I-LEARNING – AN EMPOWERING ADULT LEARNING PHILOSOPHY FOR EDUCATORS

A DISCUSSION PAPER

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ABSTRACT

I-learning is an adult learning behavioural philosophy that focuses on students being given the behavioural and assistive technology tools to empower them to 'pull' information and develop self-learning leadership. It is oriented toward Vocational Educators or Trainers, Workplace Mentors, Learning and Development (L&D) Practitioners, Team Leaders and Managers. It also has application for teachers and educators working in primary, secondary and tertiary education sectors. Teacher-centred, student-centred, inquiry-based and co-operative are terms and methods educators are familiar with. Each style or method has its merits and place in educating others. The norm however seems to be that the teacher, educator, tutor, facilitator, mentor etc, remain the owner of knowledge, managing the 'push' of information to students. It is very difficult for an educator in an adult learning environment to shake the stereotypical teacher/student hierarchical relationship whereby the student, child or adult, remains in a subservient role. During their formative learning years in primary, secondary and potentially tertiary education, the student may not have gained nor have been given an opportunity to understand their preferred learning styles or to gain learning independence. On-job-training opportunities may also place the adult learner in a subservient role whereby they watch, listen and wait for instruction, rather than actively seek to 'pull' knowledge from their facilitator or mentor. With easily accessible, valid and robust behavioural and learning profiling metrics, the advent of lower-cost assistive technologies in the classroom, and the Tin Can API that allows learning to happen and be tracked anywhere and anytime, educators have an opportunity to build a very targeted learning self-development strategy. I-Learning builds student/trainer relationships and equitably distributes the responsibility of 'pushing and pulling' knowledge. I-learning is a behavioural philosophy designed to create a greater awareness of individual learning needs in both the educator and the participants, allowing the student to take more control of their learning confidence and competence.

Field of Research: *Trends in Learning*

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1. Introduction

Why should the proposed I-Learning philosophy be considered relevant by the academic community? Similar sounding methodologies exist, i.e. Student-Centred Learning and are used very effectively to educate the broader community.

If we as professional educators do not re-think our instructional design tactics, and the roles we play in learning, our consumers will choose personalised learning opportunities (PLOs), 'putting the learner at

the heart of the education system' (Leadbetter, 2008), that are more cost-effective, skill and knowledge targeted, customised, and accessible, where, when and how they want.

Advances in digital audio and video recording, editing and broadcasting technology, access to low-cost and free wifi, allow facilitators to be recorded, 'sliced and diced' and presented time and time again across a myriad of mobile devices. Record once and use infinitely.

Theses technological advances have caused a Big Bang Disruption in the way learners access and consume information.

Big Bang Disruption is a dramatic new kind of innovation. Instead of entering the market as a product that is either inferior to or more expensive than those of established incumbents, a Big Bang Disruptor is both better and cheaper from the moment of creation. (Downes and Nunes, 2013)

This discussion paper seeks to highlight the potential risk to educator roles through the shift away from traditional facilitator-led learning opportunities, and the potential for learners (and educational facilities) to replace, partly or completely, facilitator-led learning with online, self-paced, personalised learning opportunities.

By enhancing the face-to-face, classroom-based experience, gaining a stronger understanding of individual learning needs, we ensure learners choose to continue to attend classes, and educational facilities choose not to replace facilitators with recordings, avatars and e-learning -only learning opportunities.

Not all academics will have the broad range of instructional design skills required for this and universities will need to offer dedicated staff development activities (Bates, 2014).

2. What Does the Teaching Environment Look Like? – Traditional or Teacher-Centered and Constructivism or Student-Centred

teach (v.)
Old English tæcan (past tense tæhte, past participle tæht) "to show, point out, declare, demonstrate," also "to give instruction, train, assign, direct; warn; persuade," from Proto-Germanic *taikijan "to show" (source also of Old High German zihan, German zeihen "to accuse," Gothic ga-teihan "to announce"), from PIE root *deik- "to show, point out." (October 7, 2017 from http://www.etymonline.com/index.php?term=teach)

Teaching, and the structure of formal education environments have not significantly changed since inception.

Students attend a place of learning at a time chosen by the education provider. Subjects and subject-matter choice remain generally in the hands of the education provider and teachers/lecturers.

2.1 Traditional or Teacher-Centred

The teacher views learners as having 'knowledge holes' that need to be filled with information (Novak, 1998, pp. pp 24-25)

The traditional method of teaching identifies the content and teacher being the focal point with students acquiring knowledge through repetition, and rote learning. Students play a subservient role in this learning relationship, being led through each learning event by the teacher.

2.2 Constructivism or Student-Centred

Constructivism, as a philosophical approach to education and knowledge acquisition with many contributors. Constructivism argues that the responsibility of learning should reside increasingly with the learner (Glasersfeld, 1989).

Teachers are still considered authority figures, however teachers and students play an equally active role in the learning process. There is more of a shared responsibility within this learning relationship.

3. What can Educators Learn from Blockbuster Video and Netflix?

Blockbuster was a movie rental company, opening its first store in Dallas, Texas, USA in 1986. At its peak, the company operated 10,000 stores with a market value of $5 billion USD (October 11, 2017 from https://hbr.org/2013/11/blockbuster-becomes-a-casualty-of-big-bang-disruption).

Blockbuster's business model pre-dated the internet, and was founded on providing movies in the form of video cassette and then later DVDs. Consumers no longer needed to attend cinemas and could watch movies in the comfort of their own homes. There were restrictions - persons still needed to physically attend an outlet between prescribed operating hours.

Once there, there was no guarantee the movie of their choice would be available. Consumers had to settle for their send or third-tier choices. Once a movie or movies had been selected, the consumer was provided with a locked and limited timeframe to view their choices and then physically return to the original place of hire and deposit their movie/s.

In 2000, Reed Hastings, the founder of a start-up company Netflix, met with Blockbuster CEO John Antioco and his team to propose a partnership. Netflix's business model was based on providing streaming media and video-on-demand online, negating the requirement to physically visit an outlet. Access to, and current download meant a current limited market. The idea was rejected.

In 2010, Blockbuster filed for bankruptcy.

The concept of a convenient, search and watch from anywhere, guaranteed availability, on multiple devices, video viewing platform was considered a Big Bang Disruption that made the 'drive to and hope for availability' service of Blockbuster redundant.

Consider the impact wifi, and mobile learning is having on the choices learners have when considering where, how and what to study. Is traditional classroom teaching the next Blockbuster?

4. Big Bang Disruption

The first e-mail message was sent over the ARPANET (Advanced Research Projects Agency Network) in October 29, 1969 from the University of California, Los Angeles (UCLA) to the second network node at Stanford Research Institute (SRI).

"The message text was the word login; the l and the o letters were transmitted, but the system then crashed. (October 12, 2017 from http://www.historyofinformation.com/expanded.php?id=1108).

Since this inaugural email message, consider the rapid advances in internet, mobile access and learning. The following graphs provide a detailed overview of the rise of these technologies and capabilities.

4.1 Rise of the Internet

The following chart represent the dramatic rise in internet usage per world-region over a 10 year period – 1995-2015. Primary source of data: (October 13, 2017 from https://ourworldindata.org/internet/)

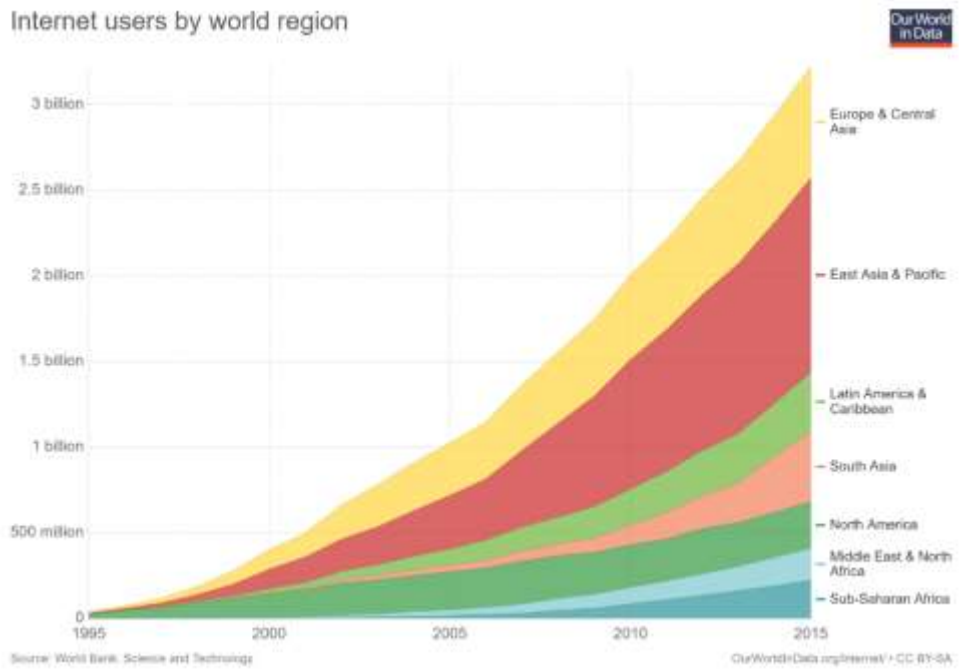

Figure 1. Internet Users by World Region

This chart indicates the internet usage per individual. Interesting to note is although North America has significantly less users by world region, they have a significantly higher usage rate per individual than other regions. Primary source of data: (October 13, 2017 from https://ourworldindata.org/internet/)

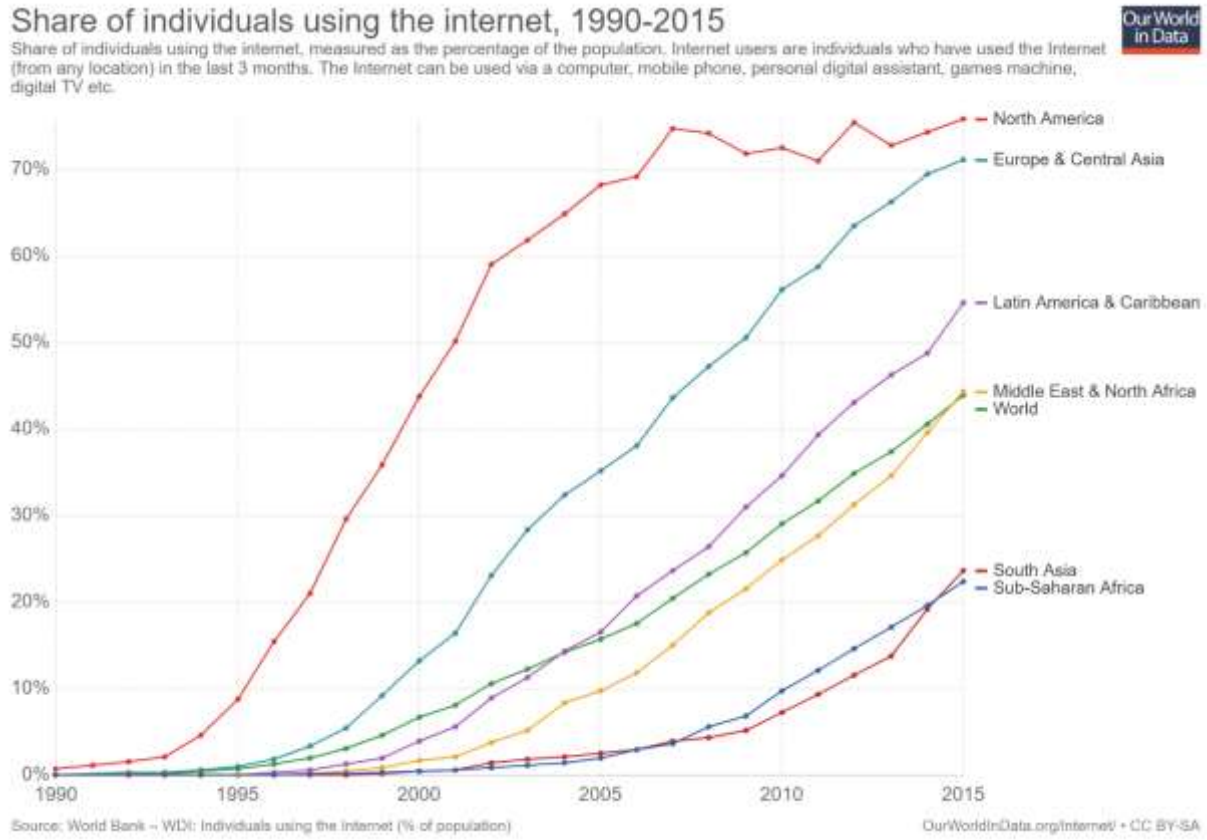

Figure 2. Share of Individuals Using the Internet

4.2 Rise of the Machines - Smartphones and Mobile Devices

The following chart indicates the growth of smartphone device users from 2014 with projected results going forward (October 13, 2017 from https://www.statista.com/topics/840/smartphones/)

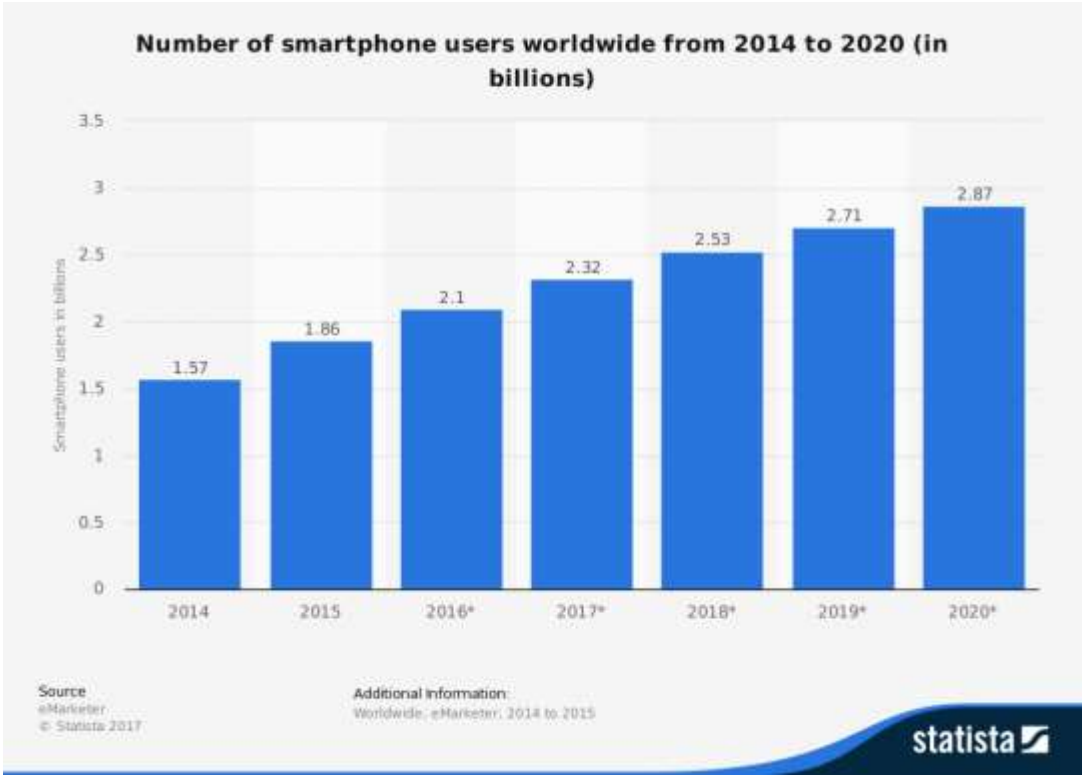

Figure 3. Number of Smartphone Users Worldwide from 2014 to 2020 (in billions)

Figure 4 shows that globally, devices and connections (10 percent CAGR) are growing faster than both the population (1.1 percent CAGR) and Internet users (7 percent CAGR).

This trend is accelerating the increase in the average number of devices and connections per household and per Internet user.

Each year, various new devices in different form factors with increased capabilities and intelligence are introduced and adopted in the market.

A growing number of M2M applications, such as smart meters, video surveillance, healthcare monitoring, transportation, and package or asset tracking, are contributing in a major way to the growth of devices and connections.

By 2021, M2M connections will be 51 percent of the total devices and connections. (October 13, 2017 from https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/vni-hyperconnectivity-wp.html

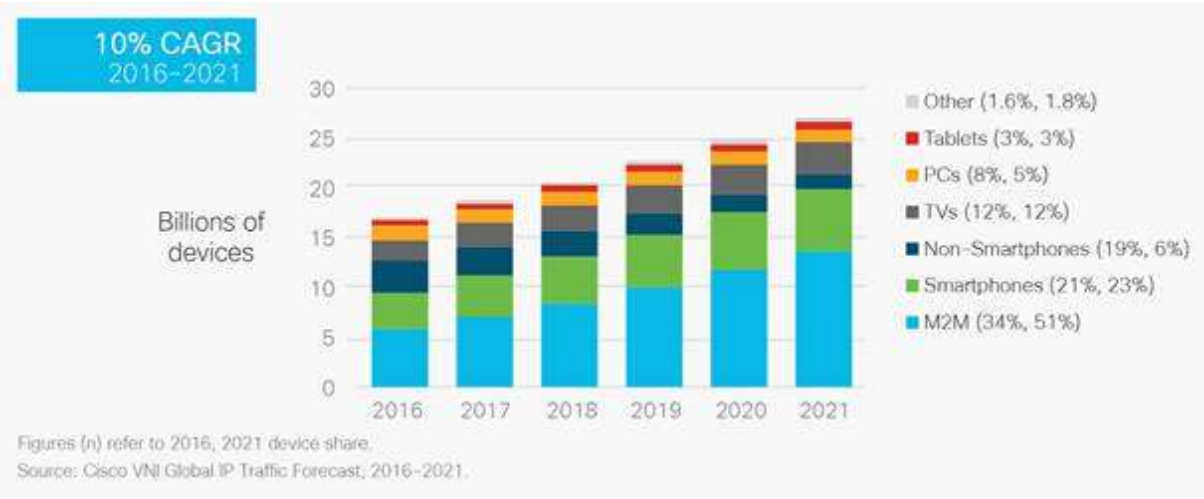

Figure 4. Breakdown of device type (Compound Annual Growth Rate (CAGR) 2016 to 2021 – projected)

Figure 5 shows the changing mix of devices and connections and growth in multidevice ownership affects traffic and can be seen in the changing device contribution to total IP traffic.

At the end of 2016, 54 percent of IP traffic and 48 percent of consumer Internet traffic originated from non-PC devices. By 2021, 75 percent of IP traffic and 76 percent of consumer Internet traffic will originate from non-PC devices. (October 13, 2017 from https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/vni-hyperconnectivity-wp.html

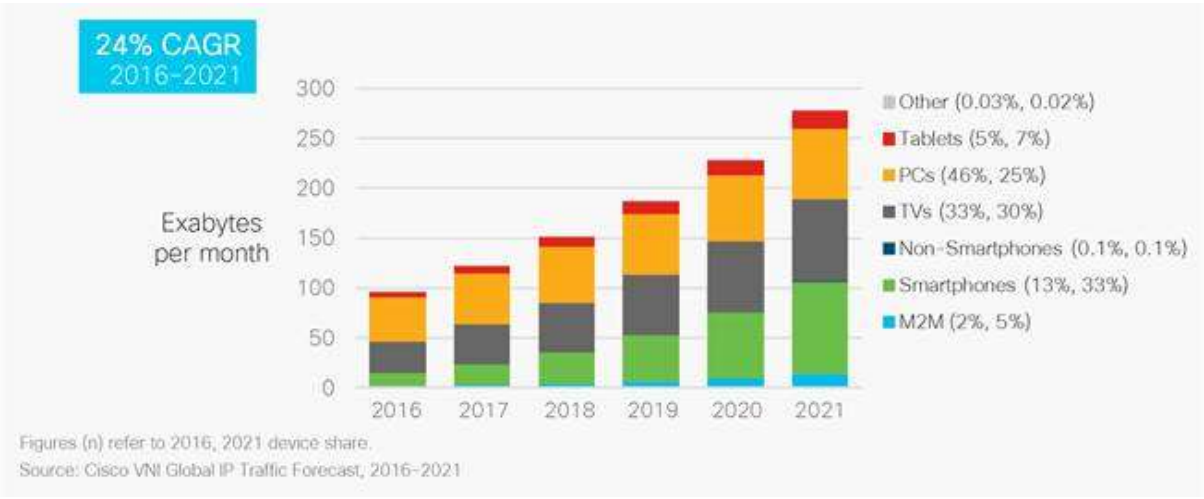

Figure 5. Global IP Traffic usage per device type per year (Compound Annual Growth Rate (CAGR) 2016 to 2021 – projected)

A summary of the internet usage and access by mobile devices is as follows (October 13, 2017 from https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/vni-hyperconnectivity-wp.html):

Annual global IP traffic will reach 3.3 ZB per year by 2021, or 278 exabytes (EB) per month. In 2016, the annual run rate for global IP traffic was 1.2 ZB per year, or 96 EB per month.

Global IP traffic will increase nearly threefold over the next 5 years. Overall, IP traffic will grow at a Compound Annual Growth Rate (CAGR) of 24 percent from 2016 to 2021. Monthly IP traffic will reach 35 GB per capita by 2021, up from 13 GB per capita in 2016.

Busy hour Internet traffic is growing more rapidly than average Internet traffic. Busy hour (or the busiest 60-minute period in a day) Internet traffic increased 51 percent in 2016, compared with 32 percent growth in average traffic. Busy hour Internet traffic will increase by a factor of 4.6 between 2016 and 2021, and average Internet traffic will increase by a factor of 3.2.

Smartphone traffic will exceed PC traffic. In 2016, PCs accounted for 46 percent of total IP traffic, but by 2021 PCs will account for only 25 percent of traffic. Smartphones will account for 33 percent of total IP traffic in 2021, up from 13 percent in 2016. PC-originated traffic will grow at a CAGR of 10 percent, and TVs, tablets, smartphones, and Machine-to-Machine (M2M) modules will have traffic growth rates of 21 percent, 29 percent, 49 percent, and 49 percent, respectively.

Traffic from wireless and mobile devices will account for more than 63 percent of total IP traffic by 2021. By 2021, wired devices will account for 37 percent of IP traffic, and Wi-Fi and mobile devices will account for 63 percent of IP traffic. In 2016, wired devices accounted for the majority of IP traffic, at 51 percent.

Content Delivery Networks (CDNs) will carry 71 percent of Internet traffic by 2021. Seventy-one percent of all Internet traffic will cross CDNs by 2021 globally, up from 52 percent in 2016.

Thirty-five percent of end-user Internet traffic will be delivered within a metro network by 2021, up from 22 percent in 2016.

The number of devices connected to IP networks will be more than three times the global population by 2021. There will be 3.5 networked devices per capita by 2021, up from 2.3 networked devices per capita in 2016. There will be 27.1 billion networked devices in 2021, up from 17.1 billion in 2016.

Broadband speeds will nearly double by 2021. By 2021, global fixed broadband speeds will reach 53 Mbps, up from 27.5 Mbps in 2016.

Globally, mobile data traffic will increase sevenfold between 2016 and 2021. Mobile data traffic will grow at a CAGR of 46 percent between 2016 and 2021, reaching 48.3 exabytes per month by 2021.

Global mobile data traffic will grow twice as fast as fixed IP traffic from 2016 to 2021. Fixed IP traffic will grow at a CAGR of 21 percent between 2016 and 2021, while mobile traffic grows at a CAGR of 46 percent. Global mobile data traffic was 7 percent of total IP traffic in 2016, and will be 17 percent of total IP traffic by 2021.

4.3 Rise of E-Learning

"The idea is simple: to publish all of our course materials online and make them widely available to everyone."
Dick K.P. Yue, Professor, MIT School of Engineering (October 13, 2017 from https://ocw.mit.edu/about/)

E-learning may be described as learning undertaken either individually or in groups utilising electronic media.

What was initially seen as a convenient but novel and somewhat 'gimmicky' way of undertaking a course of study has grown significantly whereby it is essential for many education providers to offer e-learning as a study pathway to remain competitive.

- Worldwide MOOC (Massive Open Online Course) enrolment grew by nearly two-thirds in 2016 to reach 58 million students
- Regional MOOC platforms, notably in Latin America and China, are now drawing significant numbers of new students
- Many courses now support self-paced learning and more frequent course starts, with the result that many students are studying in smaller cohorts than in the recent past
(October 13, from http://monitor.icef.com/2017/01/global-mooc-enrolment-jumped-last-year/)

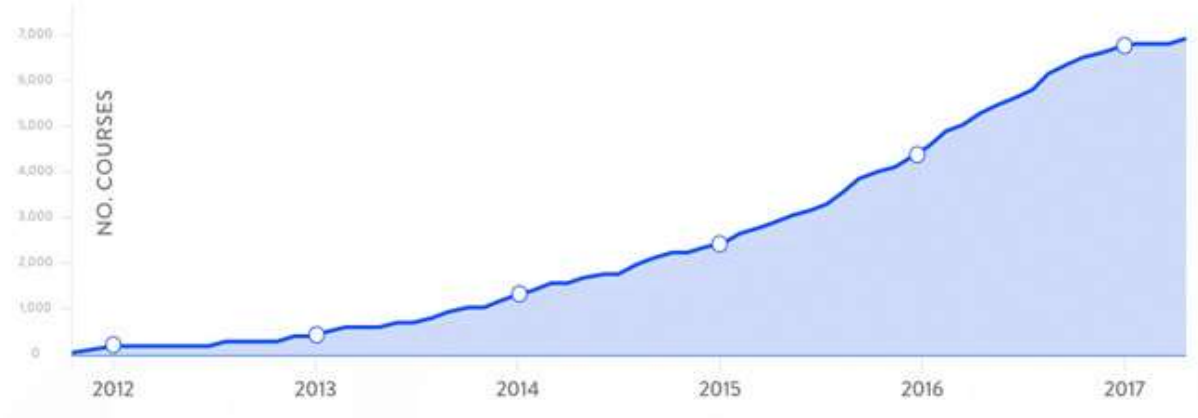

Figure 7. Number of MOOC courses available worldwide, 2012-2016.

The Massechutas Institute of technology (MIT), is an example of a recognised learning facility offering their programs, online and free of charge.

MIT OpenCourseWare (OCW) is a web-based publication of virtually all MIT course content. OCW is open and available to the world and is a permanent MIT activity.

Through OCW, educators improve courses and curricula, making their schools more effective; students find additional resources to help them succeed; and independent learners enrich their lives and use the content to tackle some of our world's most difficult challenges, including sustainable development, climate change, and cancer eradication. (October 13, 2017 from https://ocw.mit.edu/about/)

MIT OpenCourseWare receives over 2 million visits each month. The image below indicates the origin of the site visitors.

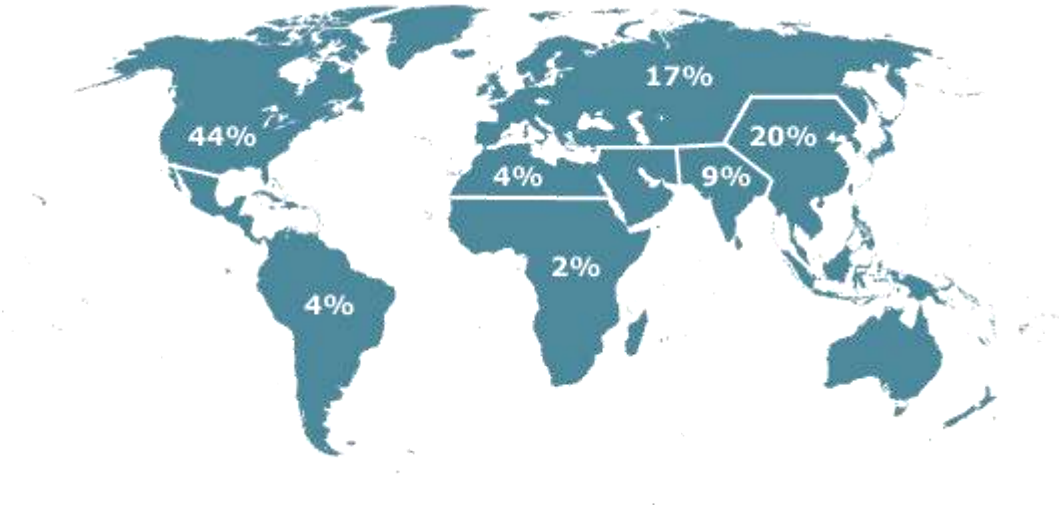

Figure 8. Origin of MIT OpenCourseWare site visitors

The following graph indicates that 85% of the persons that visit and undertake MIT OpenCourseWare programs are either formal students or persons seeking personal learning opportunities.

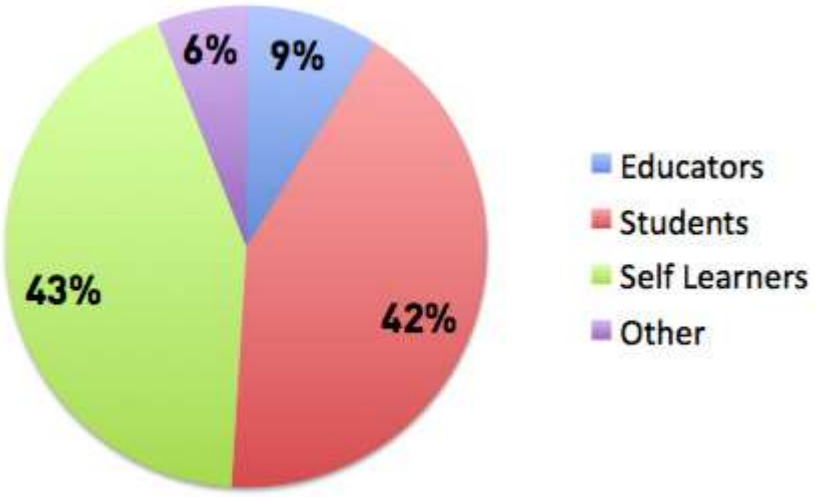

Figure 9. Profiles and percentages of MIT OpenCourseWare users

The following table provides significant insight into the specific reasons persons are accessing MIT OpenCourseWare online programs.

What is interesting to note is the trend in personal learning opportunities for professional development.

Prior to the availability of programs offered by providers such as MIT, Educators, Students and Self-Learners would have had to attend a physical location for professional development or not had the opportunity altogether.

USE SCENARIO		% OF USE
Educators	Improve personal knowledge	31%
	Learn new teaching methods	23%
	Incorporate OCW materials into a course	20%
	Find reference material for my students	15%
	Develop curriculum for my department or school	8%
Students	Enhance personal knowledge	46%
	Complement a current course	34%
	Plan a course of study	16%
Self Learners	Explore areas outside my professional field	40%
	Review basic concepts in my professional field	18%
	Prepare for future course of study	18%
	Keep current with developments in my field	17%
	Complete a work-related project or task	4%

Table 1. MIT OpenCourseWare access purposes

4.3 Rise of Artifical Intelligence in Learning

Artificial Intelligence (AI)

1:a branch of computer science dealing with the simulation of intelligent behaviour in computers

2:the capability of a machine to imitate intelligent human behaviour

(October 13, 2017 from https://www.merriam-webster.com/dictionary/artificial%20intelligence)

MINDOJO is a Virtual Private Tutor — Train It and It Will Train Your Students

It's simple — you create dialog scripts of lessons and add your practice items, and Mindojo adaptively teaches them to your audience.

Engage students with a proactive virtual tutor that keeps the conversation alive and improves from student to student. Mindojo continuously evaluates your students and tailors the course to their needs while they enjoy a socialized, gamified learning experience. (October 13, 2017 from http://mindojo.com/)

Mindojo is an example of how artificial intelligence is used in the form of an algorithm-based learning platform that:

- identifies patterns in learning behavior and tailors a program to meet the needs of an individual
- provides a realistic tutor-student learning environment without a human tutor
- provides a flexible, personal learning opportunity platform

Is this the educational version of Netflix?

5. I-Learning Philosophy

I-learning is an adult learning behavioural philosophy that focuses on students being given the behavioural and assistive technology tools to empower them to 'pull' information and develop self-learning leadership.

It is oriented toward Vocational Educators or Trainers, Workplace Mentors, Learning and Development (L&D) Practitioners, Team Leaders and Managers. It also has application for teachers and educators working in primary, secondary and tertiary education sectors.

During their formative learning years in primary, secondary and potentially tertiary education, the student may not have gained nor have been given an opportunity to understand their preferred learning styles or to gain learning independence.

A traditional teaching environment is often favoured while young learners are forming their preferred learning behaviours.

Human facilitated, higher-education, vocational education and skills and behavioural development short-course workshops are the more at-risk learning environments for redundancy through consumers choosing online, personalised learning opportunities.

I-Learning builds student/trainer relationships and equitably distributes the responsibility of 'pushing and pulling' knowledge. It is an enhanced version of student-centred learning whereby the teacher/trainer/facilitator focuses on:

- building strong relationships and personal connections with their learners whereby they feel valued and are part of the learning process rather than just a recipient
- creating an outstanding 'learning experience'
- providing a face-to-face learning experience that replicates online, flexible personal learning opportunities within a classroom environment

With easily accessible, valid and robust behavioural and learning profiling metrics, the advent of lower-cost assistive technologies in the classroom, and the Tin Can API that allows learning to happen and be tracked anywhere and anytime, educators have an opportunity to build a very targeted learning self-development strategy.

I-Learning as a behavioural philosophy comprises the following 3 key areas:

5.1 Participant Profiling

In I-Learning, the first phase is individual profiling, preferably undertaken pre-program. As a minimum, outside of any academic pre-entry requirements, it is suggested participants undertake a Language, Literacy and Numeracy, and learning styles profiling assessment.

These 2 profiling target areas provide the teacher/facilitator with valuable information regarding each participant's capability and capacity to learn, their preferred learning styles and guidance on instructional design for the workshop or longer program.

Figure 10 shows the learning styles profile of a learning cohort of 12 adults. By gaining an understanding of this cohort's individual learning style preferences prior to a program commencing, allows the teacher/facilitator to design and deliver a program significantly more learner-targeted than a per-script session.

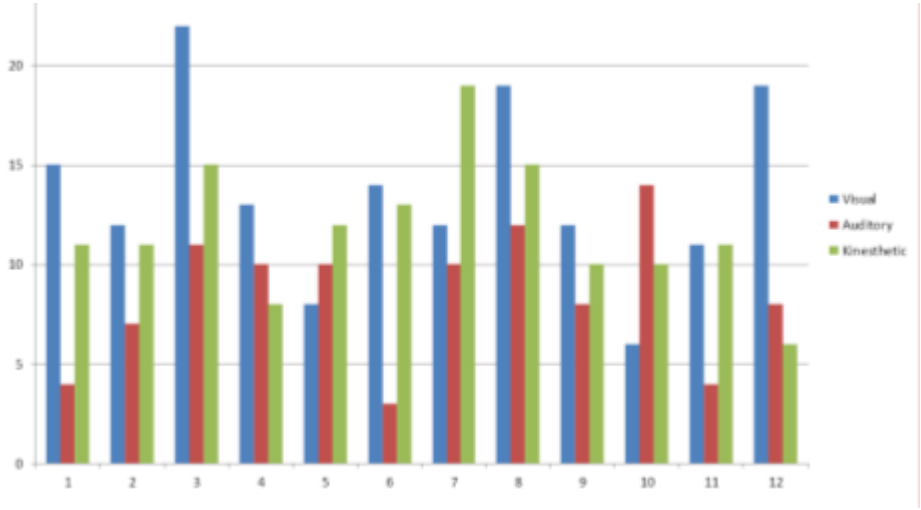

Figure 10. Example of Individual Learning Styles within a Learning Cohort

Should pre-program profiling not be available, teacher/facilitator knowledge of learning style characteristics such as where a participant sits, do they constantly tap their feet or a pen provide indicators of preferred learning styles.

In-class profiling can be continued utilising response-ware technologies and apps to undertake diagnostic assessment of qualitative and quantitative metrics.

Figure 11 demonstrates the value of in-class profiling and the valuable, dynamic feedback it provides both teacher/facilitator and the participants.

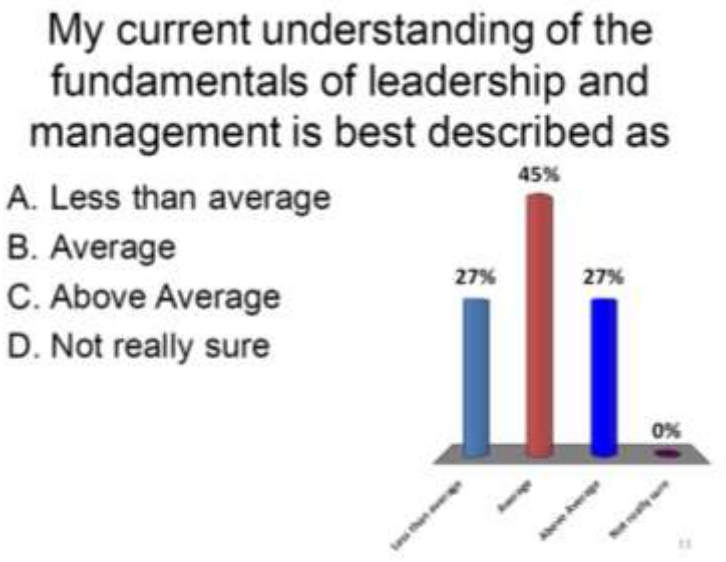

Figure 11. Example of In-Class Diagnostic Assessment Utilising Response-Ware Technologies

These technologies may be used in-class and for external polling which assists in replicating the online environment yet allows the teacher/facilitator to remain connected with the participants.

5.2 Flexing the Learning Pathway

As a behavioural philosophy, I-Learning leverages existing Instructional Design models such as Rapid Prototyping whereby the teacher/facilitator has significant freedom in which to 'flex' the learning pathway dynamically based on primary participant profiling and ongoing feedback.

5.3 Emotionally Intelligent Teachers/Facilitators

Students are more likely to do well when their teachers are passionate about what they are teaching, about being a teacher and about helping their students learn. (Hattie, 2008)

Technical expertise and a text and image-filled PowerPoint alone do not ensure participant engagement.

To create an outstanding learning experience, each and every time, and to build strong personal learner connections, teachers and facilitators must demonstrate highly evolved levels of emotional intelligence.

I-learning is a behavioural philosophy designed to create a greater awareness of individual learning needs in both the educator and the participants, allowing the student to take more control of their learning confidence and competence.

6. Conclusion and Future Recommendation

Since its inception, e-learning has attempted to replicate traditional teacher-led classroom sessions through flexible, self-paced, personal learning opportunities.

Trends and uptake of mobile device and internet usage, the accessibility of free, Massive Open Online Courses, and the advances in artificial intelligence learning algorithms indicate this has been achieved successfully.

Paradoxically, classroom-based teaching proponents must now consider replicating the flexibility that e-learning offers if there is to be any longevity for this learning environment.

By learning more about who is sitting in front you and what they need, combined with a focus on providing exceptional learning experiences will ensure that students of the future will continue to choose to travel to, and participate in, in-class learning opportunities.

Acknowledgement

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