ELearning for a Developing Economy

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Abstract

eLearning, although not entirely new, has taken on a renewed form and focus with the advent of new technologies like Web 2.0 which allow for easier collaboration and the growth of social media. As with any new technology being introduced into a very traditional formal sector like Education, there are a number of barriers to ICT in education and the progress is cautiously slow. In addition outcomes of eLearning are very different from traditional outcomes and are difficult to measure with the current techniques, which further complicates or distracts from implementation and the evaluation.

Advocates of eLearning need to embrace that this is complimentary to current educational techniques and should be intended to enhance a learners experience and not completely replace it. Opponents need to appreciate that the new technology is able to assist in producing better equipped students with new 21st Century skills, at the same time opening a learner to a more global perspective.

Developing Economies stand to gain significant benefits in advancing their education sector with the correct and careful implementation of eLearning structures. Although much of the focus for eLearning implementation is on access to technology, there are a number of other factors that have to be considered to effectively implement an eLearning program;

1. Shared Vision and Policies aligned to social and economic desired impacts
2. 21st Century Pedagogy requirements
3. Foundational ICT Skills
4. Curriculum Framework
5. Contingency Planning
6. Skilled Personnel and continued professional development
7. Suitable equipment
8. Technical Support
9. Assessment and Evaluation

eLearning is essential for a developing country. The process requires a long term plan and commitment but the end result could allow us to not only leap-frog but surpass other countries in having adequately prepared graduates for the 21st Century.

History of ELearning

In the early 60's with the start of computers, B.F Skinner coined a phrase "teaching machines". Later in the 80's and more so in the 90's, as the personal computer started its domination, the concept of having training material on a computer teaching a student was termed computer based training or CBT. In the late 90's I recall being involved in the AVU project that used a Satellite dish to download training content that was replayed through a facilitator. As these are all various forms eLearning, it can be said that eLearning has been around in concept for the past 50 years. However it was not until the last few years with the advent of Web 2, which catered for the interactive web and resulted in the blossoming of the social media that e-Learning has really taken on its newest form.

Technology and Education

There have always been sceptics to technology in education. Socrates believed in only the spoken word, and felt that to write words down would kill them and destroy man's intellect. The printed word was developed in 15th century and the scholars at the time believed that to print books and make available to the populace would cause the down fall of the education institutions.

On the other hand, advocates for technology were often overzealous. In 1922 Thomas Edison predicted that "*the motion picture is destined to revolutionize our educational system and ... in a few years it will supplant largely, if not entirely, the use of textbooks.*"(Oppenheimer, 1997) Twenty-three years later, in 1945, William Levenson, the director of the Cleveland public schools' radio station, claimed that "*the time may come when a portable radio receiver will be as common in the classroom as is the blackboard.*" . In the early 60's BF Skinner had though that the new computers or "Teaching Machines" would allow students to learn twice as much. These innovations in technology did not quite have the impact in education as anticipated.

Will this be the same for ICT's in Education and eLearning?

Review of ICT in Education and ELearning

As we have already seen, eLearning as a concept has been around in some form for the past half century. Although the experience and environment of ELearning in developed countries differs to that of a developing country, it is still useful to look globally at the research and experience that has been gained from the use of ICT in education.

In the early 1980's, Apple were one of the first to try and leverage the education market by making available over $25million of equipment to 13 schools over a decade. Steven Jobs, one of the founders of Apple Computer who claimed credit for the school drive, in 1996 came to the conclusion in an interview with Wired Magazine that: "*What's wrong with (USA) education cannot be fixed with technology. No amount of technology will make a dent*". According to Jane David, a consultant hired by Apple to study the classroom initiative, 'dumping' computers

produced no significant results. She commented, "*There are real dangers, in looking to technology to be the saviour of education. But it won't survive without the technology*."

In a BBC article published in 2005, entitled "Doubts about school computer use", seemed to indicate that learners who had a great deal of access to ICT did not significantly improve their results but in fact, those using computers several times a week performed 'sizeably and statistically significantly worse' than those who used them less often.

This is echoed by research done by Thomas Fuchs in Germany in 2005(Fuchs & Wobmann, 2005), who showed that student performance showed an inverted U-shaped relationship with the extent of computer and internet use at school, rising with some use but falling again with excessive use. Also they found that classroom size has a major effect. This was further reinforced by Professor Cuban at Stanford who's research showed that student performance with eLearning did not improve significantly until classes fell under 15 students, and was significantly ineffective if they rose above 30.

In a review by the US Education Department in 2009 on research on online courses (ELearning) that concluded few rigorous studies had been done and that policy makers "lack scientific evidence" of their effectiveness.

Ben Levin the then Deputy Minister of Education for Ontario, Canada, said in a recent interview that most of the research they had done on ICT's in education has shown that it has little or no impact on the outcomes. In studies on PC's, laptop and whiteboards, they showed that children did not learn any more (or any less) than children with no access to ICT's. He concluded that investment in technology by itself is not a high priority, but rather start with good pedagogical practices and then see where technology can assist.

In an article published in the New York Times in September 2011 entitled "In Classroom of Future, Stagnant Scores", the article reported that schools are spending billions on ICT technology and eLearning, even as they cut budgets, reducing arts expenses, cutting out libraries and laying off teachers, with little proof that this approach is improving basic learning. They quoted a Nicole Gates, from the PTA of Kyrene Elementary Schools as saying; "*We have Smart Boards in every classroom but not enough money to buy copy paper, pencils and hand sanitizer, - You don't go buy a new outfit when you don't have enough dinner to eat*!"

An English teacher, likened computers to lollipops that rot your teeth; "*The kids love them, but once they get hooked you can get gaping holes in their basic education. It makes reading books seem tedious; books don't have sound effects or animations so their brains have to do the work.*"

Although there have been specific areas of undisputed success of ICT in education, like learning challenged, attention deficit, hearing impaired learners and others, as can be seen from literature, there are many opponents and concerns to the advance of technology in schools, as there have always been for any new technological advances.

It would be easy to characterize the battle over ICT in Education as merely another chapter in the world's oldest story: humanity's natural resistance to change. But I believe that does an

injustice to the forces at work in this revolution. This is not just the future versus the past, uncertainty versus tradition; it is about encouraging a fundamental shift in personal priorities. I believe that no other technology has challenged our social norms more than the internet has and will do. The damage of over emphasis on ICT in Education could result in the minimising of the real, physical world in favour of an unreal "virtual" world. In its extreme it results in teaching learners that exploring what's on a two-dimensional screen is more important than playing with real objects, or sitting down to an attentive conversation with a friend, a parent, or a teacher. In the process, it may also limit the development of children's imaginations.

Why then ICT in Education and ELearning

With these distractors and warnings, why then do we pursue ICT in Education and ELearning? Why indeed do we have a Summit of this nature? My assumption is that it is because we all recognised that ICT's are a principal driver of economic development and social change worldwide, and especially in developing countries. They can provide a unique tool for addressing the past imbalances if used correctly and education is indeed in need of this reform.

Also, one of the major problems to most of the research is the way "successful" education or learning is currently measured and evaluated as we are still using the old pedagogical assessment techniques of knowledge retention and recall.

In addition, while the advantages and disadvantages of one PC/laptop per child and the effects of excessive ICT usage are still being debated in developed countries, we are nowhere near attaining that barrier. As an emerging economy the budget restrictions are greater and the access to technology for our schools is much more limited. While we need to be cognisant of the potential dangers, I believe we need to urgently embark on a process for successful ELearning projects.

Effective eLearning Implementation

A large majority of this Summit looks at new and innovative ICT equipment, but this only plays one part of the requirements for a successful student eLearning experience. Unfortunately the supply of ICT equipment tends to be the main focus point for delivery of an eLearning program often to the exclusion of other critical requirements. This, together with lack of appropriate outcome objectives and measurements, in my opinion leads to the failure or assumed failure of many eLearning or ICT education based programs. For us, as developing countries, to make the most success from eLearning I believe that there are a number of conditions that have to be considered to allow for effective eLearning.

Shared Vision, Policy and Planning; A proactive leadership is required in developing a shared vision for the use of ICT's in Education and eLearning. Without such a vision implementations are typically uncoordinated, piece meal and often donor-driven rather than vision-driven. The vision needs to lead to policies and initiatives at the national, regional, and local levels to support schools and teacher training programs. To realise the full impact of ICT-based education reform, educational policies and programs need to be coordinated with those in

other ministries, such as economic development, human resource development, telecommunications, agriculture, and rural and urban development. A national, cross-ministerial ICT coordinating agency or council can facilitate this policy and program coordination as well as promote the sharing of knowledge and resources. The committee should include participants from outside the government, such as business people, unions, university faculty, members of scientific organizations, and so on, as was the case in both Singapore and Namibia. These policies and plans should have explicit fundamental connections to the desired economic and social impact stated in national goals.

The policies should be specific and detailed while being short-term and frequently reviewed. Singapore Ministry of Education are now in their third five-year plan for ICT in Education, which was revised and launched in 2009 after two very successful stages from 1997-2002 and 2003-2008.

21st Century Pedagogy; For more than 150 years a set of pedagogies reflecting the priorities of the Industrial Age has been embedded in the process of mass schooling. The hallmarks of these pedagogies are found in teacher-controlled learning where deconstructed and reconstructed information is presented to same-age students in a standardised classroom settings. We need to critically examine and review our teaching pedagogy to accurately incorporate modern trends and desired outcomes to equip our students for the 21st Century. The trick is not to add on ICT's to existing methods (which as literature reviews have shown, typically leads to no significant learning differences) but to use ICT's to meet new goals that better reflect the needs of a knowledge-based society. This means redesigning not just our teaching methods but also our institutions to fully exploit the opportunities that ICT's provides. Some of these outcomes could include; creativity and innovation, communication and collaboration, research and information fluency (rather than retention), critical thinking, problem solving and decision making, awareness of digital global citizenship and not only technology operations and concepts. Changing our pedagogy is critical and the key for successful eLearning outcomes and the measurement of them.

Foundational ICT Skills; Training needs to start at appropriate levels for teachers and pupils to build skills and confidence in gradual steps. Ensuring that foundational ICT skills are taught and not assumed has proved to be a common oversight resulting in a number of ICT implementation program failures especially in developing countries

Curriculum Framework; We need to identify locally relevant content, as well as standards and related digital curriculum resources that are aligned with and support eLearning. This needs to be based on student-centred learning, and incorporate planning, teaching methods and assessments criteria based on the new outcomes. There are a number of commercial programs available and one that ICDL Africa has found to be the most effective is a product called eLearner which is represented here.

Contingency Planning; Teachers and support staff need to be prepared for disruptions in eLearning due to internal system failures as well as external infrastructure failures or limitations. This should be included with curriculums guides and planning.

Skilled Personnel; Educators, support staff and other leaders need to be skilled in the selection and effective use of appropriate ICT resources. This is also not once off, but should include on-going professional learning

Suitable Equipment; There always is a requirement for access to current, robust but sustainable technologies and digital resources. There needs to be easy access for all students, teachers, staff, and school leaders to intuitive and relevant technology. This requires not once off but on-going funding to support technology infrastructure, personnel, digital resources, and staff development.

A large number of us are here for the glitz and glamor of new technology. Tablets definitely appear to be the most innovative ICT product for future in education.   The Indian Government have launched an initiative to offer every tertiary student with an Aakashe tablet for $35 per unit. At the end of last year, the Russian Federal Institute of Development of Education has launched an electronic textbook program which has been piloted in a number of schools. There are a few eReaders or electronic books and tablets on display here which cannot only substitute for books but surf the internet, access email, produce and send documents and are typically around the $100 mark.

Technical Support; Consistent, reliable and easy to access assistance for maintaining, renewing, and using ICT and digital learning resources is essential. The teachers need all their time to focus on teaching.

Assessment and Evaluation; If there is no revision of the assessment and evaluation methods to match new 21st Century skills and new desired outcomes, success of eLearning cannot be measured. This should be continuous assessments, based on desired outcomes, and evaluation of the use of ICT and digital resources. The International Computer Driver's License (ICDL) has proved to be an excellent bench mark for the initial ICT literacy assessment of students.

Conclusion

eLearning has been developing over the past half century. For a developing country, it is a program that could not only meet the social and economic agendas, but also level the past inadequacies and open up global learning opportunities that will allow us to effectively equip our graduates with skills to meet the 21st Century requirements.

We need more than ICT equipment and training programs. For eLearning to successfully work we need:

- A National Vision and Policy across ministries and aligned to social and economic desired impacts
- To reviewed Education pedagogy with new targets and measureable deliverables
- To take gradual steps to ensure correct skills for teachers and students are taught and assist teachers with lesson and contingency planning
- On-going commitment to skill development and funding equipment
- Appropriate choice of suitable, reliable hardware and supporting software

- Strong easily accessible technical support

Socrates was wrong; the written word did not kill the spoken word. We need to be open to new technology in education however the printing press, Radio and TV never eliminated teachers or the previous way of teaching, but they all contributed to enhance teaching methods and also affect the way we as social society interacted.

If we are serious about producing 21st Century skilled graduates, eLearning will be vital for us as developing economies. eLearning and ICT's in education will never replace the spoken or written word, but it will drastically effect the way we can teach and probably more than any technology before, will and has already has drastically effected the way we as humans interact, explore and learn.

References

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