

Similarities and differences in North American and New Zealand tertiary instructors' perceptions of effective e-learning methodologies



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In this cross-national study, tertiary instructors from North America and New Zealand were asked to share their perceptions regarding effective e-learning methodologies. Our intent was to determine what similarities and differences in perceptions existed and what implications, if any, such similarities and differences could have for the New Zealand government as it reviews and refines a national Digital Strategy that includes the tertiary sector. A comparison of the responses to four research questions indicated that while both similarities and differences in perceptions do exist, the similarities far outweigh the differences and there were no strong conclusions to significantly modify New Zealand's current Digital Strategy development.

Keywords: e-learning, tertiary pedagogy, cross-national research, instructor perceptions

Introduction

For several decades, the effectiveness of technology in contributing to students' learning has been a focal but controversial issue in education (Keller & Suzuki, 2004; Roblyer, 2006; Walker & Arnold, 2004; Laurillard, 1993; Muilenburg & Berge, 2001; Hyslop-Margison, 2004; Robertson, 1998). The question of when and how technological strategies are most effective for students' learning relates directly to e-learning.

The terms *e-Learning* and *online learning* are similar but not identical. E-learning is often considered to utilize a broader spectrum of learning and communication technologies while online learning depends heavily upon the Internet and Web for learning delivery (Neal & Miller, 2004). For purposes of our study, the terms can be used interchangeably.

Prior research studies have examined which instructional and learner factors influence the overall quality and learning outcomes of e-learning at the course level (King, Harner, & Brown, 2000; Lim & Kim, 2003). The overarching frameworks and mechanisms influencing the quality and learning outcomes of e-learning programs at the institutional level and instructional design considerations have been explored as well (Lim & Ripley, 2007).

Our focus in this study is the perspective of the *instructor*. We seek to discover which e-learning methodologies are perceived to provide the best results (*best results* is defined here as *enhancing student learning*) by a group of e-learning instructors from New Zealand and North America, and to see what similarities and differences in their perceptions exist.

Review of literature

Definitions and typology of e-learning

Several definitions of e-learning are found in the literature (Stockley, 2006; Kaplan-Leiserson, 2004). We lean to the Kaplan-Leiserson idea that e-learning covers a wide set of applications and processes to deliver learning content via Internet, intranet, audio, video, satellite broadcast, interactive TV, CD-ROM, and more.

A typology of e-learning can be established based on the proportion of content delivered electronically. Similar to the online course models with low-to-high technological content proposed by Mason (1998) as *content plus support*, *wrap around*, and *integrated*, we classify e-learning courses as follows. Those courses that deliver their content between 1 to 29% electronically, we term *technology-facilitated* and technology primarily supplements face-to-face (FTF) interaction. Courses that deliver 30-79% of content electronically, we consider to be *blended/hybrid* as e-learning is combined with FTF instruction throughout the course. Finally, we consider courses that deliver 80% or more of course content electronically and typically include very little FTF interaction to be *technology-driven* courses.

Pedagogical models and e-learning

Bixler and Spotts (2000) indicate that in designing e-learning courses, instructional designers are guided by pedagogical principles from multiple learning theories. Thus course design by or for instructors who lean toward particular viewpoints could be expected to feature methods rooted in those perspectives. However, McLoughlin and Luca (2001) have suggested that e-learning leads to pedagogical reengineering resulting in learning scenarios where students are more active participants and actively participate in generating new knowledge. They refer to this as a “participatory/ contributions-oriented” (p. 420) approach to learning. While McLoughlin and Luca’s model does not overrule other approaches, it is seen as a more desirable model for e-learning from the constructivist’s viewpoint since learners involved in e-learning often need more self-directed learning habits and attitudes than learners within FTF learning environments.

Guidance for instructors

There is no shortage of articles in the literature suggesting what e-learning methods *should* be followed by instructors. These cover areas such as asynchronous discussion (Knowlton, 2005), online facilitation (Merrill, 2003), best practices in blended classes (Habaneck, 2006; Mortera-Gutierrez, 2006), frequency of communication (Woods, Jr., 2002), the potential of online discussion tools (Aworuwa, 2004), online pedagogy (Domine, 2006; Saleh & Lacey, 2004), encouraging critical and high-level thinking (Christopher, Thomas, & Tallent-Runnels, 2004; Ripley, 2006), the social aspects of online courses (Ackley, 2002), and theory application (Doyle & Hogan, 2004). However, we were able to find very little on cross-national work, although Zhang and Liu (2006) presented a comparison of American and Chinese high school teachers and Meredith and Burkle (2006) provided a Mexican-UK e-learning case study analysis.

Problem statement, purpose, and research questions

Problem statement

As noted, there is no shortage in the literature of articles that provide guidance for instructors on methods those authors suggest *should* be followed. However, *instructor perceptions* of the effectiveness of various e-learning methods have been less studied, particularly from a *cross-national perspective*, and this has relevance to the current situation in New Zealand.

Developing national capacity in information and communication technology (ICT) is a major focus in New Zealand. An effort to develop a comprehensive national Digital Strategy has been underway since 2004, when a draft was produced. A strategy discussion document was developed and released in 2006 and “two years on from the launch of the Digital Strategy, it is timely that we review progress, look at what gaps still need to be filled and what new actions can be implemented to help create our digital future” (Government of New Zealand, 2006). Within this climate of reviewing and refining the Digital Strategy, the tertiary sector’s role is seen as critical “to better support our national development goals and to respond to the challenges of globalisation, accelerating technological change and the knowledge society. E-learning is mandated by the Strategy ‘to strengthen system capability and quality.’ An action plan is currently being developed to co-ordinate national initiatives centrally in partnership with the tertiary education sector and in collaboration with government agencies and other stakeholders” (Government of New Zealand, 2006).

Research purpose

Our study seeks to identify what tertiary sector instructors from New Zealand and North America perceive as the most effective e-learning methodologies in order to help inform the development of the tertiary sector’s role in the Digital Strategy. While Canada and the USA are both much larger than New

Zealand, both countries face some of the same issues as New Zealand. For example, both countries have students in densely populated urban areas and in sparsely populated rural areas. To help confirm the directions already being taken by New Zealand and to consider other approaches, the following research questions were developed to explore the similarities and differences of instructors' perceptions in these three countries.

Research questions

1. What e-learning methods do instructors perceive produce the best results, in terms of student learning?
2. What evidence do instructors offer in support of these perceptions?
3. In what situations do instructors find these methods to be effective (e.g. setting, class size, level of students, etc.)?
4. Why do instructors believe these methods are superior to other approaches?

Methodology

Design

Qualitative research is the direct product of the interplay between the researcher's conceptual framework, design, and research questions. In this study, the Naturalistic Inquiry conceptual framework, data collection, and data processing strategies described by Lincoln and Guba (1985) were employed because our focus was to collect participants' perspectives on research questions 1-4 with the understanding that, "realities are multiple, constructed, and holistic" (Ibid, 37).

To collect these realities, participants were asked to respond to our research questions in an open-ended manner. All participants were asked the same questions, in order to provide for comparison of responses. We selected instructors from New Zealand and North America who were experienced (at least 3 years) in teaching *blended* or *technology-driven* e-learning courses. As Patton (in Morse, 1994) has noted, it was important that our sample was *information rich*, and using experienced instructors provided this. Specifically, we used *intensity sampling*, where one purposively "selects participants who are experiential experts and are authorities about a particular experience" (p. 229). As Lincoln and Guba (1985) suggest, such an approach "increases the scope or range of data exposed as well as the likelihood that the full array of multiple realities will be uncovered" (p. 40).

Our North American sample consisted of 33 tertiary instructors, including 5 from Canada and 28 from the USA; our New Zealand sample consisted of 12 tertiary instructors. The North American instructors were from 3 Canadian and 14 USA tertiary institutions. All were universities, except for the Baltimore, Maryland Community College in the USA. Most were major provincial (Canada) or state (USA) universities. The New Zealand tertiary instructors were from the University of Auckland, University of Canterbury, Open Polytechnic, University of Otago, and UNITEC Institute of Technology.

Data collection

We first conversed with all participants, either in person or by telephone (with two exceptions, where we exchanged several e-mails). The purpose of these conversations was to ensure that all participants understood the purpose of the study and the questions and to respond to any concerns they might have; it was *not* to actually obtain answers to the questions. During the conversations, we asked participants to take a few weeks to reflect on the questions before responding. We felt this approach gave us some of the same benefits that exist in asynchronous e-learning discussions. Further, because our participants did not have to respond to the questions immediately, as would have been the case had we collected data through face-to-face interviews, they were able to spend more time reflecting. We felt this would increase the probability of well-considered responses.

Following the conversations, participants were provided the URL and password for our web-based open-ended response instrument. We felt a web-based instrument was appropriate given the background of the participants and the nature of the study.

Data analysis

The goal in processing and presenting this data for interpretation was "to reconstruct the categories used by subjects to conceptualize their own experiences and world view" (Lincoln and Guba 1985, p. 334). To

reconstruct these categories, instructors' responses to the open-ended questions were analysed. Specifically, the processing steps consisted of: (a) reading the participants' responses, (b) using those responses to create categories, and (c) using those categories to address the research questions. These categories were then analysed for occurrence across participants' responses in order to view and identify them as findings of this study.

Findings

By using the four research questions as the framework for analysing the North American and New Zealand instructors' responses, trends of similarity and difference emerged. As demonstrated in the following summary tables of responses and frequency of emergent trends, some cross-national comparisons can be formulated. Length considerations preclude the use of more detailed tables showing each individual response, however, excerpts from instructors' responses that are representative of the trends are provided. The percentages in the tables reflect that instructors' responses may have addressed more than one category, so total numbers of responses can exceed the sample size. In the *Instructors* columns of the tables, NA represents North America and NZ represents New Zealand.

Research question 1: What e-learning methods do instructors perceive produce the best results, in terms of student learning?

Table 1: Combined instructor responses to research question 1

| Instructors | Discussion (Students) | Collaboration | Feedback (Instructor) | Real-world Projects | Location for Materials |
|-------------|-----------------------|---------------|-----------------------|---------------------|------------------------|
| NA (33) | 23 (70%) | 14 (42%) | 9 (27%) | 4 (12%) | |
| NZ (12) | 8 (67%) | 2 (17%) | 1 (6%) | | 2 (12%) |

North American instructors

North American instructors' responses clustered around the four methods of *discussion among students*, *collaboration*, *feedback from instructor* and *real-world projects*. The frequency of responses that mentioned the method of *discussion among students* (23 out of 33) outpaced the other methods. While the other three methods were often linked to *discussion*, instructors made a distinction in their responses. In other words, *discussion* was described as a teaching method in and of itself, regardless of whether or not it was a component of the other methods. Some representative excerpts from their responses:

I like to use a variety of methods to encourage the students to talk with one another about course content.

I am more a fan of projects than discussion questions. I think projects that involved groups work the best, but individual projects with group input are also effective. Projects that involve steady interaction with professor input/guidance are very effective.

Constructivist methods work best from my perspective. Having students build on theories with projects, papers, and discussions give them experiences from which they can learn the material and meet course objectives.

New Zealand instructors

The responses to Research Question 1 by the New Zealand instructors were consistent with three of the four methods mentioned most frequently by the North Americans. One North American category, *real-world projects*, did not appear in any New Zealand response and a new category, *location for course materials*, did appear in the New Zealand data. While New Zealand instructors made a distinction between *discussion* and the other three methods, its frequency in responses (8 out of 12) is far beyond the others, which were mentioned by only 1 or 2 each. The four methods appear to generally stand-alone and do not appear to be seen by the instructors as inter-related. Some representative excerpts from their responses:

WebCT has proved to be a very useful and efficient tool in providing students access to course materials such as the course outline, assessment items and lecture notes. Students talking to each other and comparing their formative work. Lecturers providing advice proactively.

Research question 2: What evidence do instructors offer in support of these perceptions?

Table 2: Combined instructor responses to research question 2

| Instructors | Personal Experience | Students' Reactions | Research by Others | Student Evaluations/ Feedback | Research by Instructor |
|-------------|---------------------|---------------------|--------------------|-------------------------------|------------------------|
| NA (33) | 18 (55%) | 12 (36%) | 11 (33%) | 10 (30%) | 4 (12%) |
| NZ (12) | 5 (42%) | 6 (50%) | 5 (42%) | 3 (25%) | 4 (33%) |

North American Instructors

Responses from the North American instructors focused on the categories: *personal experience and observation*, *students' reactions to a specific method*, *research by others*, *student evaluations and feedback*, and *research by instructor*. The most frequently mentioned category was *personal experience and observation*. It could be argued that *personal experience and observation* is similar to *research by instructor* and those two sources should be combined. However, it appeared that instructors were clear to use language and terminology to distinguish between the two with several responses stating, "My evidence is anecdotal," and "I have no data that supports these methods are superior," and "I have no hard data to support my beliefs..." Similarly, *student evaluations and feedback* were not described as research data but as information gained from institutional evaluation procedures.

New Zealand instructors

The responses to Research Question 2 by the New Zealand instructors were again consistent with those of their North American colleagues, grouping in the same five categories. New Zealand instructors also clearly distinguished between their own observations and what they considered research with statements such as:

There is no data to support my belief except for the students' feedback, which has always been extremely positive.

I have researched in the area and also gathered anonymous data from students.

Research question 3: In what situations do instructors find these methods to be effective (e.g. setting, class size, level of students, etc.)?

Table 3: Combined instructor responses to research question 3

| Instructors | Class Size | Undergrad (UG) Grad (G) | Online (OL) Blended (BL) | Adults (A) Prof (A) |
|-------------|---|-----------------------------|-----------------------------|------------------------|
| NA (33) | 19 of 33 classes are < 21 | GR: 13 UG: 2 UG/GR: 3 | OL: 3 BL: 6 OL/BL: 4 | A: 3 P: 5 |
| NZ (12) | 3 of 12 classes are < 21 4 are up to 350 | GR: 3 UG: 6 UG/GR: 1 | OL: 3 BL: 9 | |

North American instructors

North American instructors' responses to this question largely described the logistics of the situations and included *class size*, *level of the class (undergraduate or graduate)*, *the e-learning type (completely online or blended)*, and whether the students were *adults and/or professionals*. Some representative excerpts from their responses:

These methods are most effective in classes of 8-15 students. When there are fewer students, discussion lacks the dynamics that discussion has in larger groups. All of the work I have done online has been done with pre-service or in-service graduate students.

These methods have been successful with graduate students in classes up to 18 in size with one instructor. I have used graduate assistants with classes of 19 to 22 but find that is unwieldy.

New Zealand instructors

The categories provided by the New Zealand instructors' responses were consistent with those of the North American instructors, with the exception that type of student (adults or professionals) was not a category of response and is not shown for New Zealand in Table 3. Class size was the situation mentioned by all the instructors with most providing specific number ranges. The two other most prominent New Zealand trends were the high number of *undergraduate* courses mentioned and the fact that *blended* was mentioned significantly more than only *online*. Some representative excerpts from their responses:

Class 101 has 200 enrolments, Class 102 just under 100. Both are introductory first year classes taught to students with no background in the area.

Open and Distance Learning - class size between 50-100 and at 300 level - the lower levels need much more hands on contact and support.

Research question 4: Why do instructors believe these methods are superior to other methods?

Table 4: Combined instructor responses to research question 4

| Instructors | Don't see their approach as superior | Value of a specific e-learning aspect for students | Value of a specific e-learning aspect for instructors |
|-------------|--------------------------------------|--|---|
| NA (33) | 6 (18%) | 25 (76%) | 11 (33%) |
| NZ (12) | 2 (17%) | 10 (83%) | 6 (50%) |

North American instructors

The responses to this question from the North American instructors were grouped into the following three categories: *don't see them as superior*, *value of a specific e-learning aspect for students*, and *value of a specific e-learning aspect for instructors*. Even though the specifics within most of the instructors' responses varied, there was a significant focus on the superiority of the methods being linked to students as shown in the following excerpts from their responses:

In online courses that include discussion, every student is heard. I've had online students tell me that in their online classes their "voices" are heard, everyone has equal opportunity to choose to speak, and they don't feel marginalised by the loud or domineering adult learner.

One reason I think these methods work is that they fit the students in the classes. The discussion methods make use of the diversity among the students, especially their differing levels of experience.

New Zealand instructors

The New Zealand instructors' responses aligned with the same three categories as the North Americans. Within these three descriptions, the specific responses were varied and there appears to be a clear majority of instructors who saw their methods as being superior in the context of student performance while a smaller group placed those methods within the context of instructor performance with a response such as:

My own belief is that it allows teachers to "see" students learning. It's a kind of surveillance over the process that usually is not observable to the teacher, but goes on as students discuss ideas/concepts outside of class. In this sense it makes it more enjoyable for the teacher.

Discussion

As previously stated, the purpose of this study was to explore the similarities and differences in the perceptions of instructors as to the effectiveness of e-learning methods. While the aggregated results presented in the Findings illustrate trends specific to each research question, those trends can be summarised more broadly into the following similarities and differences:

Similarities

- Both groups of instructors perceive that using e-learning methods to generate student discussion produces the best results in terms of student learning.
- Both groups rely heavily on their personal experiences and their perceptions of students' reactions (as compared to formal student evaluations) as evidence that their e-learning approaches are effective.
- A strong percentage of both samples stress the value of their approaches in terms of the benefits to their students.
- A good number of each sample emphasise the value of their approaches for themselves as instructors.
- A small proportion of each sample does not consider their approaches as superior to other options.

Differences

- The North American sample appears to place a greater importance on the value of their approaches as providing opportunities for students to receive feedback from instructors.
- The New Zealand sample appears to place a greater importance on research as a rationale for their approaches; 8 of the 12 instructors (67%) indicated a reliance on personal or others' research.
- The North American sample has a higher proportion of small classes and graduate classes.
- The New Zealand sample has a higher proportion of large classes and undergraduate classes.

With regard to using those trends from the Findings toward informing or modifying the New Zealand Digital Strategy, it appears that the perceptions of these North American instructors do not suggest any radically different directions for the New Zealand tertiary sector to take with e-learning as there appear to be many similarities. Rather, the differences between the instructors' perceptions may reflect the different contextual factors that exist at tertiary institutions in North America and New Zealand.

Thus, in its role of assisting the New Zealand government in reviewing, refining, and implementing the Digital Strategy, the use of e-learning in effectively addressing these differences, where relevant, may be useful. For instance, how might the North American instructors' perceptions that their e-learning approaches provide opportunities for students to receive feedback from instructors inform decisions by the New Zealand tertiary sector? To replicate this approach, students' online access would need to be assured while recognising that phone and broadband connections costs in New Zealand are relatively expensive compared to North America. Further, to encourage instructors to provide more feedback through e-learning modes leads to acknowledging the large class sizes mentioned by New Zealand instructors, which is a situation related, perhaps, to different teaching loads and number of teaching staff at institutions in these different countries.

As demonstrated by those intricate and contextual factors that differentiate North American and New Zealand instructors' perceptions and practices, it is important that the tertiary sector is an informed collaborator on the review and refinement of the Digital Strategy. The New Zealand tertiary sector should not necessarily adopt all of the e-learning practices of the North American tertiary sector but can learn where and when such practices fit within its specific context.

Conclusions

The Findings and Discussion illustrate our main conclusion that the perceptions of the North American and New Zealand instructors who participated in this study are more similar than they are different. Differences between the two groups of instructors in this study do exist, but in our view, these are mostly explained by some of the responses to the research question relating to *situations*. The instructors from all three countries stated a strong focus on students with the following cross-national conclusions:

- There is strong agreement on the value of e-learning approaches for generating student discussion.
- Instructors in both groups stressed value to students as their major rationale for considering their approaches superior to other approaches.
- Both indicated student reaction, informal and through formal evaluations, as important data for ensuring the efficacy of their approach.

It is important to consider the above conclusions in light of the primary data collection method of open-ended research questions. Even though the instructors had the opportunity to describe any e-learning methods they perceived as effective, most chose to focus on how they used the technology for discussion between students and themselves. None of the instructors explicitly described methods that involved the other forms of e-learning described by Kaplan-Leiserson (2004) such as: audio, video, satellite broadcast,

interactive TV, or CD-ROM. While this might be attributed to the limitations of experiences of this particular group of 45 instructors, their overall lack of describing those other methods might be for other reasons, including their teaching philosophies - these instructors appear particularly inclined toward McLoughlin and Luca's model (2001) - and technology infrastructures. This study did not pursue those questions further but they are important ones to consider as institutions devote resources to developing e-learning practices and tools. Presumably, those practices and tools should align with instructors' perceptions about the most effective methods for implementing them.

Our purpose was to explore similarities and differences in the perceptions of these two groups of instructors with regard to effective e-learning methodology, as similarities could help to confirm directions already taken by the New Zealand tertiary sector in supporting the Digital Strategy and differences could suggest consideration of other approaches. The samples in this qualitative study are not large, and we make no effort to generalise our results beyond the study population. However, based on the perceptions of the instructors in this study, we find no significant conclusions to indicate that instructors in the New Zealand tertiary sector are not moving in appropriate, and internationally similar, directions. We find this encouraging and hope future studies will be undertaken to further investigate the contextual differences in e-learning at tertiary institutions in these countries and to continue to refine New Zealand's Digital Strategy.

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