

Taming a wicked problem: Meeting academic standards, institutional goals and professional expectations in online courses

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Abstract:

E-learning and online education have the potential to transform professional learning by widening access and participation, customizing and personalizing learning experiences, building communities of interest and practice, developing professional expertise and global competence, promoting diverse perspectives and inclusive behaviours, and supporting evidence-based reflective practitioners. However, online education programs have had a mixed reception; although popular with students, they have been disparaged for low standards and poor quality, and dismissed as academically weak and professionally unsatisfactory for subjects where hands-on experiential learning is regarded essential for theoretical understanding to be translated into working knowledge and practical skills. The present case study challenges such assumptions, showing that online asynchronous courses in library and information science can not only provide rich and rewarding experiences for learners and teachers, but can also result in quality enhancement of their traditional face-to-face counterparts by transferring methods developed for the virtual learning environment to the onsite classroom.

The study describes the course development process adopted and the designs produced, and reflects on the experiences of course delivery, drawing on student evaluations and instructor reflections collected over several terms. Eight factors are judged critical to the success of online courses: upfront advice and consultancy from an instructional designer; ongoing help and support from an instructional technologist; breadth and depth of subject matter expertise; learning from best practices in the field; systematic evaluation and feedback from student learners; annual review and reflection by the instructor; an accessible and flexible course management system; and a functional and reliable information technology infrastructure. Library and information science educators of the future need to move beyond the T-shaped competency model of one area of profound specialist expertise supported by generalist capabilities to the Pi-shaped or H-shaped model of double-stemmed expertise to meet the academic and professional demands of learning in dynamic online environments.

Keywords: information technology, instructor competencies, online education, professional development, Web-based instruction, workplace learning

Introduction and Background

As Hanson and Williams (2012, p. 1) observe “E-learning has gone from being an interesting idea in the early 1990s to a global industry. Professionals increasingly expect to be learning via the Internet, wherever and whenever they happen to need to learn”. In 1999, Westbrook (2002) identified only eight institutions in North America where students could complete a degree in library and information science (LIS) without visiting the campus. The current database of programs accredited by the American Library Association (ALA, 2016) shows 29 institutions offering “100% online” degrees, and the use of e-learning for professional education is now a global phenomenon, manifest in 85 programs from 21 countries (Islam, Kunifuji, Hayama & Miura, 2011). The launch in 2003 of the Web-based Information Science Education (WISE) consortium has enabled students in participating programs to take quality-assured online courses offered by other member institutions around the world, giving them access to a wider choice of topics and instructors than available locally (Montague & Pluzhenskaia, 2007). LIS practitioners are also using online tools and social media for their continuing professional development and to build personal learning networks (Anasi & Ali, 2014; Cooke, 2012; Corcoran & McGuinness, 2014; Corral, 2011; Del Bosque, 2013; Stranack, 2012).

There is a substantial literature on online education in LIS, which can only be referenced selectively here. A significant theme is faculty concerns about the quality of distance education (Barron 2003; Sigal 2013) and the negative perceptions held by some students and employers (Gonzalez, Kennedy & Cenzer, 2007; Shapiro, 2013; Swigger & Turner, 2003; Wilde & Epperson, 2006). Haigh (2007, p. 107) reports “the stigma against online education remains strong among face-to-face students, despite an overwhelming feeling among online students that their education is at least as good”. Other issues include the extra work involved for instructors (Buchanan, Xie, Brown & Wolfram, 2001; Khanova, 2013) and the reduced opportunities for interaction with students (Burnett, Burnett & Latham, 2003) and “the socialization of students into the profession” (Kochtanek, Seavey & Wedman, 2003, p. 168). However, other studies report increased interaction in online courses, with more inclusive and in-depth discussions (Buchanan et al., 2001; Chow, 2013; Hrastinski, 2008; Kazmer, Gibson & Shannon, 2013), and show how the use of Web 2.0 tools can promote independent thinking and prepare students for participation in communities of practice after they graduate (Branch & deGroot, 2013; Li 2013).

Irrespective of delivery mode, LIS educators are continually challenged in their efforts to resolve the competing values of academic and professional stakeholders in our field, including tensions between research and practice, knowledge and skills, managerial and technical content, and emergent and traditional subjects (Corral, 2010). Professional education is problematic, and *online* professional education even more so – a “*wicked* problem”, as a challenge that is hard to pin down, with complex and tangled roots, involving many stakeholders with different values and priorities (Camillus, 2008). I used to belong in the skeptics camp: my early experiences of online teaching (and learning) were not good, and went from bad to worse when I had my classroom lectures captured on video; but I am now a convert, convinced that online education (or technology-assisted learning) is the way forward for professional education. What changed? I found a method of online teaching that not only works well for me and for my online students, but has also enhanced the quality of the courses I deliver in traditional face-to-face (F2F) mode.

Having usable technology was an important factor, but evolving my online pedagogy was the significant breakthrough here, facilitated by productive collaboration with expert colleagues in the Pitt *Online* division of our Centre for Instructional Development and Distance Education (CIDDE), and also influenced by insights gained from others at Pitt and connections with the wider community. My study uses two courses, one with a strong professional orientation and another with an overt academic focus, to show how online education can meet required quality standards and provide desired real-world experiences as good or better than traditional classes.

Case Description and Reflection

The MLIS program at Pittsburgh is ranked among the top ten in the country by *U.S. News & World Report*. It aims to provide a strong foundation of theoretical knowledge, ethical principles, practical skills, and social responsibility, including opportunities for experiential learning outside the classroom. We have offered an online program since 2001, in line with the University's "emphasis on flexible course delivery to multiple audiences" (Frey, Alman, Barron & Steffens, 2004, p. 82), and the MLIS was the first degree offered by Pitt via the Web (Alman, Tomer & Pilarsky, 2003). Our program emphasizes:

- *flexibility*, allowing students to study full-time or part-time, and to mix onsite and online courses to suit their circumstances;
- *personalization*, encouraging students to choose courses and topics to fit their personal career goals;
- *real-world engagement*, via credit-based field experiences and project work;
- *co-curricular activities*, such as participation in professional groups and conferences.

Our online program has evolved from its original cohort format requiring termly visits to campus to a more flexible model delivered totally online. It has also evolved technologically, transitioning from video capture of traditional classroom lectures to the preparation of content specifically for online students, developed with support from a dedicated central team of instructional designers and technologists, who now work with faculty in seven schools to deliver online professional graduate degrees via the Pitt *Online* platform. Although a few courses are still offered via the original "blended" mode, the majority of MLIS online courses are delivered via Pitt *Online*, including our four core courses (Understanding Information, Introduction to Information Technologies, Organizing & Retrieving Information, and Managing & Leading Information Services), and the four courses prescribed for the Academic Libraries specialization (Academic Libraries, Reference Sources & Services, Research Methods in LIS, and the Information Professional's Role in Teaching & Learning). We aim to give online students an equivalent experience to their onsite counterparts, although the courses offered may vary.

Instructors developing a course for Pitt *Online* are assigned an instructional designer and an instructional technologist to work with over a whole term, with the intention of completing the development and building the online course by the end of the term. They are also invited to participate in a three-week online workshop, Teaching Online @Pitt (TOP), facilitated by a senior instructional designer, which provides an overview of the course development process, and enables participants to begin designing their course and get formative feedback. The workshop has three modules:

- (1) Online course development;
- (2) Conquering the course content;
- (3) Engaging and assessing student learning.

As it is delivered completely online via the Pitt *Online* platform, the workshop gives participants experience of learning online in the same environment as their future students, as well as a hands-on introduction to technology tools and course management system features that can enhance learning. We had an excellent course text, *Essentials of online course design* (Vai & Sosulski, 2011), with a companion website providing links to additional resources, including free articles from *The Chronicle of Higher Education*. I was familiar with some of the course material from the Certificate in Learning and Teaching at my previous institution, but the refresher on the principles of constructive alignment (Biggs & Tang, 2011) and backward design (Wiggins & McTighe, 2005) were valuable. As Sample (2011) explains in his *Chronicle* blogpost, for subjects where literature features strongly, which applies to both my courses, when you have a heavy workload, it is easy to let your reading list design your course around what you want students to *read*, instead of consciously designing it around what you want them to *learn*.

CIDDE advocates the same instructional design model for both online and on-campus courses. Figure 1 shows how the model matches the three stages of backward design in a learner-centered approach where the course goals and learning objectives are developed first, followed by the assessments, and finally the learning activities. Though conceived as three stages, in practice it is an iterative process, as courses always need updating. The key point is the alignment of objectives, assessments, and activities so they work together and support each other.

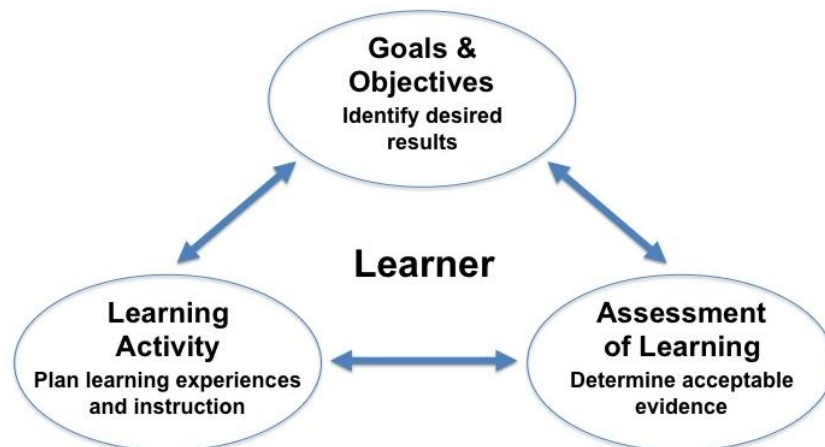


Figure 1: Instructional design model

The course development model is translated into a project timeline with milestones for the instructor to deliver materials over a 16-week term (shown in Figure 2). The process involves regular meetings with the assigned designer (F2F or virtual, if the instructor is out of town). The first phase allows time to do the course syllabus (including assessments) and schedule, before creating one complete module or unit as an agreed model for the remaining content; the pace then quickens with a strict timeline to allow the Pitt *Online* team to conduct a final quality assurance review prior to making the complete course available to students before the start of term. CIDDE acknowledges development may take longer; for example, if the instructor has not taught the course F2F, or has a heavy workload (which applied in my case).

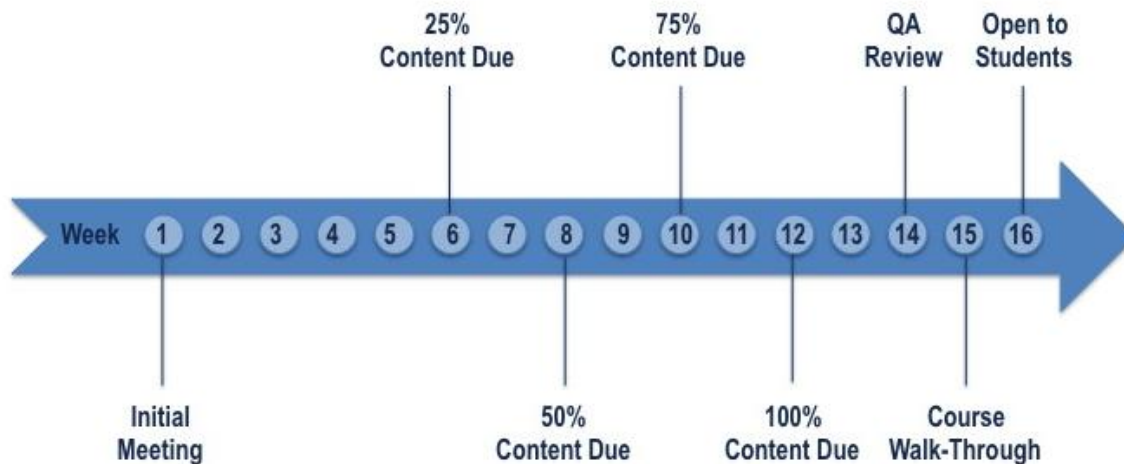


Figure 2: Content development timeline

Other takeaways from Module 1 included the key differences between the delivery models for Pitt *Online* and F2F courses (shown in Table 1); particularly, the systematic design process, with a project plan for structure and consistency across modules, and the team approach, described by Oliver (2000, p. 83) as the “industrialization of course development, including the division of labour amongst teams of specialists”. We were advised to “assemble a support team of experts” and not attempt to do everything ourselves; the instructor is the “face” of the course and the subject matter expert, but many others can be involved in content development behind the scenes (instructional designers, instructional technologists, video specialists, etc.).

Table 1: Delivery models compared

Pitt on-campus	Pitt <i>Online</i>
Synchronous	Asynchronous
Instructor led	Team initiative
“Sage on the stage”	“Guide on the side”
Instructor format	Style guide
Developed week by week	Developed in advance – more structured, less flexible
Quick discussions – not everyone participates	Time for students to reflect and plan posts – expectation that everyone participates Requires and develops technology skills

Module 2 reinforced the importance of structure and consistency, suggesting we adopt a standard format to organize and present the content of our weekly learning modules, illustrated in a diagram storyboarding the overall organizational structure of a typical online course. Figure 3 shows how I used this model in my Academic Libraries course. Each module has a similar structure of subheadings, but they are not identical; for example, some modules have an Assignment, but no Discussion, and Videos are not used every week. Module 2 included good advice on using lectures in online courses, such as keeping them short (under 15 minutes, producing two short presentations instead of one long one, if necessary); creating a script for smooth delivery, which can be posted as a transcript; and designing content for a shelf life of several iterations –much easier for my Research Methods course, than for the fast-moving field of Academic Libraries.

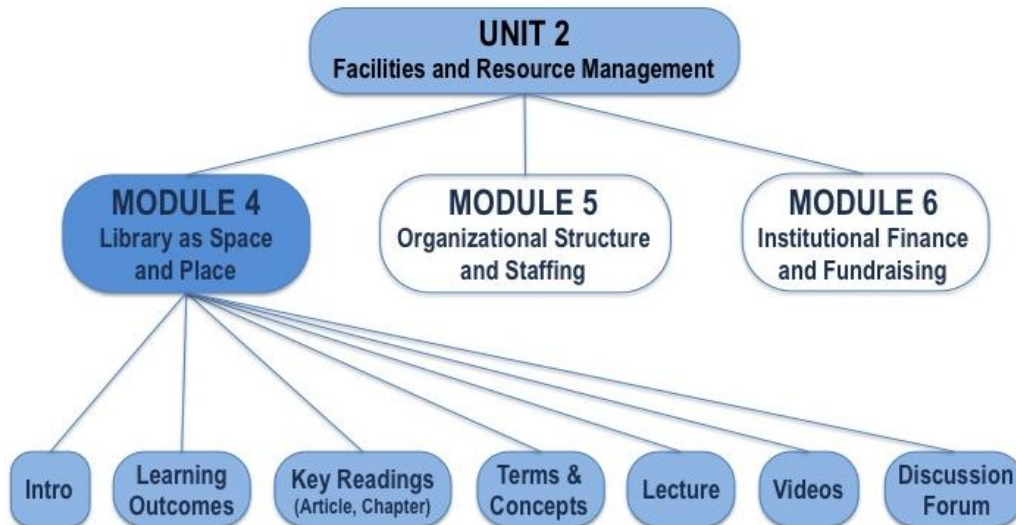


Figure 3: Sample weekly module

CIDDE offers a variety of lecture capture technologies. After trying several examples, I opted for Articulate Presenter (even though it does not run on my Mac), because it is easy to record and edit narrated presentations slide-by-slide; so, when I decided to adjust the schedule of assignments and discussions for Academic Libraries in response to student feedback, it was relatively straightforward to substitute new slides and voiceovers in my introductory lecture. Module 2 also provided examples of more active learning strategies used in online courses by other Pitt schools, including case studies, collaborative projects, role plays, and virtual tours; which confirmed that activities I was already using in F2F classes could be transferred to an asynchronous online environment. Other takeaways from Module 2 were to be creative, and bring a variety of resources, including our own personalities into our courses (“ways to share your stories and examples”). A key message here was not to overload students with content when you do not have the time constraints of the campus classroom.

Module 3 covered interaction and assessment, the two areas I have given most thought to since moving to Pitt. While the changes I made in assessment were largely incremental, and a natural evolution of my previous practice, I experienced a much more fundamental shift in my practice and thinking around engaging students in discussions. When I moved to the US, I was surprised to find colleagues often awarded grades for participation, based on factors such as attention to in-class activities, as well as participation in discussions, even class attendance (which may be assessed in undergraduate courses in the UK, but rarely in Master’s programs). However, after completing the assigned readings, and talking later with my assigned designer, I was persuaded to do things differently.

Deep Discussions

Online discussion forums serve multiple purposes, as a form of active learning to engage students with course content, and as a way of facilitating interaction and building community. The key point for me is the way online discussions can stimulate deeper reflection and more effective learning than happens F2F. It is also easier to get everyone to participate online, if expectations are communicated upfront, and especially if participation is assessed and graded.

I was concerned about the time it would take to grade participation, but I liked my designer's suggestion to have students self-assess, by selecting their three best forums, evaluating their posts against a grading rubric, and then providing a summative assessment and overall grade (for me to review and confirm or amend). Having students apply the rubrics themselves also offered a useful learning opportunity for neophyte academic librarians, who are often interested in library instruction tools.

Useful advice on designing discussions includes communicating ground rules in advance; creating a friendly, enthusiastic environment (with a unique icebreaker to start the course); and developing focused questions, problems, or activities as foundation for dialogue, to generate distinctive responses from students. My expectations are outlined in the syllabus and detailed in the assignment instructions, where I refer students to my grading rubric for guidance on content and style, and also quote the comment policy of *Library Journal* to indicate how discussions should be conducted in our professional field. We originally had weekly forums, with responding to posts of others an additional requirement in some weeks, but I adjusted the schedule after students reported overload in weeks when assignments were also due. The schedule for both courses now requires students participate in a forum on alternate weeks (alternating with assignment submissions), and for forums where they are required to respond to others, they have an additional week to do so. Figure 4 shows the timeline for Research Methods, illustrating how the discussions and assignments work together and are aligned with the objectives to conduct a review of research literature; critically appraise research studies; conceptualize and plan a small-scale research project; and collect, analyze, and interpret research data.

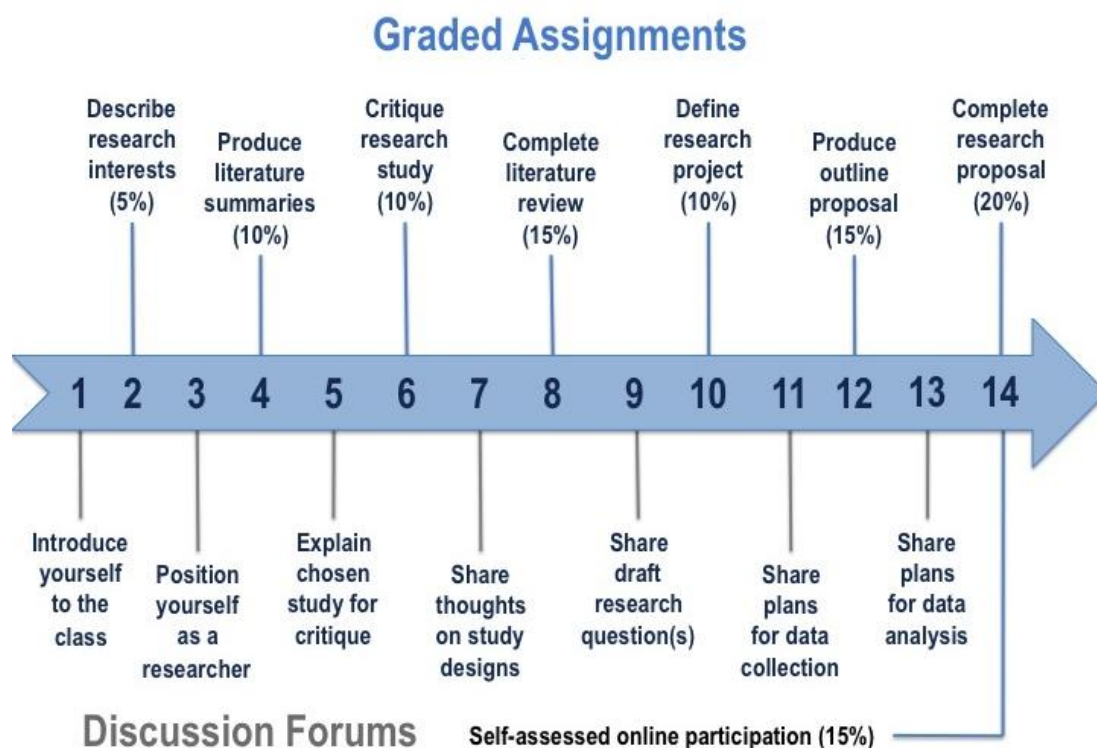


Figure 4: Sample assignment timeline

My experience shows that carefully planned discussion prompts aligned with course objectives can lead to lively debates, serious engagement, and effective collaborative learning.

Some forums are designed to help students get started on reading or thinking for assignments to be sure they are on track to complete all the tasks by the due date; for example, in Module 4 of Academic Libraries they view videos of library space renovations, decide which space works best for students, and reflect on the features that make it a good place to study, to prepare for a group assignment where they have to define criteria for evaluating library space prior to conducting onsite assessments. Other examples deal with issues debated in blogs and journals, such as “Should academic librarians have tenure?” and the pros and cons of item-by-item selection by librarians versus patron-driven acquisition. The forums typically have three prompts or questions and generally suggest readings as thought starters. Though not always formally required, I encourage students to read and respond to posts of classmates throughout the course, which has worked particularly well in Research Methods, where peer feedback on their proposed methods of data collection and analysis evidently helped several students to clarify or even rethink their final proposals.

Authentic Assignments

I see course assignments as central to student learning and try to design meaningful tasks that require students to relate theory or models from the literature to real-world practice, and submit work in formats they might use in future professional positions. I am committed to an inquiry-based pedagogy that models the process of research in the learning experience, and lets students define their own lines of inquiry as preparation for evidence-based practice in the workplace. I never set “essays”, but instead have them draft briefing papers on hot topics in the field; conduct onsite library assessments and interviews with practitioners (F2F or online); evaluate resources; and use a standard research paper structure to provide experience in writing for publication. I always explain the rationale for assignments, and I let students focus on areas of practice that interest them so they can pursue their career goals in class, which often motivates them to go further into a subject. I mix individual and team projects, again to reflect the real world of work. I expect students to do a lot of work, so it is important their time and effort is put to good effect.

TOP reinforced my commitment to creating authentic assignments, and a variety of assessments that are “challenging, but attainable”. We can help students produce good work by breaking down large tasks into smaller component steps to scaffold their learning, providing “practice opportunities for formative assessment prior to completing major summative assessments”, and using feedback as a teaching, learning, and motivational tool (by delivering it promptly, and making it positive, balanced, constructive, and specific. Having observed students struggling with complex tasks, such as writing a research proposal, and having received literature reviews that looked like an annotated descriptive bibliography rather than a critically appraised synthesis, I have gradually broken down my assignments into as many stages as needed for students to complete the task effectively. In Research Methods, students now submit their search strategy, research summaries (extracting relevant information on an article-by-article basis), and a visual overview of their findings (as a summary table or literature map) as the first stage of their literature assignment, and only proceed to writing an integrated review after receiving feedback on gaps or weaknesses in their preparatory work; they then get feedback on their submitted reviews, which they can use in revising them for incorporation in their final research proposal.

Transparent Teaching

On advice from my designer, I expanded my previous checklists of assessment criteria into full rubrics to clarify expectations for assignments. I also provide examples of previous student work representing good practice, which helps students grasp less familiar elements of a research proposal, such as a data management plan. Breaking down assignments into component tasks and stages has involved several revisions of my assignment instructions, which I have used to elaborate and clarify requirements in light of questions from students and weaknesses in submissions. So my instructions are often many pages, include references, and thus serve as important learning resources. They have a consistent format and structure, using the same set of headings, including a Rationale section explaining their purpose and relevance to students in the context of the course and their careers. This approach conforms to the principles of Transparency In Learning and Teaching established by Winkelmes, who demonstrated that “students who understand the purpose, tasks and criteria of an academic assignment before they begin to work on it... experience higher academic confidence, an increased sense of belonging, and greater awareness that they are mastering the skills that employers value” (Berrett, 2015; Winkelmes, 2016). Her “transparent assignment templates” for faculty and students are useful tools reinforcing these messages.

Formative Feedback

I use feedback from multiple sources to inform changes in my courses, including end-of-term Student Opinion of Teaching Surveys, posts to the Q&A forums, questions in personal emails from students, files of “notes for next time”, and the reflections on teaching required for my annual performance review. For both courses, students repeatedly comment positively on their organization and structure, including the modular/staged assignments, full instructions, and opportunities to pursue their own personal research interests and learn from other students via the discussion board. The calendar feature in Blackboard (initiated by my instructional technologist) and the downloadable course schedule with start and end dates for modules and topics, and deadlines for assignments and discussions (suggested by my designer) are additional tools valued by busy online learners managing coursework alongside their day jobs. They also liked the availability of lecture transcripts, the use of real-world examples to illustrate key concepts, and supply of readings and other resources for further exploration. They specifically identified my knowledge and experience in the field as a particular strength, and my ability and willingness to respond quickly to email questions, along with constructive and timely feedback on assignments.

In Academic Libraries, they liked the variety and real-world focus of assignments:

“The class encouraged me to consider some of the "big picture" items of academic libraries that I had not previously considered.”

“I appreciated most the assignments that tasked us with examining the real world roles of academic librarians.”

“I HATE group projects, they are a real pain...but I loved the one that we were given. The first part was especially enjoyable where we had to find a library and present our findings on a certain aspect of what we observed in our library of choice. It was truly enjoyable to me...it didn't really seem like an assignment. I enjoyed the interaction with the other students”

For Research Methods, students also liked the “really helpful examples and readings”, as well as my efforts to phase and pace their learning, and to simulate an online research community:

“I especially liked the set up of the lecture material being about a week or more ahead of the assignments, and then the space between written assignments with discussion board entries allowing peer review of concepts”

“The instructor's organization of the course was excellent, and having very clear, regular deadlines that are stated from the beginning of the course was a huge help in managing course work with my day job. All assignments were clearly defined and the discussion board questions were always interesting, on-point, and thought-provoking. The instructor has a great way of making the class think together to get a lot more opinions, experiences, and ideas than a single lecture could express.”

Both courses attracted negative feedback when first delivered via Pitt *Online* because I had not completed all the preparation of materials, recording of lectures, and uploading of handouts for the start of term (which also caused some delays in grading and feedback during course delivery). In Research Methods, one student suggested monitoring the discussion forums more actively to look out for students not getting feedback from classmates, and another suggested having online/F2F meetings, which I shall try next time; though previous offers of synchronous discussions/chat sessions have not had much take-up. One student taking Academic Libraries suggested we revisit the assignments schedule to avoid too many submissions towards the end of term.

Conclusion

Courses can always be improved, but the evidence suggests a strategy using formative feedback, transparent teaching, authentic assignments, and deep discussions, can work well for both online and traditional classrooms. Far from lowering academic standards, my online students have consistently attained higher final grades than their on-campus counterparts. Eight factors emerged as critical to the success of my two courses:

- upfront advice and consultancy from an instructional designer;
- ongoing help and support from an instructional technologist;
- breadth and depth of subject matter expertise;
- learning from best practices in the field;
- systematic evaluation and feedback from student learners;
- annual review and reflection by the instructor;
- an accessible and flexible course management system; and
- a functional and reliable information technology infrastructure.

While students highlighted my depth of knowledge in the subject matter of both courses, I believe another factor contributing to their success was the knowledge of online pedagogy I gained from the TOP course, which built on the knowledge and skills acquired at my previous institution; and suggests that LIS educators may need to move beyond a T-shaped competency model of one area of profound specialist expertise supported by generalist capabilities, to the Pi-shaped or H-shaped model of double-stemmed expertise to meet the academic and professional demands of teaching and learning in dynamic online environments (Demirkan & Spohrer, 2015).

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