learners in UW with small groups of graduate students at Simon Fraser University (SFU) and University College of Cape Breton. Using TCPIP Internet infrastructure with an audio-video-graphic link (CU-SeeMe), students in a virtual classroom spanned the Canadian expanse from coast-to-coast: western graduate students in BC could see the Pacific Ocean; eastern graduate students in NS could see the Atlantic.	• The TA continued with his doctoral studies, rising to Full Professor at SFU. This "imaginative and progressive academic" seconded for a nine-year term as Director of Vancouver's Centr Digital Media. The enthusiastic and tech-savvy TA (Smith) who inspired and configured the audio/video/graphic media and the network link using nation-wide tunneling to specified IP addresses (Reference 6 & 10). • Meanwhile, the author focused on pedagogy for curriculum sharing, and management of content for delivery.

Corresponding Author: Paul D. Guild, guild@connect.uwaterloo.ca
Citation: Guild, P.D. (2021). Experiences Spanning Decades and Boundaries Through Remote Online Learning and Teaching. *Academia Letters*, Article 123.

Table 1: (cont'd)

5	**College Curriculum-Sharing via CTS** **(with H. Hudson, D. Coll & R. Lumb, 1975)**	**Summary of Learning Outcomes**
	Domestic communication satellites and video compression techniques increased communication channel capacity and reduced cost of video transmission. NASA Ames Research Center, Stanford University and Carleton University were participants in an experiment to develop, demonstrate, and evaluate college course sharing techniques via satellite using video compression. The universities exchanged televised seminar and lecture courses via CTS. The experiment featured real-time video compression with channel coding and quadra-phase modulation for reducing transmission bandwidth and power requirements. Evaluation plans and preliminary results of Carleton surveys (conducted by the author) on student attitudes to televised teaching were presented. Policy implications for the U.S. and Canada were outlined.	• It is recognized that the investigation represented a confluence of technological, economic and behavioral factors. • ***Technological*** factors show the most rapid change, with staggering advances in multimedia signal processing, display and transmission systems. • ***Economic*** factors determine the cost viability, with consideration of what is possible but also what is affordable in applications. • ***Behavioral*** factors undergo the slowest rate of change and are observed in with attitudes, beliefs, expectations, and preferences. • Acceptable solutions must manage complex tradeoffs among these three factors (Reference 8).
6	**Hybrid Multi-Media Course in Psychology-100** **(Prof. William Walther & Six TAs, 1972-74)**	**Summary of Learning Outcomes**
	The author was a TA and sessional lecturer at Carleton University's (Ottawa) Psychology Department, one of six overseeing 1800 undergraduates in this early "hybrid" course. The course professor, Dr. William Walther, was audio-video taped delivering formal lecture content. TAs managed course assignments, graded and provided feedback planned; they also planned and taught mini-courses to sub-groups of about 30.	• This course advanced innovation in delivery format (audio-video media) and distribution (CCTV). It influenced follow-on exploration of hybrid delivery and extended the 'reach' from one campus classroom to many local classrooms. • Psych-100 maintained this configuration for several years; meanwhile, the author continued with his doctoral research studies at the University of Oxford (Reference 7).

Remote online multimedia delivery presents fertile ground for nurturing innovation in quality pedagogy and enriched learning experiences; however, this is neither guaranteed nor easily accomplished. It will surprise some educators that effective distance education is at least as challenging to achieve – often more challenging – as typical classroom delivery. At this point, online learning is relatively fragile, and it is realistic to expect that further innovation attempts will also fall short of expectations rather than be fully achieved.

Corresponding Author: Paul D. Guild, guild@connect.uwaterloo.ca
Citation: Guild, P.D. (2021). Experiences Spanning Decades and Boundaries Through Remote Online Learning and Teaching. *Academia Letters*, Article 123.

Table 2: Several Hypotheses for Online Learning and Teaching

1	**It is imperative to select and/or create *Quality Learning Assets Toward Student Mastery and Learner Engagement***	**H1.1** Anticipate that subject matter experts who are also top-notch communicators will create learning assets that will be acquired or borrowed by other instructors of closely related course topics. **H1.2** To the extent that content creators own and control use of their innovations the more likely it is that reciprocated borrowing of learning assets will occur.
2	**There is a requirement to implement *Secure Proctoring and Academic Integrity Safeguards***	**H2.1** The vast majority of trustworthy students and administrators of academic integrity will insist upon provision for secure proctoring methods. **H2.2** The small minority of "bad actors" who will attempt to cheat or "game the system" must be discouraged from trying, and fairly corrected when detected.
3	**There is an obligation to assess fairly the *Instructors' Performance of Teaching Effectiveness and Protect Their Intellectual Property Rights (IPR)***	**H3.1** Parallel forms of teaching effectiveness in online and classroom teaching are needed to evaluate fairly the contribution of instructors regardless of the form of delivery. **H3.2** Protection of IPR of instructors and content creators will encourage distance education.

Conclusion

By sheer increased innovation attempts during 2020 and beyond, remote online teaching and learning is receiving a major boost. An old cliché advises that "necessity is the mother of invention"; thus, distance education experiences are expected to evolve 'best practices' rapidly and set new benchmarks for effective and efficient learning.

Not all serious attempts at innovation with remote online learning will be acknowledged as successful. The majority will fall short of total satisfaction. To tilt the balance toward success, increased co-operation among instructors in specialized domains of knowledge should be encouraged: look for opportunities to disseminate and re-use best practices, sharing advances in distance-delivered course designs and curriculum development.

The pace of technological change will continue to outpace change in the economic and behavioural domains of knowledge. A key strategy for online education is to create learning assets and course designs that can be "forward compatible" so that obsolescence is delayed as much as possible. In sum, optimistic assertions are that distance education is here to stay, and enduring best practices are yet to come.

Corresponding Author: Paul D. Guild, guild@connect.uwaterloo.ca
Citation: Guild, P.D. (2021). Experiences Spanning Decades and Boundaries Through Remote Online Learning and Teaching. *Academia Letters*, Article 123.

Endnotes (1-3) and References (4-10)

1. "Our commitment to diversity and inclusion is rooted in the belief that multiple points of view, life experiences, ethnicities, cultures and belief systems are essential to academic excellence." Whitman School of Management, Syracuse University, Syracuse, NY, USA - retrieved November 2, 2020.

2. "Our international programs offer unique experiences and the opportunity to come into contact with different cultures and discover that commonalities far outweigh differences. Each culture is unique, and this experience is enriching anywhere in the world." TEC de Monterrey, Monterrey, MX - retrieved November 2, 2020.

3. "The Management Sciences department teaches students to make strategic use of technology to better understand and manage business operations. With the support of more than 20 faculty members, (students) learn about supply chain management, global logistics, decision-making, and risk management to make businesses work better." Management Sciences, UW - retrieved November 2, 2020.

4. Anon A. (2020) Management Sciences Takes a Collaborative Approach to Remote Teaching - retrieved November 1, 2020.

5. Anon B. (2020) Master of Management Sciences (MMSc) Online Part-time Coursework Degree. (a.k.a. Management of Technology MOT) - retrieved November 2, 2020.

6. Anon C. (2018) CU-SeeMe Early Video Conferencing Tech. Cornell University - retrieved November 1, 2020.

7. Guild, P.D. (1978) Mediated Person-to-Person Communication: A Social Psychological Perspective. Doctoral Thesis Oxford: University of Oxford. (068f5647-1485-4f72-97a0-8bbf045ed9dd) - retrieved September 30, 2020.

8. Hudson, H.E., Guild, P.D., Coll, D.C., Lumb, D.R. (1975) College curriculum-sharing via CTS. NASA Scientific and Technical Information (STI) Program. (ID# 19750053966) - retrieved November 2, 2020.

9. Shah, M.U. (2020) Organizational Behaviour Online Management Sciences 211 - retrieved November 1, 2020.

10. Smith, C. (2020) After Nine Years at the Helm, Richard Smith Steps Down as Director of Vancouver's Centre for Digital Media - retrieved November 1, 2020.

Corresponding Author: Paul D. Guild, guild@connect.uwaterloo.ca
Citation: Guild, P.D. (2021). Experiences Spanning Decades and Boundaries Through Remote Online Learning and Teaching. *Academia Letters*, Article 123.

Acknowledgements

- Numerous teaching assistants (TAs), various collaborating faculty colleagues and administrators include: Dr. Richard Smith, Dr. Umair Shah, Dr. Clifford Blake, Dr. Enrique Diaz de Leon, Dr. James Kalbfleisch, Dr. William Walther.
- Dr. Donald George and Dr. David Coll (both now deceased) who were prime movers and visionaries behind the Wired City Simulation Laboratory (WCSL) in Engineering at Carleton University (1972-75).
- Department of Communication, Government of Canada, who funded the exploratory engineering facility of the WCSL.
- CIBC/Nortel/NSERC-SSHRC Chair in Management of Technological Change (MOTC), Department of Management Sciences, UW (1995–2001).
- BNR/BCTel/NSERC-SSHRC Chair in Management of Technological Change (MOTC), Management Sciences, UW, and Communication at Simon Fraser University (1990-95).

Corresponding Author: Paul D. Guild, guild@connect.uwaterloo.ca
Citation: Guild, P.D. (2021). Experiences Spanning Decades and Boundaries Through Remote Online Learning and Teaching. *Academia Letters*, Article 123.