

The State of E-Learning in Canadian Universities, 2011: If Students Are Digital Natives, Why Don't They Like E-Learning?

Higher Education Strategy Associates Intelligence Brief 4

Jason Rogers
Alex Usher

With Edyta Kaznowska

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Higher Education Strategy Associates (HESA) is a Toronto-based firm specializing in research, data and strategy. Our mission is to help universities and colleges compete in the educational marketplace based on quality; to that end we offer our clients a broad range of informational, analytical, evaluative, and advisory services.

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Contact:

Higher Education Strategy Associates
Unit 400, 460 Richmond Street, Toronto, ON M5V 1Y1, Canada
phone: 416.848.0215
fax: 416.849.0500
info@higheredstrategy.com

www.higheredstrategy.com

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INTRODUCTION

For many years now, people have been touting the arrival of the “digital native,” or students that were “born digital”. These terms were meant to describe members of a generation who, according to the more fevered sections of the technorati at least, actually have a different set of neural pathways – who, having been exposed since birth to the Internet and hypertext, “think and process information differently” from previous generations.¹ In some quarters this has led to calls – on the basis of evidence that can sometimes be alarmingly thin – that curricula and instructional technologies be radically overhauled in order to cater to the “new learner.”

At the same time, much has been made about the quality-enhancing – and cost-reducing – potential of using the Internet for learning purposes in universities. The National Center for Academic Transformation in the United States, in particular, has been a leading voice in using course redesign as a means to improve both learning outcomes and resource allocation.² This has not really been about moving whole courses online – the “disruptive technology” that some commentators suggest is about to change universities completely³ – but rather it has been about deploying e-learning resources in such a way as to complement and amplify what is being done in more traditional courses. The entwining of these kinds of resources into courses that remain primarily physical and class-based is commonly referred to as “blended learning.”

In Canada, universities have been implementing e-learning solutions and purchasing virtual learning environment platforms such as Blackboard, Desire2Learn and so on. However, in comparison to the United States, there has been less focus on cost-savings and almost no focus at all on outcomes. Yet much of the discourse around e-learning is similar in that implementation of these platforms tends to be wrapped in notions around how newer generations, having been reared digitally, are demanding these kinds of resources and indeed “prefer” learning that way.

Yet as Bennett, Maton and Kervine (2008) note,⁴ there has been precious little research done on what the so-called digital natives themselves think about this. In the weeks prior to publication of this study, for instance, a major study on e-learning by the Pew Research Center⁵ was unveiled to considerable fanfare in the United States, but while it presented results of a survey of the American public and of U.S. college presidents, it did not bother to get the student

¹ Prensky, M. (2001) “Digital natives, digital immigrants” *On the Horizon* 9(5). Tapscott, D. (1998) *Growing up Digital: the Rise of the Net Generation*. New York: McGraw-Hill.

² An overview of the center’s activities with respect to course re-design can be found at <http://www.thencat.org/index.html>

³ See for instance Christensen, C. (2011) *The Innovative University*. San Francisco: Jossey-Bass

⁴ Bennett, S, K. Maton and L. Kervin (2008) “The ‘digital natives’ debate: A critical review of the evidence” *British Journal of Educational Technology*, 39(5) 775-786.

⁵ Parker, K, A. Lenhart and K. Moore (2011) *The Digital Revolution and Higher Education*. Available at: <http://www.pewinternet.org/Reports/2011/College-presidents.aspx>

perspective. While Kvavik (2004)⁶ has put together some solid evidence on how students use e-learning technology and what they think about it, it is remarkable how far from the discourse this kind of evidence-based reasoning has been.

The purpose of this paper is to try to redress the balance of the discussion about e-learning by putting the voices of the learners themselves at centre stage. Whether one buys the “digital natives” theory or not, or whether one believes that e-learning can help “bend the cost curve” in higher education, these resources are now being rolled out on such a scale that it is important to understand how the people they are intended to benefit actually view them.

As such, the paper sets out to achieve a number of different goals. The first is to try to quantify the availability and use of e-learning resources in Canadian universities. It also attempts to look at satisfaction and perceived learning outcomes in classes according to the degree of e-learning resources available. Finally, it seeks to analyse the views of undergraduate students on blended learning as it is currently implemented on Canadian campuses. Throughout, the key questions are: do so-called “digital natives” actually prefer using e-learning resources, or not? And if they do, are Canadian universities performing to their expectations?

⁶ Kvavik, R (2004) Convenience, Communications and Control: How Students use Technology. Available at: <http://www.educause.edu/Resources/EducatingtheNetGeneration/ConvenienceCommunicationsandCo/6070>

METHODOLOGY

The data in this report was collected from an online survey conducted by Higher Education Strategy Associates (HESA) between April 21st and April 30th. HESA runs an ongoing online panel with a membership of over 8,000 undergraduate students who have been enrolled in an undergraduate program in a Canadian degree-granting institution at some point in the 2010-11 academic year and have indicated that they are returning for study in 2011-12. Roughly every six weeks, HESA sends them a survey on a variety of issues, with a response rate that varies from month to month, usually in the range of 25% to 40%. The sample for this survey is 1,370 undergraduate students; 81 respondents had not taken any courses in the study's reference period (due to co-op work placements, for instance) and were excluded from the analysis, leaving 1,289 records for study.

Obviously, the resulting sample for any of these monthly surveys is not a purely random one, as members of the panel must have responded to at least one previous survey administered by Higher Education Strategy Associates (either directly or as part of its Canadian Education Project). Since they are not based on random probability samples, the concept of "margin of sampling error" is not applicable to results shown here.

As with most student surveys, females are slightly over-sampled, as they appear to be likelier to respond to surveys than males. Our panel is also slightly overweight in Ontario and underweight in Quebec (specifically, it is underweight at Francophone universities, meaning it is a highly Montreal- and Anglo-centred sample). It is also biased towards upper-year students. Exact numbers in the sample change from month-to-month; up-to-date details of the survey demographics are available on request by contacting the authors.

In this report, as in all HESA reports based on data from our student panel, the data has been re-weighted based on publicly available data on gender and province of enrolment. This corrects for differences in response rates among males and females and by region, and produces results that are more representative of the Canadian undergraduate population.

THE AVAILABILITY OF E-LEARNING RESOURCES

In order to look at the impact of e-learning resources on educational satisfaction and learning experiences, it was necessary to quantify the availability of resources on a class-by-class basis. This was done by asking each student to report how many classes they were enrolled in during the semester (Winter 2011), and then asking a series of questions about each class with respect to availability of resources, perceived learning outcomes and satisfaction.

Survey results at the class level show that a majority (57.5%) of the 5,447 classes taken by survey respondents involved some online component beyond simple email communication with the instructor, while a quarter (25.4%) were in-person with email only and about one in six (17.0%) were entirely in-person. Among those classes with at least some online component (i.e., more than just email), the most ubiquitous electronic resources were the least elaborate ones – syllabi and administrative details (89.1%) and lecture notes and handouts (80.8%). Forums and discussion boards were enabled in 43.9% of all courses, but more “high-tech” e-resources were relatively rare. Only 20.4% of courses with online resources offered online tests or quizzes, 12.4% had video or audio recordings of lectures, while a mere 1.3% had lectures streamed online. The availability of electronic resources is presented in Table 1.

Table 1: Availability of E-resources

Electronic resource	Availability (out of classes with e-resources)	Availability (out of all classes)
Syllabus/admin details	89.1%	51.2%
Lectures handouts/notes	80.8%	46.5%
Grades	66.1%	38.0%
Readings	54.9%	31.6%
Forum/discussion board	43.9%	25.2%
Answer keys to tests/assignments	38.2%	22.0%
Online tests/quizzes	20.4%	11.7%
Video/audio recordings of lectures	12.4%	7.1%
Live streams of lectures	1.3%	0.7%

Of course, the mere presence of e-learning resources does not mean that they were necessarily used by students in those courses. Because the survey tracked usage on a student-by-student basis rather than a class-by-class basis (one usage question per student vs. one availability question per course),⁷ the usage statistics are not precisely comparable to those shown in Table 1; nevertheless, they show broadly the same pattern. Usage statistics are presented separately from the main report, in Appendix A.

In order to examine the effects of e-learning resources on satisfaction and student perception of learning outcomes, it was necessary to simplify the analysis somewhat, as measuring by the presence or absence of each of the ten e-resource types would simply be unwieldy. However, simplification was not entirely straightforward – student self-assessment of the intensity of the resources available proved to be unreliable (see box).

THE PROBLEM WITH SELF-ASSESSMENT OF RESOURCE INTENSITY

For each class, students were asked to choose between one of six descriptions of the intensity of electronic delivery. Those who indicated the presence of e-resources were asked a follow-up question about which resources were present. However, when the described intensity was compared with the available resources, it became clear that there was no strong relation between a student's assessment and the e-resources that were available in the course. This can be seen in Table 2. For instance, comparing courses that were described as "mostly in-person but with some electronic resources used" and "an even mix of electronic and in-person interaction," one sees that the courses with an "even mix" are either similarly likely or less likely to have syllabus/admin details, lecture handouts/notes, grades and answer keys, and only somewhat more likely to have readings, a forum or discussion board, online tests or quizzes, and video or audio. In many cases, students faced with similar sets of resources were coming to different conclusions about intensity.

(Continued on page 6)

⁷ Availability rates were determined by asking participants, once for each course in which they were enrolled, which resources were available in that course. Availability percentages therefore indicate the proportion of classes in which a given resource was available. Usage rates, by contrast, were determined by asking "For what did you use the virtual learning environment systems available in your classes?" once per participant. Usage rates therefore indicate the percentage of survey participants who used a given resource, not the percentage of classes in which a given resource was used.

Table 2: Availability of Electronic Resources vs. Student's Description of E-resource Intensity

Electronic resource	Mostly in-person but with some electronic resources used	An even mix of electronic and in-person interaction	Mostly electronic	Entirely electronic (i.e., online course)
Syllabus/admin details	89.3%	88.3%	80.5%	91.3%
Lectures handouts/notes	81.1%	84.2%	70.5%	71.8%
Grades	64.9%	64.1%	71.8%	88.6%
Readings	52.3%	59.3%	65.4%	82.6%
Forum/discussion board	39.9%	52.2%	51.3%	85.9%
Answer keys to tests/assignments	37.7%	39.0%	47.4%	38.3%
Online tests/quizzes	15.8%	28.8%	37.2%	67.1%
Video/audio recordings of lectures	9.1%	21.9%	26.9%	36.2%
Live streams of lectures	0.4%	5.1%	0.0%	7.4%

The problem likely lies with differing expected baselines of e-resources. Some students may be accustomed to a certain level of online delivery, and might take for granted resources that others view as an electronic component. One student may feel that online availability of lecture notes and handouts is a basic resource that can be expected in most classes, while another might view it as a more intensive electronic resource. Moreover, students may have differing views on whether some resources are a form of online interaction – tests, for instance. The inconsistencies of self-assessment speak to the need for a more objective measure – one based on the actual resources available in the course.

In the end, an intensity measure was chosen based on what were perceived to be natural groupings of usage. Classes were divided into four categories based on the e-resources available in their virtual learning environments. Our categories of “degree of e-resource availability” are:

None - Course was entirely in-person.

Basic - Course was either (a) “almost entirely in-person with no electronic resources other than email communication with instructor” or (b) had at most some or all of the following resources

available electronically (but no others): lecture handouts/notes, syllabus/admin details, grades, or a method of directly contacting the instructor or T.A.

Moderate - Course's virtual learning environment offered at least one of online readings, answer keys or an interactive forum/discussion board, but did **not** offer video or audio recordings of lectures, live streams of lectures or online tests.

Advanced - Course offered either video or audio recordings of lectures, live streams of lectures or online tests.

The rationale for these categories was two-fold. First, the resources in the advanced category are different in kind – video and audio recordings of lectures offer potential for replacing physical attendance altogether, while online tests involve interactive delivery of core material. Second, the resources in the moderate and advanced categories were relatively rare (compared to the extremely common presence of syllabi or lecture notes/handouts), and as such were not resources that students could necessarily expect to see in most of their courses.

With this re-coding, the distribution of class e-resource availability is given in Table 3.

Table 3: Class E-resource Availability

Class e-resource availability	Share of classes
None	17.1%
Basic	33.7%
Moderate	33.8%
Advanced	15.4%

ACCESS TO E-LEARNING

Within universities, not all disciplines have been equally quick to integrate e-learning resources into the classroom, and this is amply demonstrated by the survey results shown in Table 4. Students in visual and performing arts, education and the humanities had the lowest availability of e-resources – less than 40% of classes taken by students in these disciplines had moderate or advanced levels of e-resources available. Conversely, the physical & life sciences and math & computer sciences had the greatest availability of online learning resources, with nearly 60% of classes having moderate or advanced levels of e-resources, and, in the case of physical sciences, 25% having some form of advanced e-resources.

Table 4: Degree of Class E-resource Availability by Field of Study

Field of study	None	Basic	Moderate	Advanced
Education	21.6%	40.8%	27.6%	10.0%
Visual and performing arts	32.0%	33.1%	22.5%	12.4%
Humanities	19.5%	41.7%	28.9%	9.9%
Social sciences	18.9%	33.0%	37.0%	11.0%
Health and related	23.0%	29.6%	31.0%	16.4%
Business	17.1%	26.6%	37.8%	18.6%
Physical, life sciences and technologies	8.8%	32.0%	33.9%	25.4%
Math and computer science	8.3%	32.4%	39.2%	20.1%
Engineering and architecture	13.4%	32.1%	43.9%	10.6%

Males and females took classes with similar e-resource availability, with males taking a slightly higher proportion of e-resource heavy classes (Table 5). While there is some interaction between gender and field of study on this measure – some of the fields with greater degrees of e-resources are also the fields with the most males – taking this into account makes the results for males and females more similar on average.

Table 5: Degree of E-resource Availability of Classes by Gender

Gender	None	Basic	Moderate	Advanced
Male	14.7%	33.5%	35.2%	16.7%
Female	18.8%	33.9%	32.9%	14.4%

Online resource availability increases with institution size (Table 6).⁸ Very small institutions have the lowest e-resource availability (39.3% of classes with moderate or advanced), and by far the lowest percentage of classes with advanced e-resources available – video, audio or online testing is available in only 7.9% of courses. More than a quarter of classes at these institutions are entirely in-person, without even email contact for the instructor. By contrast, the proportion of classes with moderate or advanced e-resource availability is 45.9% in small institutions, 49.0% in medium institutions, and 52.7% in large institutions. Differences by type of institution are smaller (Table 7). E-resources are somewhat more available at medical/doctoral institutions (52.3% moderate or advanced) than at comprehensive institutions (48.6%), and are the least available at primarily undergraduate institutions (44.9%).

These differences by size and type are perhaps not as large as one might have expected. Intuitively, one might expect that large institutions would be particularly suited to benefit from the implementation of e-resources to support blended learning. They have more resources

⁸ Sizes are determined using full-time equivalent enrolment, calculated as FTE = full-time enrolment + 0.3*(part-time enrolment). The size categories are: Very Small (less than 4,000 FTE), Small (4,000 – 10,000), Large (10,000 to 22,000), Very Large (22,000+).

(financial and otherwise) to support implementation, and certainly their very large classes in lower years seem an obvious spot to provide extra assistance and potentially reduce the need for more expensive teaching resources. Yet classes with “advanced” e-resource courses appear to be no more common at large, research-intensive institutions than at medium or small institutions with a more undergraduate focus, and classes with “moderate” e-resources are only slightly more common.

Table 6: Degree of E-resource Availability of Class by Institution Size

Size	None	Basic	Moderate	Advanced
Very small	27.4%	33.3%	31.4%	7.9%
Small	18.3%	35.8%	29.6%	16.3%
Medium	14.9%	36.1%	33.4%	15.6%
Large	15.8%	31.5%	36.1%	16.6%

Table 7: Degree of E-Resource Availability in Class by Institution Type

Institution Type	None	Basic	Moderate	Advanced
Medical/doctoral	14.4%	33.2%	36.6%	15.7%
Comprehensive	17.9%	33.6%	32.6%	16.0%
Primarily undergraduate	20.6%	34.5%	30.9%	14.0%

Older students took classes with lower degrees of e-resource availability (Table 8). Since age is a good proxy for year of study, one can infer that e-resources are less available in upper-year courses, which would make sense seeing as classes tend to become smaller and there is less need – on economic grounds at least – to supplement teacher resources. However, as with the issue of institution type, the gap between lower years and upper years is not nearly as pronounced as one might expect; between a 19-year old student and a 22- to 24-year-old student, the proportion of courses taken with a moderate to advanced degree of e-resources drops by 9.3 percentage points. Note that as this survey contacted only students who were registered in the 2009-10 academic year and returned for 2010-11, there were a negligible number of participants aged 18 and under.

Table 8: Degree of E-Resource Availability in Class by Age

Age	None	Basic	Moderate	Advanced
19 years old	14.7%	30.8%	36.6%	17.9%
20 years old	14.2%	32.5%	35.6%	17.7%
21 years old	16.3%	34.1%	36.1%	13.5%
22-24 years old	18.2%	36.6%	31.3%	13.9%
25+ years old	27.4%	31.9%	26.8%	13.9%

EFFECTS ON PERCEIVED LEARNING OUTCOMES AND SATISFACTION

For each class in which they were enrolled, students were asked whether or not they believed they learned less, more or about the same as they did in other classes they had taken in the same semester. Table 8 shows the results according to the availability of e-resources in that class. Students had a tendency to say that they “learned more” rather than “learned less,” regardless of e-resource availability – as such the results are best interpreted by comparing percentages across e-resource availability groups. As the level of available e-resources increases, the proportion of students saying they “learned more” drops significantly. In over a quarter of courses delivered entirely in-person (28.0%) students said they “learned more” than in other courses they took this academic term, contrasted with 18.2% of courses with advanced e-resources. Students were not actually more likely to say they had learned less in their courses with advanced e-resource availability (indeed they were slightly less likely to say they had learned less when describing these courses than when describing courses with basic or no e-resource availability), but they were more likely to say they had “learned about the same” in those courses as in other courses they were taking. While there were some variations by field of study, the only field in which the largest “learned more” percentage was associated with the highest degree of e-resource availability was engineering.

Table 9: Responses to “Did You Learn Less/About the same/More in this Course than in Other Courses You Took this Academic Term?” by Course’s Degree of E-resource Availability

Class e-resource availability	Learned less	Learned about the same	Learned more
None	15.1%	56.9%	28.0%
Basic	16.0%	57.5%	26.5%
Moderate	12.7%	63.9%	23.4%
Advanced	13.1%	68.7%	18.2%

In addition to being asked about their own learning outcomes, students were also asked about their satisfaction with each class. Generally speaking, students reported high levels of satisfaction across the board, regardless of the instructional delivery method, but higher levels of e-resource use was associated with some drop-off in satisfaction. Students were very satisfied with 42.9% of classes that were entirely in person, but this percentage decreased as the degree of e-resources increased, reaching a low of 35.5% for courses with the highest degree of e-resources. This does not mean that students are *dissatisfied* with courses with high levels of e-resources; students primarily switched from “very satisfied” to “satisfied” as e-resource availability increased. This effect was not uniform across fields of study. Engineering students and health students, for instance, were actually more likely to say they were very satisfied with courses with advanced resources than with other courses, while business students showed no clear trend. By contrast, science students were particularly unlikely to say they were very satisfied with courses with moderate and advanced degrees of e-resource availability.

Table 10: Overall Satisfaction with Course by Course's Degree of E-resource Availability

Class e-resource availability	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied	Not sure/ don't know
None	4.7%	10.4%	41.4%	42.9%	.4%
Basic	3.7%	9.9%	45.5%	40.2%	.7%
Moderate	2.6%	10.8%	49.7%	36.7%	.2%
Advanced	2.3%	11.2%	51.0%	35.5%	.1%

GENERAL PERCEPTIONS OF E-LEARNING

Part of the purpose of the survey was to gauge students' opinions on the importance, quality and desirability of e-learning as a means of augmenting or replacing in-person instruction. Analysing this data using a class-by-class measure of e-learning resource intensity would have been clumsy and produced confusing results. To simplify matters, a new variable was created showing the average degree of availability of e-learning resources across all of a student's classes. In order to derive average e-resource availability for each individual, each class was scored based on class e-resource availability. The scoring scheme was 1 point for "None," 2 for "Basic," 3 for "Moderate" and 4 for "Advanced." The average score across all classes was then obtained and used to classify each student's overall exposure to e-learning resources. Those with an average of less than 2 were put in the "minimal" category, above 2 but less than 2.5 were considered "low," 2.5 to 3.0 "medium" and greater than 3 "high." The percentage of students in each average e-resource availability category is given in Table 11.

Table 11: Average Overall E-resource Availability

E-resource availability	Percentage of students
Minimal	16.0%
Low	29.2%
Medium	39.3%
High	15.5%

A large majority of participants (73.7%) found that the virtual learning environments in their classes were either fairly important or very important to their overall education experience, while 25.2% found that they were either not very important or not at all important. In other words, even if students were not especially impressed by the e-learning resources available to them, they were likely to say that the presence of such resources did materially alter the nature of their education. Perhaps unsurprisingly, though, the greater a student's average availability of e-resources, the more likely they were to say that the virtual learning environment was fairly or very important – 51.6% of students with the lowest degree of e-learning resource availability said so, compared to more than nine out of 10 students (91.8%) with a high degree of e-learning resource availability.

Table 12: Importance of the Virtual Learning Environment to the Overall Education Experience, by Average E-resource Availability

	Not at all important	Not very important	Fairly important	Very important	Not sure / don't know
Minimal	15.2%	28.8%	36.4%	15.2%	4.5%
Low	6.1%	27.8%	40.1%	25.6%	0.3%
Medium	2.2%	21.8%	45.8%	30.0%	0.2%
High	0.0%	7.6%	39.6%	51.8%	1.0%

OVERALL OPINIONS ON USE OF E-LEARNING

Respondents were asked a number of questions regarding the effects of online resources in general on the education they received. In this section, we show the results of four such questions about courses with online resources: how interesting they are, how well organized they are, whether they are a substitute for in-person teaching and whether they lead to students being more likely to skip class.

Students did not find courses with more online resources to be more interesting than courses with fewer online resources (31.8% agreed that they were more interesting vs. 56.3% in disagreement). Students who were actually currently taking courses with more online resources were more likely to view e-resource-heavy courses favourably, though – 40.1% of students with high average e-resource availability agreed that courses with more e-resources were more interesting, compared to 28.6% of those with minimal availability and 23.4% of those with low availability. Nevertheless, even among those with high e-resource availability more students disagreed that courses with more online resources were generally more interesting than agreed (48.8% vs 40.1%). Note, though, that this does not mean that they find them *less* interesting – disagreement with the statement may simply indicate that they believe courses with more e-learning resources to be equally interesting.

Table 13: Agreement with “I Find Courses with More Online Resources Generally more Interesting than Courses with Fewer Online Resources,” by Average E-resource Availability

Average e-resource availability	Strongly Disagree	Disagree	Agree	Strongly agree	Not sure/ don't know
Lowest	13.8%	43.8%	20.2%	8.4%	13.8%
Low	17.8%	44.5%	19.1%	4.3%	14.3%
Medium	14.3%	40.6%	23.5%	12.0%	9.6%
High	10.7%	38.1%	25.9%	14.2%	11.2%

Even if they do not necessarily find online courses to be clearly more interesting, students do recognize that the provision of greater levels of e-learning resources is associated with better course organization. Overall, 58.0% of students agreed that courses with more online

resources were better organized than courses with fewer online resources (Table 14). Greater exposure to e-learning resources clearly had an effect on respondents' views: among those who were taking courses with a high average degree of e-resource availability, two-thirds of students (66.3%) found e-resource-heavy courses to be more organized.

Table 14: Agreement with "I Find Courses with More Online Resources Generally Better Organized than Courses with Fewer Online Resources," by Average E-resource Availability

Average e-resource availability	Strongly Disagree	Disagree	Agree	Strongly agree	Not sure/ don't know
Minimal	7.9%	25.7%	39.1%	14.4%	12.9%
Low	8.9%	30.5%	32.6%	19.4%	8.6%
Medium	6.6%	27.9%	35.7%	24.8%	5.0%
High	4.1%	22.3%	34.0%	32.5%	7.1%

While students agree that e-resources are associated with better course organization, when it comes to actual lectures, students decidedly do not prefer online delivery (Table 15). Four out of five (79%) respondents disagreed with the statement that they would prefer to watch a live stream of a lecture than attend it physically. Even among students taking courses with a high degree of average e-resource availability, only 18.2% agreed with the statement.

Table 15: Agreement with "I Would Prefer to Watch a Live Stream of a Lecture Rather than Physically Attend a Lecture," by Average E-resource Availability

Average e-resource availability	Strongly disagree	Disagree	Agree	Strongly agree	Not sure/ don't know
Minimal	51.0%	31.7%	5.0%	6.4%	5.9%
Low	47.7%	36.9%	6.5%	4.3%	4.6%
Medium	43.5%	32.9%	9.6%	8.0%	6.0%
High	47.0%	25.8%	10.6%	7.6%	9.1%

Despite students' preference for in-person delivery, the presence of e-resources makes students more likely to skip class. More than half of students (55.9%) agreed that they were more likely to skip courses with more online resources because it is easier to catch up in those courses (Table 16). This result did not differ based on available e-resources; students who have experience with e-resource-heavy classes are just as likely to agree that the presence of those resources makes them more likely to skip lectures.

Table 16: Agreement with “I am More Likely to Skip Courses with More Online Resources because it is Easier to Catch Up,” by Average E-resource Availability

Average e-resource availability	Strongly disagree	Disagree	Agree	Strongly agree	Not sure/ don't know
Lowest	12.3%	23.6%	39.4%	17.2%	7.4%
Low	12.7%	31.9%	34.1%	19.2%	2.2%
Medium	13.1%	27.3%	37.8%	19.9%	2.0%
High	13.7%	29.4%	35.5%	18.8%	2.5%

In another set of questions, respondents were asked directly about the *relative* quality of courses delivered in different ways, and asked whether various attributes of courses were better when delivered entirely in-person, when delivered partly or entirely online, or whether both delivery methods were about the same. Table 16 suggests that while students may feel that “blended learning” improves course organization, it remains very much a second-choice form of learning. Over a quarter of students (25.8%) find the quality of study materials and readings better in entirely or partially electronic courses, vs. 15.5% who say entirely in-person courses win out. Students are split on course design, with 20.7% saying that entirely or partially electronic courses are better, and 17.8% saying that entirely in-person courses are better. However, this does not translate into a belief that electronic delivery is in any way superior to in-person instruction: half of students (49.4%) say that education is better in entirely in-person courses, and a full two-thirds (67.3%) say that the quality of instructors is better.

Table 17: Which Course Delivery Methods Are Best for the Following (Entirely or Partially Electronic, Entirely In-person or Both Are the Same)?

Course aspect	Entirely or partially electronic	The same	Entirely in-person
Quality of education	6.4%	44.3%	49.4%
Quality of instructors	4.5%	28.2%	67.3%
Quality of study materials/readings	25.8%	58.7%	15.5%
Course design	20.7%	61.4%	17.8%

Despite expressing views on online resources that might be described as “tepid,” the majority of students (59.6%) still said they would like to see more course content offered electronically. Even among students taking courses with the lowest e-resource availability – the group that showed the greatest scepticism about e-learning resources – 53.4% of students agreed that more online content would be desirable. The proportion among students with high average e-resource availability was even higher; 70.2% of these students wanted more electronic content. Table 18 summarizes the results.

Table 18: Agreement with “Universities Should Offer More Course Content Electronically,” by Average E-resource Availability

Average e-resource availability	Strongly disagree	Disagree	Agree	Strongly agree	Not sure/don't know
Lowest	7.4%	31.7%	35.1%	18.3%	7.4%
Low	7.3%	25.9%	41.0%	11.9%	14.0%
Medium	6.2%	23.9%	41.4%	21.3%	7.2%
High	6.1%	14.6%	47.5%	22.7%	9.1%

When asked about the quantities of specific e-learning resources they would like to have in their courses, a majority of students (53.6%) wanted more lecture notes or handouts available online, and almost none (2.3%) wanted fewer. Nearly half (46.6%) of students said they wanted more lecture recordings and 44.2% said they wanted more electronic versions of readings; in both cases, these were pluralities but not majorities, and non-trivial proportions of students said they actually wanted *fewer* resources in these areas (13.1% and 15.3%, respectively). Substantial majorities thought the amount of interactive forums for discussions with professors or students needed no change. As for live streaming of lectures, 45.2% said they thought current availability was sufficient and 20.4% thought that fewer such resources should be available. Considering that fewer than 1% of classes possess this form of resource to begin with (see Table 1, above), this is perhaps best understood as a negative attitude towards using live-streams *in place of* in-person attendance at lectures, rather than feedback on live-streams by students who have actually used them to supplement their education.

Table 19: Responses to “In the Future, Would you Like to see More, the Same or Less of the Following Resources as Part of the Virtual Learning Environment Systems?”

Resource	Less	About the same	More
Electronic versions of course readings/books	15.3%	40.5%	44.2%
Lectures notes/handouts	2.3%	44.2%	53.6%
Audio/video recordings of lectures	13.1%	40.3%	46.6%
Live streams of lectures	20.4%	45.2%	34.4%
Interactive forums to interact with fellow students	9.8%	59.9%	30.2%
Interactive forums to interact with instructors	7.3%	58.2%	34.5%

The results shown in Tables 19 and 20 are somewhat puzzling. If students do not – as the foregoing pages have demonstrated - think very much of blended learning, why do they want more electronic resources? Take, for instance, the issue of having more electronic course readings and books. When we asked students directly whether they preferred to have their course materials in hardcopy or electronic format, only 17.7% said they preferred having e-texts. Yet over twice that proportion - 44% - say they want *more* electronic texts.

What is going on here? Again, the best explanation seems to have to do with convenience. Students *prefer* physical texts, but they'd like to have the *option* of having an e-resource to read it wherever and whenever they need. Similarly, they *prefer* to attend classes because they are seen as a superior educational experience, but they *appreciate* the convenience of having audio and video resources if they have competing priorities and need to miss a class. It is notable in Table 20, for instance, that students are most positive about static resources that can be accessed at leisure and least positive about resources that require actual interaction (i.e., forums) or being in front of a screen at a particular time (streaming video).

CONCLUSION

This study has provided some basic insights on e-resource provision and uptake in Canadian universities, as well as empirical evidence that sheds some doubt on the conventional thinking surrounding how young students – sometimes dubbed “digital natives” – perceive e-learning resources and blended learning in general. While our survey only scratches the surface of some of the key issues in blended learning, a number of conclusions can nevertheless be drawn.

The evidence seems to show that electronic resources are not being rolled out evenly within institutions, with substantially more uptake in physical and life science than elsewhere. It is not entirely clear why this is the case or whether there is some pedagogical reason why rollout should be happening there first. It also seems to show that, unexpectedly, universities are not overwhelmingly concerned with concentrating the use of these resources in larger, lower-year classes where they might help significantly with course delivery and logistics. In general, larger institutions do not appear to be more intensive in their use of e-learning resources than smaller ones which is surprising since one might have thought that larger schools would have had a greater ability to make the large capital investments that are necessary to make blended learning work.

Moreover, the alleged correlation between more e-resources and improved student outcomes does not seem to hold. Not only do students give slightly lower satisfaction ratings to classes with higher levels of e-resources, they are substantially less likely to say they “learned more” in a class with lots of e-resources than they are in a class with none at all. This does not mean they learned *less*, but it does suggest that there are not really any learning gains associated with blended learning as it is currently being implemented – blended learning classes are much less likely to be considered exceptional than non-blended ones. Even students in e-resource intensive classes are overwhelmingly likely to say that courses which are conducted *entirely* without e-learning resources are superior to blended courses in terms of quality of instructors and quality of overall education. And all this despite the fact that students also clearly find blended learning courses to be better organized than courses without e-learning resources.

All of this, however, does not translate into a desire to avoid e-learning resources. Indeed, when students are asked directly whether or not they would want more e-learning resources, the answer is “yes.” But the kinds of e-resources they want are perhaps key. Students are much more interested in seeing universities expand the more “static” resources like readings rather than the more dynamic ones like interactive forums. Quite clearly, this is not because they enjoy reading online: remember that over 80% of students say they prefer hard copies for reading than reading on-screen. Rather, it seems that the advantage of having readings online lies in convenience, as they can be accessed from anywhere.

These do not quite sound like the views of the “digital natives” we have heard so much about. Far from preferring to be immersed in a digital world of self-directed learning, students seem to still have an enormous desire to learn directly from a “sage on the stage.” The advantage they see in e-learning resources is that they give them the freedom to make occasional mistakes – missing class, forgetting a textbook at home, etc. – with less fear of falling behind.

However, while this all provides grounds for suspicion with respect to glib claims about digital natives, there is not enough evidence here to dismiss the notion entirely. Another way to read the data is simply that the e-learning resources being deployed in Canadian universities aren't of high enough quality to really engage a very digitally-savvy student population. Perhaps with more investment not just in the user interface but in the integration of in-person and online learning, e-learning resources can move from being a technology that helps students find alternatives to being in class to a technology that actually enhances and is additive to their in-class experience.

To achieve this will require institutions to place more emphasis on research and development in e-learning than they currently do. It will require institutions to develop a more nuanced understanding of how e-learning benefits their students – it cannot be assumed the students have an insatiable and undifferentiated appetite for electronic delivery. There is likely no silver bullet here – merely patient trial and error and a commitment to continual improvement and assessment. Surveys like this one can, of course, help institutions to monitor their successes on an ongoing basis. For reasons of both cost and quality, understanding what works and what doesn't in blended learning is going to be an increasingly important issue in the coming years.

APPENDIX A: USAGE STATISTICS FOR THE E-LEARNING RESOURCES

Of those students who had access to a virtual learning environment (i.e., who took at least one course involving some online resources apart from email contact with the instructor), the majority used their virtual learning environment to cover administrative basics, such as checking one's grades (84.4%) or checking for announcements (84.0%), or for obtaining handouts or notes for lectures (88.4%). Interactive usages, such as communicating with fellow students or with the instructor, posting questions and checking for answers, or taking online tests, were less common – these were used by around a quarter to a third of students. Watching or listening to lectures were the least common uses (under 10% each), with live streams being the single least used resource (1.6%). Broadly, usage mirrored availability (see Table 20) – the least available resources were understandably the least used. Usage rates of different possible features of the virtual learning environment are presented in Table 11. Note that this table presents percentages out of all students who had a virtual learning environment with at least one resource, regardless of whether a given resource was available – as such the low usage rates of video recordings, audio recordings and live streams are a reflection of the relative lack of availability of these technologies.

Table 20: Usage of the Virtual Learning Environment

Usage	Percent using
Obtain lectures handouts/notes	88.4%
Check grades	84.4%
Check course announcements	84.0%
Obtain assignment answers	46.9%
Communicate with instructor	33.9%
Take online tests	32.8%
Communicate with fellow students	26.5%
Pose questions/check for answers	26.4%
Listen to lectures	9.7%
Watch lectures	9.4%
Stream lectures live	1.6%
Other	8.6%



400-460 Richmond Street
Toronto, ON M5V 1Y1
Phone: (416) 848-0215
Fax: (416) 849-0500