Impacts of Technology on Learning Experiences at Bermuda College: Student Perceptions

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Abstract

Over the last two decades, technology has profoundly transformed how we function in the world. Conversely, ascertaining how the teaching and learning process will be transformed over the next two decades remains a formidable challenge. The pace of adaptation to this 'new normal' will determine if higher learning institutions are capable of offering curricula that will appeal to the learning styles of 'digital natives,' people born into a world saturated with modern technology. Already, the proliferation of new technologies being adopted by academia and the increased sophistication of educators in leveraging technology has created a rich tapestry of engaging learning experiences. This article examines the perceptions of Bermuda College students on the role of technology in their educational experience. It also ascertains the extent to which Bermuda College lecturers incorporate different technologies into their teaching. Finally, it examines student preferences for more or less technology in delivering course content and whether this technology enhances the student learning experience at Bermuda College.

KEY WORDS: *Technology, Bermuda College, student perceptions, teaching and learning methods*

Introduction

The integration of technology into teaching and learning remains a top-of-mind and much debated topic among educators. It can be argued that applying yesterday's teaching methods without integrating the most appropriate forms of technology is a disservice to students born and raised in the current technological era. Without question, technology is forever transforming the way we live and has significantly impacted teaching and learning. Brown (2015, 58) noted in the inaugural volume of this journal that "today's learners need 21st century skills." Thus, it is incumbent on educators to stay current with technology and possess the necessary skill sets to meet the needs of 21st century learners.

We live in an era saturated with social media options, course management systems, predictive analytics, virtual educational labs, asynchronous discussion forums, fully online courses, avatars, and other virtual learning tools designed to meet the needs of digital natives. There is a school of thought that "faculty scholars need to familiarise themselves with, utilise, and integrate technology into … teaching, and realign … teaching and learning outcomes with the technology" (Zellweger 2007, 66). Conversely, others argue that technology "is not a homogeneous intervention but a broad variety of modalities, tools, and strategies for learning. Its effectiveness, therefore, depends on how well it helps teachers and students achieve the desired instructional goals" (Ross et al. 2010, 19) One fact that remains absolutely clear is that continuing to practise the proverbial 'chalk and talk' methods of the past will most certainly not prepare students to cope in the future.

Review of Literature

The exponential growth of digital literacy has affected not only Bermuda College, but has also confronted other higher learning institutions with the urgent need to adapt. "The undeniable truth is that the world we live in outside of the classroom has drastically changed. It begs the question: how can our classrooms change and evolve as well?" (Rudi 2011,1). Consequently, a proactive strategy necessarily involves aggressively adopting technology-focused repositioning, which takes into account the learning needs of 'technology junkie' millennials.

A study by Fitzgerald cited by Rudi (2011) underscores how the brains of digital natives are "physiologically different than those who didn't grow up with technology and require a fuller range of representational modes to achieve literacy" (Rudi 2011, 4). Digital natives grow up with technology as a normal part of their environment and view it as a regular extension of their lives. Moreover, this 'Net-generation' cohort is totally oblivious to a time when there was no such technology. Research by Gu, Zhu, and Guo (2012, 392) suggests that "these students have been raised in a digital environment that has shaped how they think, behave, and act." Adopting creative technology-based teaching strategies and platforms more likely to appeal to the needs of digital natives should not be considered an optional strategic goal by educators wishing to remain relevant.

Findings delivered at a July 2013 pre-conference workshop entitled Foundations of Effective Technology Integration: Best Practices in Teaching and presented by Dr Donna Quadri of New York University, outlined several pertinent reasons technology should be used more in the classroom. They include:

- Extending the walls of the classroom and fostering better collaboration

- Strengthening analytical skills and enlivening student interest in content, and

- Generating stronger recall through greater sensory engagement.

Professor Quadri went on to say: "If you are not using technology to teach you should be, and technology should be used as an attraction not a distraction" (Quadri 2013, 3).

Chickering and Ehrmann (1996:3), in a study discussing the implementation of seven best technology practices endorse this notion by concluding that "technologies can help students learn in ways they find most effective and broaden their repertoires for learning." These authors are convinced that technology used in the classroom "can strengthen faculty interaction with all students, but especially with shy students who are reluctant to ask questions or challenge the teacher directly" (Chickering and Ehrmann 1996, 3).

Research by Zellweger cited by Aldunate and Nussbaum (2012, 519) establishes that "faculties who commit to more time integrating educational technology into their teaching have a greater chance of adopting new technologies." Rolin Moe, a creative writing teacher and Pepperdine University doctoral student, concludes that "the most successful teachers are putting lessons into a context that ensures students their real value in the real world, and that often requires additional effort to learn technologies that [students] have already mastered" (Rudi 2011, 2). This author is also convinced that "purpose-driven learning has much more promise with today's 'what's in it for me?' students, who typically don't respond to the concept of learning for its own sake" (Rudi 2011, 2). In investigating how technology supports learning, Martinez (2014) concluded that student learning can be enhanced by the use of programmes and applications in a number of different ways. However, she also cautioned against making technology the "servant not the master" (Martinez 2014, 10).

The 2015 New Media Consortium Horizon Report on Higher Education concluded:

Bring Your Own Device (BYOD) and the flipped classroom are expected to be increasingly adopted by institutions in one year's time or less. Also, make use of mobile and online learning. The time-to-adoption for makerspaces and wearable technology are estimated within two to three years, while adaptive learning

technologies and the Internet of Things is expected to be mainstream in universities and colleges within four to five years. (New Media Consortium 2015, 46)

Recently, virtual and augmented reality learning technologies have become available on the educational and commercial scenes. Even 3-D printing teaching platforms and customised institutional apps have enhanced the academic experience.

One of the findings in the 2014/15 State of Information Computer Technology in Bermuda is that:

> … 99% of businesses have Internet access, 89% of households have access to the Internet, 85% of households own a smartphone, and 98% of residents use the Internet from any location at least once a week. Moreover, 90% of residents agree that having a strong knowledge of technology was essential in getting ahead today, while 85% believed that technology helped them to be more creative or innovative. (Government of Bermuda 2014/15, 5)

The report goes on to discuss how "technology is an essential tool in our day to day lives," and that mobile technologies are very popular among Bermuda's residents, who consistently use them to access the Internet.

Given this technology-driven paradigm shift, should the longstanding, non-technology teaching and delivery platforms employed by some lecturers at Bermuda College be amended in response? More importantly, to what extent are Bermuda College lecturers integrating technology into their teaching and learning methods in order to satisfy the needs of a First World, technology-driven society? Also, is there evidence that Bermuda College students believe technology plays an important role in improving their learning experience?

Methodology

A two-pronged data collection process was used to elicit input for this study. Permission was sought in advance from a random sample of fellow lecturers to assist with collecting data. Dates and times were established for the author to attend classes during the weeks of 12-30 October 2015. At the start of each lesson, students in computer labs were asked to participate in the study and were provided with instructions to locate the survey tool's link, which was embedded in the respective lecturer's area in Moodle, the course management system used by Bermuda College. Then students completed an electronic version of the questionnaire. Data were also collected using an identical paper version of the questionnaire. Students were instructed to complete the paper version only if they had not already completed the online version. Also, both data-collection procedures were closely monitored by the lecturers and this author. Data collected from the paper surveys were input into the Survey Monkey created by the author.

Findings and Discussion

A total of 237 respondents completed the survey, representing 24.5 per cent of students registered for the Fall 2015 semester. Of this number, 75.9 per cent were full-time students and 22.4 per cent part-time. As expected, a clear majority (71.5 per cent) were female and 28.5 per cent male. Also, 85.9 per cent were 16 to 24 years old, with only 5.9 per cent and 5.5 per cent of the respondents falling respectively into the 25 to 34 and 35 to 44 year brackets. A total of 47 per cent were first year students, 33 per cent second year, 15.2 per cent third year and the balance fourth year and above. Seven Business Administration and Hospitality Division lecturers were randomly asked to participate in the study, while eight lecturers were randomly selected from the Liberal Arts Division. Chart 1 below displays the students' areas of study.

Chart 1: **Areas of study**
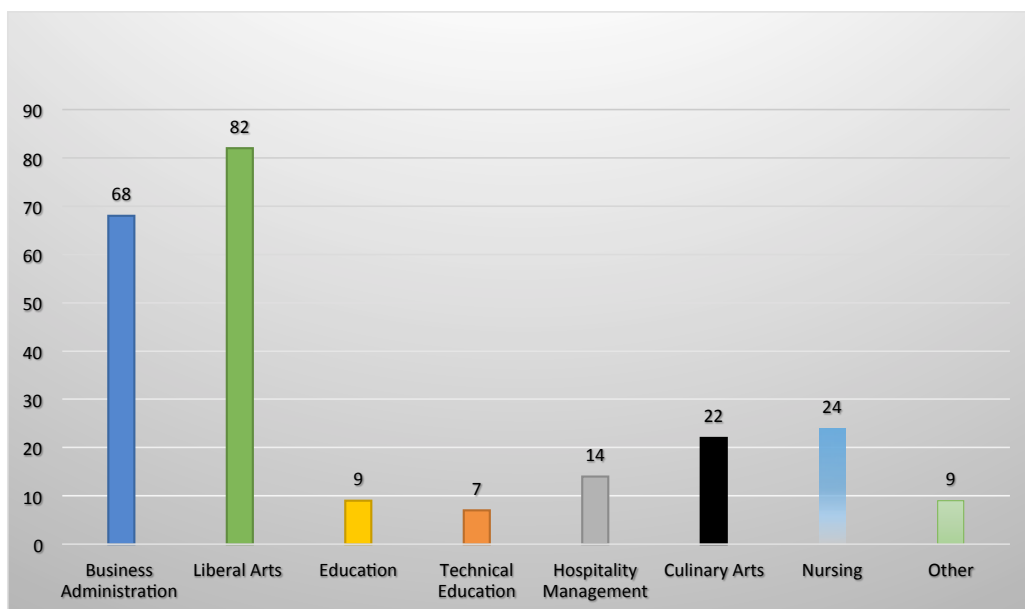
Source: Data collected from 237 Bermuda College students for this paper.

Numerous technology-based learning options were identified by students as having been used during their learning experience. Table 1 details the vast range of technologies employed by faculty at Bermuda College. From the plethora of technology-based plaforms utilised by faculty, the Moodle grade-book was the most widely used (by 84 per cent of respondents). This option meets the students' desire to know their grades in real time. Bermuda College faculty should thus be aware that students wish to know what their grades are at any given time in a virtual format. Online exams and assignments were the next two technology formats most commonly used by students. My Math Lab, Smarthinking, Snap Training and Assignment, and Google docs were other technolgy platforms popular with students.

A majority of respondents noted how Moodle was used to deliver homework assignments that contain You Tube videos and other media formats. Moreover, students confirmed how the various forms of technology used by lecturers helped improve their learning experience. This sentiment speaks volumes, and should encourage faculty to embrace technolgy and find additional ways of integrating it as a tool to further enhance the student learning experience.

Table 1: **Technologies used by lecturers**

Answer Choices	Responses	
The Moodle Grade-book	84.81%	201
Completing exams using Moodle	45.15%	107
Completing assignments using Moodle	73.42%	174
Moodle chat rooms	20.25%	48
Smartboards used by teachers	33.76%	80
My Math Lab	30.38%	72
My English Lab	7.59%	18
My Science Lab	7.59%	18
My Spanish Lab	5.49%	13
Smarthinking	19.83%	47
Blogs	4.64%	11
Wikis	6.33%	15
Podcast	0.42%	1
Clickers	0.84%	2
Turn it in.com	5.06%	12
Google docs	19.83%	47
Facebook	8.44%	20
Twitter	2.53%	6
Instagram	4.64%	11
What's App	19.41%	46
SNAP Training & Assessment Software	34.60%	82
Alternative virtual labs and interactive games	10.13%	24
Weebly	6.33%	15
None of the above	1.27%	3
Other (please specify) Responses	10.55%	25

Source: Data collected from 237 Bermuda College students for this paper.

Table 2 indicates student perceptions about the extent to which faculty required students to use Bermuda College's learning management system, Moodle, to complete homework assignments and discussion posting exercises and about whether technology played a role in improving the overall learning experience.

Table 2: **Technology's role in the learning experience**

	Never	Rarely	Sometimes	Often	Very often	Total
Moodle is used in this class to deliver homework assignments, which contain YouTube videos, audio clips, and/or other media format.	15.19% 36	8.02% 19	20.25% 48	27.43% 65	29.11% 69	237
Technology used in this class has played a role in improving my learning experience.	5.49% 13	6.75% 16	20.25% 48	33.76% 80	33.76% 80	237
I am required to engage in online discussion posting exercises for this class.	34.18% 81	16.46% 39	18.57% 44	13.92% 33	16.88% 40	237
Moodle is used in this class to deliver home assignments, which require me to upload them on Moodle or where my answers can be directly inserted into the provided locations on Moodle.	15.61% 37	8.44% 20	21.52% 51	22.78% 54	31.65% 75	237

Source: Data collected from 237 Bermuda College students for this paper.

The final set of questions was designed to explore student preferences for using technology throughout the teaching and learning process. Just less than half (46.6 per cent) of respondents preferred using Moodle or another technology platform to submit assignments and exams electronically, versus having to write or print them on paper. A total of 29 per cent strongly agreed with using technology in this fashion.

Just over one-third of students confirmed that they strongly agreed with receiving electronic feedback from lecturers on their assignments in real time. Thirty-eight per cent agreed with this procedure.

Students expressed mixed preferences regarding faculty using more or less technology to deliver course content: 20.9 per cent strongly agreed, 38.9 per cent agreed, and 25.2 per cent students were uncertain about increasing or reducing the technology used in the learning process.

A majority of students confirmed that the technology used in the specific class in which they completed the survey played an important role in improving their learning experience: 46.1 per cent agreed and 29.5 per cent strongly agreed. On the other hand, only 2.1 per cent of students noted this was not the case. Moreover, most students either agreed or strongly agreed with the notion that using more technology in the classroom in general would most likely play a pivotal role in transforming education in future.

Another important finding is that a majority of students (just over 60 per cent) were familiar with the technology being used in the classroom as they had previously been exposed to educational technology formats similar to Moodle, Smarthinking, and other virtual learning platforms prior to attending Bermuda College. This insight should encourage Bermuda College lecturers to seriously consider the technology-driven learning expectations of potential students in preparing their lesson plans.

Conclusion

This study's findings confirm not only that the integration of technology into teaching and learning is expected, but also that it is perceived by students as improving their overall learning experience. Furthermore, a majority of Bermuda College students indicated their preference for attending classes that incorporate more technology to deliver the content. Likewise, most respondents agreed they preferred to submit assignments and complete exams electronically rather than in paper format.

Technology has become woven into the fabric of learning. Consequently, it is in the best interests of institutions of higher learning and other learning organisations to recognise the significant role technology plays and will continue to play in teaching and learning. Such institutions must be proactive and develop curricula designed to cater to rapidly changing learning styles and trends. Digital natives seek more lasting and memorable learning experiences. They not only make up the majority of students on college campuses, but also wish to learn in non-traditional learning spaces and require engaging and inspiring technology-driven teaching platforms.

Student retention and graduation rates are critical and often attract significant attention from college administrators. Failing to adapt to the 'new normal' will most likely result in declining enrolment figures, dissatisfied students, and low retention rates. Consequently, higher learning institutions must move towards adapting innovative technology-driven teaching techniques to sustain and improve the overall student learning experience.

This study did not quantify the proportion of Bermuda College faculty who use Moodle and other technology platforms to enhance learning or to deliver virtual exams and assignments, since data were not collected from faculty. However, a follow-up study will determine if there are significant differences between the perceptions of faculty and students regarding the role of technology in the teaching and learning process. The aim is to determine what is required to narrow the apparent technology gap between digital natives and digital immigrants or seasoned educators.

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