

Keeping up the momentum: A longitudinal evaluation of professional development in digital technologies for academic librarians at an Australian university

This paper reports on the effectiveness of a professional development seminar about digital technologies and associated pedagogies delivered to academic librarians at an Australian university. The five-year longitudinal study aimed to evaluate the influence of the seminar on participants' use of new technologies and new pedagogies, and their interactions with colleagues, and in particular to determine any long-term effects for individuals and the organization as a whole. The data collection comprised two surveys based on Kirkpatrick and Kirkpatrick's four-level Evaluating Training Programs model, two focus group interviews, and an observation of participants' evolving digital projects. It was found that the seminar enabled participants to consolidate and expand on existing technological skills and complement them with a deeper understanding of pedagogy, leading to individual behavioral changes alongside broader organizational changes which were maintained over time. Librarians developed new ways of talking and thinking about digital technologies, especially about how to make best pedagogical use of them, resulting in more productive interactions between librarians, faculty, and wider support staff.

Keywords	Australia; Blended learning; elearning; Kirkpatrick and Kirkpatrick training evaluation model; Professional or continuing development; Web 2.0 technologies
Taxonomy	Information Literacy, Library and Information Science Education
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Introduction

Effectively and critically using digital technologies to access, manage, create and disseminate information is an essential skillset for living, learning and working in a digital age. The concept of digital literacies, or the ability to make effective use of digital technologies, has emerged in tandem with the growth of networked communication technologies.^{1 2} Shank and Dewald suggest that the growth of educational technologies, blended learning and digital literacies have converged in librarians' instructional roles.³ As Helene Blowers acknowledged in her *23 Things* initiative, to be able to support contemporary uses of information by students, librarians need to participate in the new media mix.⁴

The *Emergent Technologies in Education* (ETE) seminar was originally developed at The University of Western Australia (UWA) in 2008 by educator Associate Professor Mark Pegrum in conjunction with librarian Ralph Kiel. Their report on its implementation appeared in an earlier issue of *College & Research Libraries*.⁵ The seminar aimed to provide librarians with an understanding of e-learning pedagogies and the skills to develop digital resources, particularly using web 2.0 technologies, for blended library instruction. By 'blended' is meant the combination of face-to-face and online delivery of teaching and learning.⁶

The study that follows focusses on the first implementation of the professional development seminar at Victoria University. It identifies the main benefits of such professional development; considers the issues and challenges involved; and assesses the usefulness of future professional development courses of this kind.

Background

Victoria University (VU) is one of 38 publically funded universities in Australia. However, the University is in the unusual position of offering both Higher Education (degree) and Vocational Education (diploma) programs, and is one of only four dual sector universities in Australia to offer both programs. It has a large cohort of international students (29%) both overseas and onshore, mostly from Asian countries, and a highly divergent (educationally, culturally, linguistically and economically

diverse) range of students spread across onshore campuses and offshore partner sites. Some 25% of the student cohort are from low socio-economic backgrounds and about 35% are mature-aged students.

VU Library has a strategic commitment⁷ to enhance the ability of VU students to easily find the information they require and to seek new digital technologies to deliver information and services. It does this in the context of the Australian information literacy principles⁸ and the Jisc digital literacy framework⁹. Moreover, the Library's practice is guided by the Australian Higher Education Standards Framework¹⁰. The VU Library has been focusing on e-books and e-journals acquisitions since the early 2000s. Library management has long expected its staff to have the digital competencies – or digital literacies – to support student and staff use of new media, as well as an understanding of the pedagogies that fit best with emerging educational technologies. This was the organizational context for the implementation of the first iteration of the ETE seminar at VU in 2011, with the aim of providing participants with both a theoretical overview and hands-on experience of digital technologies in higher education.

The *Emergent Technologies in Education* seminar encompassed a history of new technologies linked to new pedagogies, an examination of relevant educational theories and frameworks, a broad overview of current and emerging literacies with a strong focus on information literacy, and a consideration of issues and challenges arising. During the seminar, participants worked individually or in groups on organizationally framed library projects involving digital technologies, some designed for staff and others for students. They presented the final versions of these projects in a follow-up session two months later, framing them in terms of their organizational and educational benefits, before going on to implement them in their everyday roles. These projects placed a strong emphasis on the pedagogical aspects of teaching with new technologies, and their relationship to and role in supporting scholarly information management.¹¹

The original UWA seminars were run one day a week over five weeks, or one day a fortnight over 10 weeks, but for logistical reasons the VU seminar was conducted in a five-day intensive mode. Over 50 VU staff members have participated in the seminar

since 2011, with updated iterations being run in 2013 and 2015, alongside occasional supplementary workshops on topics of specific interest such as multimedia presentation guidelines or flipped learning approaches.

It was an expectation by the VU Library management that the seminar's impact should be evaluated and the implications of staff participation assessed. As with the UWA seminar, it was decided to conduct the evaluation using the Kirkpatrick and Kirkpatrick four-level Evaluating Training Programs model.¹² This model measures: *Reaction* – what participants thought and felt about the training; *Learning* – the increase in participants' knowledge and skills, and changes in attitudes; *Behavior* – changes in participants' on-the-job behavior; and *Results* – organizational results achieved due to changes in participants' behavior. While data have been gathered from participants in each of the three VU seminar iterations to date, the focus of this paper is on the initial 2011 intake, which has allowed us to follow this cohort over half a decade. Thus, consistent with the Kirkpatrick and Kirkpatrick model, analysis of the data from the 2011 intake has enabled an examination of changes and development over time.¹³

Literature Review

Academic librarians have a longstanding role in supporting students and academics in scholarly information management through library instruction. In an information-rich, networked scholarly environment, librarians with enhanced skillsets, and in particular with expertise in new technologies, are needed to support students in how they learn, use information, and participate in the life of an increasingly online learning community.¹⁴ This study discusses an initiative to familiarize librarians with how new technologies can be used in innovative and pedagogically grounded ways in library instruction. Library instruction in this instance is the teaching practice or “the teaching itself”, as defined by Nygaard and Serrano,¹⁵ that librarians carry out.

In the library and information science (LIS) literature, the need for ongoing development of digital literacies and fluency for librarians is recognized including by Houghton¹⁶; Riley-Huff and Rholes¹⁷; Robertson¹⁸; the Society of Chief Librarians¹⁹; and the State Library Victoria and Public Libraries Victoria Network²⁰, to name a few. However, there is less in the LIS literature on organizational responses to the need for

technology training grounded in contemporary pedagogy. Indeed, much of the LIS literature around librarians' continuing professional development (PD) remains focused on technology training without a strong pedagogical element.

One of the best-known earlier initiatives to address rapidly changing information and communications technologies (ICTs) at an organizational level in academic libraries was the program designed by librarian Helene Blowers. Known as *23 Things*, it was based on 'things' on the web which could serve as a base to explore and expand one's knowledge of the internet and web 2.0.²¹ In their assessment of organizational programs based on *23 Things* that aimed to support academic librarians in developing new technology skills, Quinney, Smith and Galbraith²² emphasized the value of principles of adult learning linked to self-directed learning, and noted the need for ongoing PD to accompany changing technologies. Stephens, Sayers and Cheetham surveyed Australian organizations that had implemented *23 Things*, observing that the program could "lead to more informed discussions and problem-solving" using new technologies.²³ Ultimately, *23 Things* remained largely focused on the technology itself.

Edwards, McLean and Cleave have reported on the development of an online training program to enhance the ICT and digital literacy skills of public library staff.²⁴ The program, while still in development, is largely aimed at developing staff familiarity with technologies and platforms. The authors acknowledge the limitations of such an approach, given the fast-moving ICT environment, but also in terms of achieving what they consider a "higher goal", that of "not only knowing how to use technological tools but also knowing how to construct things of significance with those tools."²⁵ They recognize that the digital literacy skillset is not just about the technologies but rather the skills to apply the technologies within library practice.

By contrast, the current study focuses on an in-house PD program designed to support academic librarians' acquisition of new technology skills *and* contemporary pedagogical understandings of how learning takes place and how effective instruction should be designed.²⁶ Organizational responses to the need for technology training grounded in contemporary pedagogy are thus a key point of focus of the current study. Pegrum and Kiel noted the lack of availability of this kind of training for librarians.²⁷

Their report also noted that the original seminar gave rise to a new way of talking among library staff. In particular, library staff were found to be talking about digital technologies and how such technologies might be used for new projects and initiatives. Since Pegrum and Kiel's study was based on an earlier version of the same seminar and used the Kirkpatrick's' evaluation model, their work is a point of comparison for the current study.

Methods

In this study, training evaluation is defined as: "Any attempt to obtain information (feedback) on the effects of a training programme, and to assess the value in the light of that information."²⁸ Stites states "there is no generally accepted method of evaluating ... library staff training."²⁹ Smith suggests the Kirkpatrick's' model is the most common in assessing human resource development outcomes, but also mentions that few use cases go beyond the first level of the framework.³⁰ Shupe and Pung indicate that the Kirkpatrick's' model is appropriate to evaluate a library's training programs.³¹ VU Library had previously applied it to the evaluation of another program and deemed it good practice to apply the same framework to other initiatives such as the ETE seminar in order to facilitate understandings and comparisons.

The Kirkpatrick's' model has been in use for many years, although modifications have been suggested.³² However, for consistency with the previous evaluation of the UWA seminar, the original four-level framework was used in the current study. Moreover, while there have been some critiques of the Kirkpatrick's' model,^{33 34} and while in particular there might be limitations around the assumed causality and the higher value of the Results dimension,³⁵ it has proven to be a useful method for assessing the extent of a program's success in achieving its outcomes. Yet Watkins et al³⁶ suggest that the majority of evaluations applying the Kirkpatrick's' framework primarily analyze level one (Reaction); a smaller number use levels one and two (Reaction and Learning); and only 2% use the four levels of evaluation (Reaction, Learning, Behavior, and Results). This is in line with the later work of Smith,³⁷ cited above. Applying the four levels does require a longitudinal approach allowing a period of time to elapse between the training and the data collection, so participants to have the opportunity to put their learning more fully into practice. Unfortunately, the dearth of four-level

evaluations both generally and in LIS specifically limits the possibility of wider comparisons.

The present study was underpinned by a set of research questions conceived in light of the Kirkpatrick's framework. The questions explored to what extent the seminar influenced participants' use of new technologies; new pedagogical approaches in their library instruction; their interactions with colleagues, and the impact of the seminar over time.

With its focus on user views, the study largely took a qualitative approach, with descriptive statistics generated from Likert-scale items in an initial survey, enriched by comments made in response to open questions, and with further comments obtained in a follow-up focus group. The survey (Appendix 1) was based on the original UWA survey. It was developed to gather data on the four dimensions of the Kirkpatrick framework, supplemented by a section on information literacy, given the relevance of this area for librarians and the prominence accorded to it in the 2011 seminar. The section was subsequently subsumed under a broader digital literacies focus in later seminars. The Likert-scale survey sought responses using a balanced set of options – Strongly agree; Agree; Disagree; Strongly disagree, and Not Applicable – to assess attitudes and behaviors. Overall, the survey was a highly structured instrument that included affective (liking) and utility (usefulness) measures.³⁸

Because of the time needed by participants to put their new knowledge and skills into everyday practice before commencing the evaluation, particularly of the Behavior and Results dimensions,³⁹ the anonymous survey was sent to participants in mid-2012, i.e., six months after seminar completion. After a further six months, i.e., one year after seminar completion, participants were invited to attend a focus group interview that, in addressing the research questions, used open-ended questions to evaluate the Kirkpatrick's four levels. In conjunction with a colleague who was the participants' line manager, the focus group was led by the first author. In addition, the digital projects and artefacts created by participants, as publicly presented at a wrap-up session two months after completion of the 2011 seminar, were taken into consideration.

Finally, in 2016, i.e., five years after seminar completion, an abbreviated (Appendix 2) version of the original survey, focused on the Behavior and Results dimensions, was used to re-survey the 2011 participants still employed by the VU Library, followed by another focus group interview conducted according to the earlier protocol but again focused particularly on the Behavior and Results dimensions.

The potential study population was very small, being limited in this instance to participants in the 2011 seminar, who were specialist academic librarians whose roles involved the provision of library information services for education and research. Of the 14 participants in the 2011 program, seven (50%) responded to the initial 2012 survey and attended the initial focus group interview; of the four still employed by VU Library in 2016, two (50%) completed the follow-up survey and all four attended the final focus group interview. The projects of all 14 original participants, as presented publicly at the seminar follow-up session, were also considered. As a longitudinal evaluative study limited to the initial cohort of specialist librarians taking part in this program, a reduction in the number of participants by the final phase of data collection was expected. However, its longitudinal nature sets it apart from many other studies, and it will provide a useful point of comparison with insights obtained from subsequent larger and broader cohorts when follow-up longitudinal studies of these cohorts are completed.

Ethics clearance for the study was obtained from VU. For both rounds of surveys and focus group interviews, participants were presented with information letters that indicated that participation was voluntary, that they could withdraw at any time without consequence, and that all data would be used anonymously in any published results. Completion of the surveys and acceptance of the focus group invitations were considered consent to participate. While surveys were completely anonymous, the power imbalance in the focus groups, due to the role of library managers in conducting the interviews, is acknowledged. Nevertheless, the focus group comments largely paralleled the survey results, suggesting that participants were responding freely.

Findings

This section reports on the findings from the initial survey and focus group from 2012, and the repeat survey and focus group from 2016, as well as making brief reference to the projects developed by librarians based on the seminar. The findings are addressed under the four levels: Reaction, Learning, Behavior and Results. As acknowledged, the study is a small one, limited to a particular group of this university's librarians. However, the study uses an approach fit for its purpose, namely qualitative evaluative research, and contributes to the field by being appropriately contextualized within these constraints.

Reaction

The first level of the framework, Reaction, investigates something akin to “customer satisfaction.”⁴⁰ It is suggested that for training to be effective and for learners to be motivated, “it is important that trainees react favorably to it.”⁴¹ Survey responses were very positive regarding content and delivery.

In common with the UWA study,⁴² reactions to the seminar were most positively evidenced by a unanimous *Strongly Agree* response to the item “I would recommend this seminar to colleagues.” Comments highlighted some of the aspects of the seminar most appreciated by participants:

I think the timing and content of this seminar were perfect for me. It gave me plenty of tools to add to the libguides [sic] I'm working on and for the delivery of info lit (2012 survey)

Great balance of theory info and practical application (2012 survey)

As Kirkpatrick and Kirkpatrick suggest, reactions are useful in establishing “standards of performance” for courses.⁴³

As noted earlier, the VU seminar was designed to run in a five-day intensive mode, unlike the original UWA seminars. This appeared to work well:

While there was a lot of new material presented in this seminar, adequate time was allowed to understand, practice and assimilate this information. The presentation and delivery kept the full days interesting. (2012 survey)

Getting feedback on the Reaction dimension is also important in suggesting areas for improvement of a course and its delivery.⁴⁴ In this case, no such suggestions were received. The responses indicate that the balance of theory and practice, along with the intensive delivery, worked satisfactorily for the 2011 group. The anonymity of the survey provides a level of confidence that the responses were genuine and given freely.⁴⁵

Learning

Survey responses regarding Learning indicated alignment between the intended seminar outcomes and the knowledge and skills participants saw themselves as having gained. In common with the UWA study, VU participants reported that “[i]mproved knowledge was closely tied to increased skill development through practical exposure”⁴⁶ and this often seemed to be accompanied by attitudinal change. VU participants commented enthusiastically on their gains in respect of both technological knowledge and pedagogical knowledge:

I have increased my knowledge of new technologies and the eLearning project allowed me to develop and use these new technologies in a practical setting (2012 survey)

I got more out of theory about how people learn rather than tools – am quite happy to play with tools (2012 focus group)

Through increasing technological and pedagogical knowledge, and the experience of employing these in seminar projects, a strong theme of growing confidence emerged:

I gained more confidence to engage with students in class, to talk to students about what they want to get out of class, articulate what they want to learn, own their learning (2012 focus group)

Behavior

The question of “[w]hat happens when trainees leave the classroom and return to their job”⁴⁷ is the focus of the level three evaluation dimension, Behavior. In the initial survey, the 2011 participants indicated that they had been able to apply their learning to their workplace practices. There was a unanimous response of *Strongly Agree* to the item “I have implemented in the workplace some of the things I learned in this seminar.” Attitudinal change was also evidenced in comments such as the following:

I have modified my approach by confidence to try new things. If it doesn't work, I'll try something else. (2012 focus group)

The 2011 program was specifically designed and organized to further the development of staff already involved in using blended learning approaches in their teaching practices. It was observed that these specialist academic librarians found the seminar relevant and could apply new technologies quickly to improve their practices because they were building on what they already knew:

We've always been a group open to technologies... we were ready for [the seminar] (2012 focus group)

On the question of whether librarians had changed their approaches to teaching information literacy, there was full agreement but with a more even spread of responses between *Strongly Agree* and *Agree*. These changes were also highlighted in participants' comments, as seen below, and it was interesting to note that both the seminar content and the delivery style seemed to have had an impact:

I have changed the way I present information in my classes, using some of the new technologies and methods of presentation with the students.
(2012 survey)

When I'm explaining different resources, I take [the seminar lecturer's] teaching style, telling stories, adding anecdotes to my presentations (2012 focus group)

Kirkpatrick and Kirkpatrick suggest that change on the Behavior dimension is complex, it is hard to predict when it will occur, and it requires encouragement.⁴⁸ Re-surveying the remaining 2011 participants in 2016, using an abbreviated form of the survey based on Behavior and Results, allowed us to adopt a longitudinal view. As noted earlier, of the four 2011 participants still working at VU, only two responded to the survey although all four took part in the follow-up focus group interview. This did at least allow us to establish that the positive trends seen in the original responses appear to have continued, with wider personal and organizational impacts. The seminar, it seems, helped participants not only to explore new technologies and associated pedagogies, but to sustain and consolidate them as part of their professional practice. As respondents commented:

I think participating in these workshops and seminars has had a profound affect [sic] on how I approach my work and also on my career. It gave a clear pedagogical underpinning to many of the tools and technologies that I'd been exposed to through the 23 Things program. But perhaps more importantly, these workshops triggered a process of changing the way I think about my professional practice in the sense that it opened up possibilities I hadn't previously considered. (2016 survey)

The tools and knowledge have made an impact on library staff involvement in the delivery of teaching/tutorial content and in discussions with college academics...The mindset of library staff is to seek out and use new technologies and be conformable to experiment with them (2016 focus group)

As will be seen below, such personal changes augured well for wider organizational changes.

Results

When asked in 2012 to reflect on perceived organizational benefits, participants' responses were spread fairly evenly between *Strongly Agree* and *Agree* with their comments elucidating the nature of the positive changes which had occurred:

I have been working with my colleagues and the academics on embedding new technologies into the information literacy segments and assessment tasks of their units (2012 survey)

In a move away from print-based guides I worked with faculty to embed referencing and database searching instruction online – [students] seemed to like online delivery of material (2012 focus group)

While UWA responses indicated some limitations to longer-term results due to time and workload issues, as well as limited student contact and institutional IT constraints,⁴⁹ VU responses suggested some constraints due to the broader university climate at the time, including course discontinuations and staff departures. As one person commented:

The university environment hasn't helped. Courses have disappeared. It's hard to get interest in new projects in this uncertainty. (2012 focus group)

Towards the end of 2011, VU Library, in line with other Australian university libraries, implemented the SpringShare *LibGuides* platform, which provides a web-like interface to facilitate the embedding of instructional and networked resources within the University's learning management system. The timing was fortuitous as this platform opened up space for new collaborative digital initiatives following the seminar, allowing the librarians to further leverage their growing expertise in relation to information management.

I have been able to further partnerships with faculty around LibGuides. It has facilitated embedding, has made conversations easier. (2012 focus group)

It is particularly interesting to note the comment that conversations had become easier, which echoes the finding in the UWA study that participants had developed a new vocabulary, or mode of discourse, for talking about contemporary technologies in relation to contemporary pedagogies.⁵⁰

It should be noted that the 2011 seminar feedback was overwhelmingly positive, with not a single occurrence of *Strongly Disagree* or *Disagree* in response to any Likert-scale survey item. It is apparent that this seminar worked particularly well for the initial cohort, with the only critical comments found in the surveys referring to the need for the library to be offering even more development for staff in the area of digital technologies and associated pedagogies. The responses in the focus group interview were similarly positive, but also provided new insights into the broader value of the seminar. Participants suggested that changes in on-the-job behaviors had emerged, along with broader organizational benefits as a result of the changed behaviors over time. The organizational benefits were further highlighted in the follow-up 2016 data collection. The authors note that in the small 2016 survey there were no *Strongly Disagree* or *Disagree* responses.

We're not just implementing technology skills but also partnering with academics, helping change the curriculum... [the seminar] enhanced our ability to talk with academics about curriculum and technology (2016 focus group)

Once again, in an echo of a 2011 comment, and in an echo of the findings of the UWA study, there is a reference here to a new ability on the part of librarians to engage in effective discourse with academics. This kind of intangible change in ways of talking, while difficult to quantify, is perhaps the ultimate kind of long-term result to be hoped for from a PD initiative of this kind.

Projects

The seminar required participants to undertake an individual or group project to develop or renew digital resources relevant to their everyday teaching, training or other roles. The final projects were presented to library management and other interested

library staff at a wrap-up session in early 2012, around two months after the end of the seminar, where presenters outlined the organizational and educational benefits of their work. The projects employed a range of platforms including blogs, wikis, and *LibGuides*, and involved the integration of artefacts and tools, many of them web 2.0 in nature, such as *Captivate* tutorials, *Delicious* tag clouds, *Twitter* feeds, *Voki* avatars, *Wallwisher* (now *Padlet*) discussion boards, and *YouTube* videos, alongside a variety of animations, flipbooks, polls and different kinds of aggregated content.

One of the projects, for instance, replaced a static guide with a *LibGuide* that included a Voki avatar voiceover. The guide also included links to library services and resources and was intended to enhance students' self-directed learning at point-of-need. The guide sat within the learning management system alongside problem-solving tasks and assessments in order to facilitate contextual support. Another project took the form of an orientation guide, again using a Voki avatar but this time in the character of a student, which was actually voiced by a student assistant. This orientation guide, while it has been through a number of revisions over time, is still in use. Yet another project aimed to introduce a social constructivist approach – with an emphasis on active, participatory, inquiry-based learning – into a library research skills class. To accomplish this, it built interaction around the topic by engaging students in discussion through digital polling in class, with the creator recognizing the advantages (in terms of learning) and disadvantages (in terms of time) that such an approach entails:

I used polling, it worked but took up so much time ... it was appropriate but took time (2012 focus group)

While not all of the project artefacts remain in use, new artefacts or learning objects have been created over time in the wake of the original ones. The seminar and its practical outcomes in terms of the projects led to a new way of working in the creation and renewal of learning objects to support blended learning delivery of library instruction. The follow-up presentations session also generated ideas for further development and highlighted collaborative possibilities around the various projects.

As specialist librarians already working in the area of facilitating e-learning using online resources, the 2011 participants were accustomed to project-based work. Their

involvement in what were effectively action learning projects that also produced or renewed digital resources seemed to be accepted as business-as-usual, without the sense of some UWA participants that they were “forced” to complete a project.⁵¹ Moreover, the ETE projects and the creation of *LibGuides* ensured a purposeful focus to the seminar, and allowed momentum to be maintained afterwards. Indeed, in a multiplier effect, other librarians became engaged in these projects to create online learning resources, and many of those librarians attended subsequent iterations of the seminar; and the projects developed by participants in the later seminars have in many cases continued or fed into the original projects as they have morphed into different forms over time. In this sense, too, momentum has been maintained within the organization as a whole.

Discussion

This study aimed to evaluate the effectiveness of the ETE seminar through a number of research questions. The first was the extent to which it influenced participants’ use of new technologies. While participants’ responses suggested the seminar did influence their use of new technologies, this was balanced with a view that they were ready and waiting for something like this following the earlier *23 Things* course:

The course built on 23 Things, what was missing after that. (2012 focus group)

In addition, within the VU Library there had been another earlier initiative called *Digital Challenges*, which involved library staff collaborating with faculty on the production of digital instructional objects, embedded in unit guides or the library website as appropriate. This initiative engaged a broader section of library staff focused on employing web 2.0 technologies to develop digital instructional materials. From these projects emerged questions of technological and pedagogical quality, and overall learning design, that needed to be addressed in order for the work to purposefully contribute to student learning in a blended environment. The ETE seminar appears to have enabled the participants to consolidate and further develop their technological skills, while exploring associated pedagogies. In short, the seminar provided a license to investigate new technologies but also, as with the UWA experience, offered a more general foundation for instructional practice, in particular acquainting participants with

the “social constructive educational approach facilitated by the technology.”⁵² As one 2016 focus group participant reflected:

The course was a wonderful opportunity for us to gain an understanding of the pedagogy underpinning the use of new technologies, as well as being introduced to a wide range of these tools. (2016 focus group)

Such comments shed light on the second research question, which focused on the extent to which the seminar influenced participants’ use of new pedagogical approaches in library instruction. The integration of pedagogical theory and technological practice with a focus on collaboration and sharing of expertise opened up opportunities and built confidence in this area:

Growth in [one’s] own confidence is also important and has been underpinned by the course, for example I introduced a change to my class learning design – it was a bit of a leap into the dark. I had to manage the class and technical difficulties but the students liked it (2016 focus group)

At the same time, however, it was observed that while the early projects integrated context and tools, many remained largely in an older pedagogical “transmission mode.”⁵³

The seminar raised awareness regarding contemporary pedagogies like social constructivism, and variants like problem-based and inquiry-based learning, which are widely employed in contemporary higher education. In other words, participants were able to experience an active, student-centred, social constructivist approach from the learner perspective, allowing them to reflect on how they themselves might employ such an approach in their own teaching, and the impact this might have on their students. Since the 2011 seminar, the librarians have participated in Learning Design seminars focused on the flipped class approach, and have subsequently experimented with the approach, and other active learning approaches, in library instruction classes.

However, it remains a challenge to design digital learning in such a way that contemporary technologies are better aligned with contemporary pedagogical possibilities, where technologies are used to enhance the level of students’

interactions and facilitate their co-construction of understanding, and to enable creation of their own digital artefacts.

The third question was the extent to which the seminar influenced participants' interactions with colleagues. As part of the UWA seminar, a class wiki was established to create an online community of practice facilitating the sharing of collective intelligence.⁵⁴ While a class wiki was not part of the VU seminar delivery, VU participants found their own pathway to a similar online collaboration space, creating a space in the learning management system within which to work jointly. This allowed the building of an online community to complement offline discussions, fostering the sharing and development of ideas within a paradigm of social learning. Such a space for dialogue and collaboration was important, and continues to be important, in the continued development of understanding after the seminar; as Biggs suggests, "good dialogue elicits those activities that shape, elaborate and deepen understanding."⁵⁵ Librarians' production of resources and artefacts to support information literacy and other skills development, sometimes in conjunction with other librarians and sometimes with faculty, has also been a concrete and ongoing benefit of the program.

In brief, the seminar had both short-term and long-term benefits for participants, contributing to a change in the way they saw themselves within the organization if not indeed the wider world.⁵⁶ Many participants reported increased confidence, underpinned by increased knowledge of new technologies and pedagogical approaches, which provided a better springboard for interactions both with library colleagues around learning designs and with faculty around curriculum needs. The resulting richer relationships and more informed conversations have been of benefit to the intellectual capital of the organization and have facilitated achievement of common goals.⁵⁷ This has been reflected in particular in the development of a new vocabulary and a new mode of discourse – and, crucially, the confidence to use these – as seen in both the original UWA study and the current VU study. New vocabulary and a new mode of discourse in turn reflect, and foster, new ways of thinking:

We think differently. The paradigm has changed for example, how we solve problems such as [Microsoft Office] Communicator for meetings,

more collaboration, we've built relations more strongly with faculty – impact has been broader than just [the seminar]. (2012 focus group)

As observed by Pegrum and Kiel, the seminar's social constructivist approach ensured that participants "experienced first-hand the theoretical approaches to pedagogy they were learning about in the course."⁵⁸ This experience may have contributed to the wider effect of the seminar.

The last research question concerned observations on the impact of the seminar over the timescale. Prior courses had clearly readied the original participants for the 2011 seminar, and they were well placed to build on their technological and pedagogical knowledge during and following on from this experience. While small, the dataset collected five years after the seminar, in 2016, indicates that the positive trends have continued, with new ways of talking and thinking about digital technologies, and how to make best pedagogical use of them, still in evidence, and leading to more productive conversations between librarians, faculty, and wider support staff.

The further development of the librarians' educational technologies skills has been supported by subsequent professional development events including ETE refresher courses, a culture of encouragement to experiment with new technologies, and new projects in which to apply their skills:

The mindset of [the unit] librarians is to seek out and use new technologies and be comfortable to experiment with them. (2016 focus group)

Since 2011 VU Librarians have been collaborating with faculty and educational designers on curriculum redesign projects to create blended modes of delivery and learning, providing further opportunities to implement their knowledge and capabilities gained from the ETE seminar.

Conclusion

While this report drew on a relatively small dataset, the findings are strongly suggestive of the positive impact of the seminar. There is a high level of consistency

among the data sources (surveys, focus group interviews, and project artefacts). Moreover, the findings tie in closely with the UWA study, which provides an additional level of confidence in the results.

In brief, the ETE seminar facilitated a new way of working with digital technologies to enhance library practices. There are elements of the ETE program that could be adapted to other institutions which share the aim of enhancing the effectiveness of librarians in providing effective instruction, support and resources in networked digital or blended contexts. The combination of educational theories and technological practice, integrated in hands-on course projects framed by participants' statements of rationale delivered in their final presentations, constitutes an effective action learning program. It is also worth noting the value of refresher programs in contributing to enhanced capability as participants continue to develop their knowledge and skills over time.

The seminar was originally run for specialist VU academic librarians in 2011, and has been run twice since then, in 2013 and 2015, for librarians from all parts of the library as part of its digital strategy. Underpinning the expansion of the seminar has been the need for library staff to have digital competencies, and to understand how contemporary pedagogical approaches fit with emerging educational technologies in order to be able to support the use of new media by students and faculty. Jaguszewski and Williams suggest that the way “libraries continuously adjust ... roles reflects how [their] parent institutions must constantly adapt to changes in ... approaches to teaching, learning and research”, but also add that the advent of each new role “requires ongoing resources, new collaborations and regular re-skilling.”⁵⁹ Seminar participants seemed to grasp this clearly:

The knowledge base for staff has greatly improved due to the courses.
Staff appreciated the investment that management has made in this area.
(2016 focus group)

Over time, the nature of the seminar has changed, moving from enhancing the skills of specialist academic librarians to providing education that is more general for all librarians to undergird their digital practices. The effect of this change on the impact of

the seminar will be the focus of a future study. For now, it is possible to state with some confidence that the seminar has had a positive influence on the first cohort of specialist librarians, and by extension on the colleagues with whom they have subsequently worked on digital projects, encouraging them to take small steps towards making positive changes in what can sometimes be a risk-averse context. Since 2011 some of the original participants, as the more senior and generally older staff, have retired, but the small number who remain at the VU Library continue to be the leaders in new ways of working and are at the forefront of organizational innovation and transformation. It is hoped that this momentum, stemming from the original seminar, can be maintained into the future.

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**Victoria University Library
Emergent Technologies in Education Seminar
23-25 Nov & 8-9 Dec 2011**

Gender (*please circle*): M F

Age range (*please circle*): 20-29 30-39 40-49 50-59

Role (*please circle*): Library other

If you circled 'other', please describe your role:

REACTIONS	Strongly agree	Agree	Disagree	Strongly disagree
The seminar content was interesting.				
The seminar was well-designed.				
The seminar had an adequate focus on information literacy.				
I would recommend this seminar to colleagues.				

Please comment on your satisfaction with the seminar (e.g., content; organisation; delivery; timing).

LEARNING	Strongly agree	Agree	Disagree	Strongly disagree
I gained an understanding of new technologies.				
I gained an understanding of the application of new technologies in higher education.				
I gained an understanding of the relationship of new technologies to information literacy.				
I gained an understanding of how to use new technologies in teaching information literacy.				
I gained practical skills in the use of new technologies.				
The seminar project helped me develop my knowledge and/or skills.				

Please comment on changes in your knowledge, skills and/or attitudes as a result of the seminar.

BEHAVIOUR	Strongly agree	Agree	Disagree	Strongly disagree
I have implemented in the workplace some of the things I learned in this seminar.				
I have modified my approach to teaching information literacy as a result of the seminar.				
My seminar project has had a positive impact on my teaching or other professional activities.				

Please comment on changes in your workplace behaviour and/or activities resulting from the seminar.

RESULTS	Strongly agree	Agree	Disagree	Strongly disagree
The seminar has facilitated productive interactions with colleagues in the application of e-learning.				
The seminar has benefited my wider organisation (e.g., Library/Faculty).				

Please comment on any wider organisational benefits as a result of the seminar.

VIEWS OF INFORMATION LITERACY	Strongly agree	Agree	Disagree	Strongly disagree
Information literacy skills are changing because of new technologies.				
It is the responsibility of academic staff to teach students information literacy skills.				
It is the responsibility of librarians to teach students information literacy skills.				
It is the responsibility of students to educate themselves about information literacy skills.				

Has your view of information literacy changed at all as a result of the seminar? If so, how? Please give specific examples.

After completing the seminar, how do you see information literacy needs – your own, those of academic staff, and those of students – developing or changing in the future?

Victoria University Library

Reflecting on your work since attending one of these seminars, please provide responses to the following:

Course name [circle one for each survey response]:

Educational Technologies in Education **ETE course date** [circle one]: 2011 2013 2015

Learning Design

New Technologies, New Directions

BEHAVIOUR	Strongly agree	Agree	Disagree	Strongly disagree	Not applicable
I have implemented in the workplace some of the things I learned in this seminar.					
I have modified my approach to teaching information literacy as a result of the seminar.					
My seminar project has had a positive impact on my teaching or other professional activities.					

Please comment on changes in your workplace behaviour and/or activities resulting from the seminar.

RESULTS	Strongly agree	Agree	Disagree	Strongly disagree	Not applicable
The seminar has facilitated productive interactions with colleagues in the application of e-learning.					
The seminar has benefited my wider organisation, the Library.					

Please comment on any wider organisational benefits as a result of the seminar.

VIEWS OF INFORMATION LITERACY	Strongly agree	Agree	Disagree	Strongly disagree	Not applicable
Information literacy skills are changing because of new technologies.					
It is the responsibility of academic staff to teach students information literacy skills.					
It is the responsibility of librarians to teach students information literacy skills.					
It is the responsibility of students to educate themselves about information literacy skills.					

Has your view of information literacy changed at all as a result of the seminar? If so, how? Please give specific examples.

After completing the seminar, how do you see information literacy needs – your own, those of academic staff, and those of students – developing or changing in the future?

Reflecting on your work since attending one of these seminars what has been the main impact on your work and workplace as a result?