The future of higher education: Is technology the answer or a problem?

Raymond Archee
Western Sydney University

Abstract

In the 21C, the future of higher education is in flux. Once the domain of an elite class, a university degree is now a routine stage in a student’s career path and has been gaining popularity for two decades. The pedagogical method has not changed much since students were mentored by the Greeks: teachers still pontificate and their students still listen to their pearls of wisdom. This process has now become less prized by those students who study entirely online, or those who do not believe the cost of a degree is worth its employment benefits. Technology is seen by some as one solution for rising costs, decreasing enrolments and for engaging ‘digital native’ students. Higher education needs to make some cautious decisions to minimize diminishing interest, dwindling government incomes and divisive program alternatives. Is technology an answer or a complication in this process?

Key words: higher education, technology, blended learning.

INTRODUCTION

For the last four years, at many Australian universities, domestic enrolments in undergraduate degrees have been progressively decreasing. This fact seems to have gone unnoticed - a higher education degree has been a predictably reliable choice for students for decades leading to a huge expansion of the industry sector in Australia and most other developed countries. Various explanations have been hypothesized, from a nation-wide decline in tertiary degree choice, to competition from more attractive free courses, to poor information available on university websites. The actual reason for this decline in student numbers is not clearly understood as yet.

Since the 2005, Australian higher education institutions have been influenced by student recruitment competition and constant Federal government frugality [1], due to successive right-wing policies. Thus, most Australian institutions have employed technology, usually in the form of a learning management system, in order to save money, enhance curriculum development and improve student access. These systems encompass intrusion to all programs of instruction, and in-house staff training but more importantly alleviate expensive infrastructure expenditure such as new classrooms, libraries and facilities. Nearly all Australian institutions have also reduced student contact hours with teaching staff, but have expected instructors to produce quality education with
less time with their students. These students have experienced added pressure from higher fees, and increased living costs. Student part-time employment requires maximum flexibility in terms of attendance, curriculum support and off-campus access. Most aspects of higher education in Australia – delivery mode, research, administration, technical support, classroom facilities, curriculum design and assessment - have markedly changed over this period.

Public concern in the USA over higher education has been marginally reported for over 30 years but few governments have seriously considered the implications of a public that abstains from a university degree. The seminal study [2] of a ‘crisis in higher education’ identified questions of continuing relevance, doubts about adult education and postgrad programs and the increasing financial liability of degrees for American families. Reference [3], a decade later, identified a number of issues at the time: the quality of higher education, opportunities for the populace, public understanding of the purposes of higher education, its relation to employment and economic development, and the cost of obtaining a degree. Reference [4] stated that in the post-GFC era, students have anxiety over the supposed value of a degree versus the massive debt incurred by going to university or college. Even in 2019, the vast majority of students will not be attending ivy-league universities or prestigious research institutions, but instead, attending a community college or private, profit-making institutions.

For the past five years, US educational media and survey polls have been warning of significant hesitancy surrounding a university education [5] which has been displayed in declining enrolments in higher education across the country. The overall domestic enrolments at mainly colleges have fallen for the seventh year in a row, currently down 1.7% according to the National Student Clearinghouse Research Center. The main deficits have occurred in liberal arts and humanities, which appear less drastic due to gains in other areas. Although these percentages look small, the actual numbers are close to 300,000 students who have chosen not to enroll in a first degree. Auspiciously, international students (1,000,000+) substitute for the loss of domestic students, but the cause of the declines are yet to be fully comprehended, and certainly not yet fully felt in the industry.

The situation in the UK is comparable to the USA with domestic applications down 2% in 2018, but explained by an equivalent lack of 18 year-olds in the British population. Nursing degree applications have declined 10% along with mature-age postgrads. Prior to 2019, nineteen institutions had reported operating deficits in 2016/17 creating sustainability questions amongst both staff and students. The lucrative international student market from the EU, which has kept the sector buoyant is now deciding whether to risk the Brexit no-deal, which could leave students financially disadvantaged in coming years because they would no longer enjoy EU discounted rates. If one factors in changing student fee rates, increased tuition costs, and dubious government subsidies there is certainly a lack of confidence shared by potential new students, tertiary staff and administrators alike.
TECHNOLOGY & HIGHER EDUCATION

The rise of technology in higher education settings closely follows the development of personal computers in the 1980s and subsequent advancements in networking and software in particular the Internet and web browsers from about 1995. Before the Internet became ubiquitous throughout the world, computers, or ‘microcomputers’ to use the term at that time, were mainly used as replacements for teaching in the form of programs of computer-assisted instruction and testing. These computer-based programs were not constrained to higher education, with high school and primary aged students also subject to this form of instruction. The use of such computer-assisted instruction was acclaimed as a savior for repetitive tasks and rote learning. However, computer-based instruction has also been decried as being robotic, inhuman, and threatening jobs of skilled teachers and trainers [6] [7]. Many training courses in a range of professions, today have migrated to a simulated computer-assisted process but using web-based modules plus the usual competency test at the end. Anecdotal evidence from nurses, teachers and academics show a mixed set of attitudes towards these somewhat anachronistic modules.

The use of technology in higher education has been seen as one of the ways to concurrently conserve spending, and also provide flexible access to students who wish to study online, either fully or part-time [8]. But the question arises, does this technology really provide cost abatement if the expense is falling student enrolments due to lack of interest and boredom? Is LMS technology of any value, if in fact these systems create ongoing expenses, and more importantly, engender apathy on the part of students leading to increasingly high attrition rates for online course takers [9]?

THE FAUSTIAN BARGAIN

The highly influential media theorist, Neil Postman said that when we use new technology we are entering into a kind of Faustian bargain [10]. This compact entails each new technology adding to our society by giving us advantages, but the same technology subtracting a part of ourselves, never to be regained. For every advantage there is an opposite disadvantage. This is true of almost all technologies one can imagine, for example, the telephone wrecked telegraphy; the motor vehicle gave us traffic, and pollution; radio stopped us talking; video stopped us reading; and the Internet has humbled the notion of expertise to the click of a Google button [11].

In Australia and other developed countries, technology in the form of websites and blended learning has been used to create savings for institutions because they can eradicate the ongoing costs of paper, filing cabinets, typists, printing and reprographics, stationery and photocopying, and paper-based assignments. The paperless office is not yet bereft of paper, but very few instructors receive paper in their pigeonholes, and students forego pen and paper unless they are sitting exams. These savings could be used to hire more staff, support more research and create better curricula. However this cost saving seems to be more often used to pay for operational spending on computer hardware, software and greater administration overheads. Institutions have been utilizing learning management systems (LMSs) for decades and used their own websites to
both market the institution and provide information for staff and students. Such websites are proclaimed as being equitable, open all hours, and accessible to anyone with an Internet connection. However, most students have discovered, traversing a university website is an arduous task, and submitting an assignment to obtain feedback even more challenging. The establishment and use of electronic submission of assignments would appear to simplify the whole process allowing students a freedom from anxiety from printing costs, traveling to locate campus assignment boxes and hoping that the assignment does not get lost. Electronic submission also assists instructors in obviating the transport of heavy loads of essays back and forth, and their storage for years, just in case a dispute might arise. But instead of the long queues of the analogue registration for tutorials, students often have to queue to submit their digital assignments at heavy use times via the LMS. The same students may receive a receipt for their submission only to find that the assignment is invisible to mark on the grade center interface. The problems continue when the assignments are returned and students cannot locate the right button to view their feedback. Anxiety over assignments has not been removed, it has just been displaced.

WHAT ABOUT THE MOOC?

A trend has occurred in higher education for more and more resources to be placed online. Teaching, research, training, communication and administration functions are now entrenched in web-based processes. This is true of traditional universities/colleges and especially the open access institutions that have begun to offer certificates of completion. In 2012, two large American universities, Harvard and MIT partnered to form the conglomerate, edX. A year later, ten Chinese universities together formed a copycat, XuetangX. Other universities such as Stanford, Princeton, Duke, and overseas, Tsinghua, Peking and Edinburgh universities also offer open education that does not select students on merit. In 2019, anyone can sign up either freely, or for a small cost, and study a range of courses taught by some of the best instructors in the world. Citizens of all countries may participate in these programs of study ostensibly allowing low socio-economic students, and those from developing countries access to higher education for a minimal cost. The value of these certificates is allegedly gaining equivalence with traditional degrees, but employer confidence is a hurdle that needs to be overcome, given the possibility of cheating and collaboration with these new programs.

The official title of these open access programs is MOOC or Massive Open Online Courses and by the end of 2012 the US platforms had about 2 million registrants, but average completion rates were varyingly said to be around 15% [12] or about 3-5% [13]. Such low completion rates do not appear to be real competition for traditional higher education providers and as such cannot be said to represent an actual threat to the benefits of obtaining a structured traditional degree. The MOOC community themselves have compiled a list of possible problems that are equally applicable to online programs in general: 1. Digital fluency is necessary, not just literacy; 2. Costs in terms of effort for participants may be too high; 3. Participants need to set their own goals and regulate their own learning; 4. Most programs are in English creating possible language barriers; 5. Programs
feel chaotic because participants create their own structure and content [14]. MOOCs have been affirmed as one of the futures of higher education. They can be democratizing, highly cost-effective, inclusive of all cultures and extremely attractive [15]. If these online courses do become the accepted norm, then higher education will certainly be radically transformed. However given the political and economic backlash from the entire higher education sector, worldwide, including students themselves, MOOCs cannot be seen as a serious threat to the status quo, in 2019.

AUDIENCE ANALYSIS OF STUDENTS

Reference [16] analyzed a broad cross-section of students’ everyday usage with technology in two Australian universities and found some unanticipated results. Whereas students all own a laptop or desktop computer their engagement with this device was mostly constrained to looking up various websites and using social media. Obviously smartphones were increasingly used as part of their daily use of educational devices. However, perusing university LMS websites for information and resources was not a daily occurrence at home or at university. The study showed that only 59% of students categorized the actual LMS content and resources as being ‘very useful’ to their learning. But using the library’s online resources was rated higher at 66% ‘very useful’.

These figures are astounding in that the digital services for doing assignments were more positively regarded than the websites that presumably constituted their entire learning content for the degree. Finding references for an assignment was a better use of a student’s time and energy than learning about the actual course content. This seems to be an indictment of the LMS content or the students’ overall engagement and motivation, or both.

This author’s figures from Blackboard analytics for taught units confirm that using the LMS is usually only performed once a week per unit, on average by the majority of students, and this occurs mainly in class [17]. The inference is that students use technology in a peripheral fashion, and while the curriculum expectation is 8 hours of reading/study, that figure is grossly overestimated from the actual times retrieved. If students only visit the weekly webpage once a week, and only for about 30 minutes on average, then they do not read all the weekly material on the webpage. The same is true of weekly references, resources and custom videos that now replace face to face lectures. Observation of student behavior in the class computer labs show individuals browsing and clicking. Writing is rarely contributed in terms of note-taking, unless students are asked to engage in a reflective or participative activity assigned for that particular class session. Online students have similar behavior patterns.

Not much has changed since [18] reviewed computer-assisted instruction and concluded that the novelty of CAI assists low-level students to use the computer program, but higher-level students are unconvinced of the merits of the computer and rapidly become disinterested. This is exactly the experience of most students when they use a LMS in 2019. Why do we believe that placing information and resources on a website will be engaging for students and keep them studying at their particular institution? Cost savings might be accruing, but the students themselves are not viewing the custom-made videos, or reading the focused content and references on those web pages.
DISABILITY & TECHNOLOGY

A web-based higher educational culture, which has become the norm in all developed nations, unquestionably disadvantages students with certain kinds of disabilities such as blindness, partial sightedness and cognitive impairment, at the same time as assisting mobility-impaired students who cannot easily attend classes. An institutional decision to use LMSs and abstain from old fashioned paper is a trade-off between flexibility and disability. The creation of Braille versions of teaching materials is not a regular occurrence at most institutions, nor should it be because student activities comprise much more than student-centered web searches and library research. While screen readers are available for these searches, there are no easy solutions to the use of Excel for chart preparation, Photoshop for editing graphics, Powerpoint for oral presentations, SPSS for statistical research, and so on. Disabled students have difficulty collecting information, presenting that information, and preparing assignments for submission – essential activities that even non-disabled students struggle to master.

In terms of LMSs and websites, many higher education institutions supply the bare basics of Alt-tag text labels for graphics, semantic headings for extended documents, and functional color schemes. However, most institutions also devolve accessibility responsibility to the LMS vendors and assume that their accessibility credentials are valid, making the websites accessible. This assumption is simply false. LMS vendors may state that their systems are W3C compliant, but they do not show how they have arrived at this surety. This author consulted a profoundly blind advisor, who used the JAWS assistive screen reader at the Australian Royal Blind Society in 2001 and discovered that WebCT, the forerunner to Blackboard, was inaccessible because of inadequate navigation assistance and many dead links. A decade later, Blackboard with the JAWS program and by using a range of automated and manual methods and found that the LMS scored “better than average”, but that score did not produce accessible content [19]. Missing sitemaps, incapacity to locate user website location, variable page layouts, absent META data elements, use of unreadable pdf files, and missing ALT text labels for graphics were commonplace. Other brands of LMS do not fare much better when those systems are properly tested and assessed.

The unseen dimension to blended learning is that it extends well beyond LMS information retrieval. Blended learning significantly includes the student face-to-face and online interaction with instructors and peers, the creation of written assignments, submission of assignments to online evaluation sites, taking exams, tests and quizzes, and retrieving feedback. Every one of these undertakings is a possible source of accessibility issues, rarely considered in the educational literature, and given meagre recognition in the W3C guidelines.

A demanding task is the common prerequisite that a student electronically sign a pdf copy of the institutional cover sheet to accompany all electronically submitted assignments. This requirement from the past is still mandatory at many institutions. The disabled student needs to download the cover sheet in pdf format, to open it in the full version of Acrobat, then insert a graphics file of their signature, re-save the file, change it to a Word document, and then add the cover sheet to the beginning of the essay, then upload to the LMS. This is a tricky process for even able-bodied students, but is very stressful and prone to errors for disabled students. The student
must own a full version of Acrobat, MS Word and Photoshop in order to accomplish a legacy task from an epoch that asked students to simply sign the front cover of their paper assignments. A trouble-free solution would be to offer disabled students the opportunity of submitting hard copy.

CONCLUSIONS

This paper began by asking what is the future of higher education if the downward enrollment trends continue to prevail. It asks if technology is a possible solution to the pressing problem of the crisis of confidence in higher education. Or is technology itself a problem? Neil Postman’s adage, that technology giveth and taketh away is still a useful perspective. After two decades, we are at the tail end of the blended learning and online education ‘gift’ and need to evaluate the ‘loss’ part of the equation. It is naïve to believe that we understand how students implement the technology that they find useful. We assume that we are fulfilling their needs. Thus, we need to research the needs of students from the ground up, and cease merely surveying how they use the technology that we provide. Higher education students in developed nations are simply tolerating their institutional technology. Students are unconvinced by traditional lectures and also video pods, no matter what the topic, or speaker. Although a few students are be digital prodigies, the majority of students are fairly ordinary users of technology – they are computer literate, but not computer fluent users. They vote with their digital absence on LMSs and websites.

We need to identify what has been lost in employing current all-encompassing digital displays of information, digital assignments, and electronic feedback. If you ask Arts students what they read, they will usually reply books and magazines in traditional paper format. Why have we decided to delete paper and textbooks from our institutions, as if paper was somehow an inferior product? Disabled students appreciate paper, in fact, paper handouts are always appreciated in 30 years of teaching experience. We have downgraded our publishing industries, our newspapers and magazine culture, and our higher education to a single, albeit multi-faceted, computer or mobile phone screen. Most classroom students, if asked, do not really want to study their degree completely online, without coming to class. They say that it is far too hard, and too isolating to study from a computer screen at home. Society has changed because of the belief that digital screens are the future.

It is imaginable in the near future that a prestigious university will make its name by claiming to be 100% analogue in terms of its curriculum offerings. It may also garner exceptional staff who understand the limits of blended learning. It may attract students who are more appreciative of charismatic face-to-face teachers, enthusiastic discussion, and feedback that contains personalized handwriting to explain errors and mistakes.

Higher education needs to ask itself what its role should be in the banal reality of the present, and not suppose that they should predict the future of education. The current popular debates surrounding pedagogy and technology need to be subordinated to a recurring concern for the basic, analogue dimensions of the teaching academy: curriculum content relevance, student expectations, and assumptions surrounding engagement and genuine learning. If these questions can be
answered then predicting the future of higher education may not need to be asked. And if it asked, technology by itself is not the answer.

REFERENCES


