

Innovation in Education: A winning transformation tool in the era of the new ICT Revolution

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Abstract

ICT-based technologies are the drivers of the current paradigm, which, the author discussed in previous contributions, is still at an early stage of diffusion, particularly for emerging countries. Building from historical evidence, the author argues that catching up of innovative education critically depends on the ability of educators to master the technology behind the dominant techno-economic paradigm and for educational institutions to adapt on the shift of the current paradigm. The author then discusses threats and opportunities related to a possible ICT-based development path.

Keywords: *Education, ICT Revolution, Innovation and transformation tool*

1. Introduction

The role of education as perceived by the author, is to develop critical skills in order to improve capacity of a single or multiple economies depending on the structure a particular educational institution found itself into. The era of the new information and communication technologies (ICT) revolution in education needs to prepare young people for jobs that don't exist yet, using technologies that haven't even been invented, for which competition will be global (Hampson , Patton, & Shanks, 2006). In order to improve innovative capacity in one or single economy as required from education, innovation within the educational sector requires a development policy instrument to foster change.

Innovation is becoming more and more important for the development of the 21st century knowledge society. It contributes to economic prosperity as well as to social and individual wellbeing and is an essential driver for a more competitive and dynamic economy. It requires a passionate interest and self-confidence (Fraser, 2007).

We know underscore Hampson , Patton and Shanks (2006) that all young people can be successful in the 21st century, but only if we radically change how children learn, how their learning is assessed and how schools are organised. Education in the era of the new ICT revolution can and must be different. Education is seen as central in fostering creative and innovative skills (Ferrari, Cachia, & Punie, 2009).

Postulating a connection between economic growth and technology is not new in this world. A good deal is the evolutionary inspired literature on the economics of innovation and technical change which has indeed cutting-edge a lot in recent years since the collected works on economic progression has for a long time identified technical change as the major contributor to output growth. In the coming decades, the changes - to politics, economics, technology, and climate – will become even stagier (Hampson , Patton, & Shanks, 2006).

Innovation is the creation of new and improved products and new production methods that increase efficiency, which are the driving force for economic growth. However, innovation is also the new way of thinking or new delivering way of the very same

service, and the education system must be capable of delivering scholars that are able to be innovative at the workplace in order to increase efficiency expected and wanted by any country around the world. Innovation is often related to new and improved products, in light of this simple definition of innovation, high-quality education of scientists and engineers is over and over again to be considered as critical.

Because the original mandate of this contribution is: from a largely defined evolutionary perspective, what are the predictable effects of the current "ICT revolution" upon Education in general and development opportunities and constraints in particular? Reflecting on that, as a member of staff of a higher education institution based in Africa, the author shares the choice of leading an intellectual life in order to inculcate others scholars to do the same. It is therefore certain to call attention on the fact that the skills picked up in education set the basis for innovations.

When using the phrase "new ICT Revolution" the author in this paper refers to the "hard" infrastructure of wiring, computers, software applications, and other equipment, including laserdisc players, over-head-mounted presentation machines functioned from a keyboard, digital cameras, and so on. New ICT Revolution also include the "soft" infrastructure of technical support for all of this equipment, including scheduled maintenance, cloud computing considerations, replacement and professional development of educators and administrators.

Reflecting again on the preceding, illustrated by the century dominated by the ICT Revolution which dictates Innovative views, the author firmly believes that scholars today are technologically savvy, and want to acquire knowledge by doing and through social interactions that can be enabled or increased by suitable technological tools.

Because the new ICT revolution as envisioned by the author is characterised by the extensive use of computers and mobile applications; the cross path relationship born between Innovations on one hand and education on the other hand is described here as the wining transformation tool on the foundation of three opinions analyzed and discussed in this paper. It is on the groundwork of the three opinions elucidated by the author, each of which is essential, but none alone satisfactory, to achieve the true potential transformation tool for education sector in the 21st century:

1. The first opinion is on innovations in teaching and learning, with a distinct focus on new ICT that develop the educational toolbox.
2. The second opinion is on educators. The ability of the educators to invent and apply innovative teaching methods, and how spurs can be considered to foster successful implementations of such methods.
3. The third opinion is on skills. The role of educational institutions to deliver skilled and innovative scholars to the workforce, and its ability to respond congruently on an altered demand for different types of skills.

In recent years, underline Blouin et al., (2009), much has been written about the new generation of learners. These scholars have grown up with interactive technologies such as computers and videogames. The author's argument is that, Innovation in education today, is a winning transformation tool irrespective of the economy surrounding a single institution.

In order for education to better meet the needs of all scholars, it must better embrace not only the balanced sustaining innovations that are needed, but also the truly disruptive innovations – many of which will come from people and system of government outside of the traditional system – that will lead to a fundamental change in the way the system looks and works, and ultimately to vibrant improvement in outcomes for the children who have so far not been served well (Smith, 2009).

Taking a step ahead to clarify the general opinion, the author underlines the *raison d'être* for higher education, which is simple and straightforward from Blouin et al., (2009) to say: Higher education is out here or there to prepare scholars, predominantly young adults, for future success. Success, yes success from the outlook, can be demarcated in many ways: the aptitude to pursue and advance in the career of one's prime; the capacity to add meaningful value to one's community; or the capacity of one to hunt an intellectual life.

For the sake on which the perception of success can be apprehended differently, that each education segment has a set of challenges exclusive to them which they have to address through various measures; the author in this paper encounters on a higher

level spectrum of education as a whole to discuss the transformation brought by the cross path relationship between Innovation and Education to enlighten all advocates.

If we are to develop contestants who are accomplished of holding their own on a global stage, we simply must get better at equipping them with the skills to handle this uncertain future (Hampson , Patton, & Shanks, 2006). Schools and education systems maneuver very much within a globalized environment with nations' education systems assessed through international testing, such as the Program for International Student Assessment and Trends in International Mathematics and Science Study (Fraser, 2007).

There is a lot of promising vigor behind innovation in education today, but that dynamism will yield little if we don't act quickly to establish some common definitions and principles that can underpin and sustain the work ahead. We consider a successful "innovation" to be a new approach that brings an improved result. These innovations can be small or large, mostly distinguishable or fully new and different (Smith, 2009).

To motivate thought and discussion about yet to come learning environments that are going to be predominantly subjugated by the optimal use of Information and Communication technologies for curriculum delivery at every layer of education, the author is analyzing a brief review of trends in education today, and he is presenting a vision for future learning environments by outlining strategies for successful implementation of innovation in education today. The author above all also believes that education is an interminably progressing enterprise which success belongs to those who innovate.

2. Review of teaching methods in Education today

Winning the teaching profession in innovation can be responsible for improvements that penetrate classrooms and mature necessary methods within a culture of continuous improvement. There is an increasing consciousness that cultivating innovation as part of general reforms and engaging educators in the development of innovation is an essential part to improving learning outcomes for all scholars (Fraser, 2007).

Since the early 1980s, corporate executives, vendors, policymakers, and parents have included in their reform agendas the common goal of creating more access to new technologies in schools (Cuban, 2001). Despite the fact that the physical appearance of the lecture room has not changed drastically to the extent of revamping old school to accommodate the new era of standards and others considerations, it is clear that in education today, there are plenty of innovations in practice taking place in small pockets across a single country.

What we must do now plea Kim Smit (2009) is to quicken that process, make it more easy to get to, and realign incentives, tools and investments to allow a singular education system to get to more significant scale and to sustain these cycles of learning over time.

Schooling at the start of the 21st century requires a new "imaginary" (Beare, 2006). Stephen Heppell quoted by Fraser (2007) says we can't use the philosophy and solutions we used in 1996 to solve the problems facing education today. The reason is, the version of education of two or three decades back from now was considered in and for a very different time, and there's no reason to assume that it will meet the needs of today's students.

Habitually innovation isn't purely a single moment of divine inspiration – though that plays a role in some innovations. But the old adage that "necessity is the mother of invention" jog our memory that the innovation cycle begins with clarity about a problem that needs to be solved. This clarity alone is an important accomplishment, as it navigates dynamism and curiosity towards a specific goal, and helps to define clear metrics against which to measure potential solutions (Smith, 2009).

Of particular note underscore Blouin, et al. (2009), is the increasing dominance of mobile technologies in the form of such handheld devices as smartphones and iPhones. These devices have created mechanisms for facile interactivity and conveyance of information while arguments for and against lecturing through technological tools are being debated by both students and staff in junior and senior common rooms globally.

Although opinion in general seems to be coming out in favour of the review of the entire educational programmes to incorporate information and communication technologies to be sustainable as an institution as well as to close the gap created by old, current and future new technology to serve the education system; it is so important to note that the learners of the new ICT revolution are part of the "internet Generation," a group sometimes called "Millennials", born with internet or the "digital natives," and they represent the majority of undergraduate students who are currently enrolled in colleges and universities today (Blouin, et al., 2009).

These scholars brought by the internet of things or the ICT revolution read newspapers only infrequently, learn by doing, and gravitate toward group or other activities that include a social component. The increasing demand of this new era as advocated by the author in this paper, with the arrival of computers, tablets, and the Internet has led to the re-thinking of many traditional teaching practices and it is an opportunity for improvement (The Economist, 2013). Hedley Beare (2006) argues that the present educational imaginary seeks to provide public assurance from an education system that is outdated.

The sad part beyond all considerations argues in this paper, is that the public make many assumptions about education. It is often said that education is about 21st century learners being taught by 20th century teachers often in 19th century buildings and rooms (Fraser, 2007). Lessons should last for about an hour or more. Mobile phones should be switched off during school and kept by the school administrators while learners are in class. Students should learn in a traditional fashion way meaning in classrooms.

The argument here is that, scholars come to school to learn, and instructors come to school to teach. These assumptions are so common because they match the method or system that most of us were educated (Hampson , Patton, & Shanks, 2006). While the call to adaptation made by the era of the new ICT revolution is at its top choice point, it should be noted that this uneven playing field among students must be taken into consideration when adopting technology-based solutions in the educational pitch (Blouin, et al., 2009).

However, while both students and staff in the higher education sector in particular may agree on the review of the curriculum facilitated by the ICT revolution in one hand. This section of our paper on the other hand, also focuses on e-learning with the extent on m-learning as a group of innovative teaching and learning methods, which does not imply that other innovative methods are less effective or have less potential to speak or debate upon here. Project-based learning, virtual learning in groups, the use of games for learning and many other methods are often considered similarly innovative as e-learning and m-learning. The majority of these methods are not exclusively new.

Educational systems should also take into consideration the empowerment culture brought about by the era of new technologies, putting the learner at the centre of the learning process. Or else, there is the threat that education policies and systems become irrelevant for students' real and future needs (Ferrari, Cachia, & Punie, 2009).

Rising costs, shrinking budgets, and the increasing attractiveness of distance education are forcing universities to reexamine the way in which curricula are delivered. In response to these changes, electronic and mobile learning are being implemented more frequently, creating new and exciting opportunities for educational institutions and scholars (Blouin, et al., 2009).

For the reason that contemporary society is dependent to metrics; from football to the stock market to the educational enterprise, communities tend to utilize quantitative measures to understand the world around us, to predict future behaviour, and to support or justify decision-making (Blouin, et al., 2009). Speaking purely from a methodological point of view, most of these innovative methods are difficult to evaluate quantitatively. One reason is that the institution of one new teaching method is often combined with the institution of other new methods, which makes it difficult to separate their effects. Second or finally for the sake of this paper is the extent to which one of the methods applied is difficult to measure. For these and other reasons non discussed here, reliable empirical evidence on the effectiveness of new teaching methods is relatively scarce.

A wide variety of stakeholders need to play a role and be effectively inter-connected in an innovation ecosystem or sequence (Beare, 2006; Blouin, et al., 2009; Smith, 2009). In education this sequence should connect policymakers who set goals and conditions, practitioners and users who help define what kinds of solutions can work and initiate some of the best new ideas, researchers who help test and refine ideas and assess effectiveness, states and departments of Education who make buying decisions that often drive what can be scaled, investors who give people and organizations the means they need to pursue innovative activity, and the entrepreneurs who translate innovative new approaches into sustainable and scalable organizations (Smith, 2009). In education as seen or observed in many countries today, this ecosystem is presently incoherent and fragmented. Most of our most promising innovations argue Kim (2009) happen in viciousness of this ecosystem, rather than because of it.

we Look back into the 1996 in the US while President Clinton made a convincing funding available from the technology literacy challenge fund, this paper gets inspire in encouraging more than one country on earth to mirror their innovation strategy against the four pillars laid out by this former president (Cuban, 2001). These four pillars have been rephrased to provide more meaning in the current situation and are as follow:

- a. Modern computers and learning devices should be accessible to every student, from lower income background to the richest learners to build a strong society and to respond effectively to constant change brought the new ICT revolution.
- b. Classrooms should or must be connected to one another and to the outside world to build a very intellectual network of learners who will foster change and be able to close existing gaps of the education sector.
- c. Educational software should be an integral part of the curriculum from late primary school to varsity and as engaging as the best video game.
- d. Teachers must be trained to be ready to use and teach with technology

After mirroring these pillars, one might argue that the implementation of new technologies and innovative ways of organising the production require a broader set

of skills than those related to specific subjects in the educational system. Yes, and not, because of the role of education been skill development of the learners.

Today, the call is made to think outside the lecture room box or closet. In a traditional classroom of our youngest age, scholars sit in rows at individual desks or small bonded seats and tables, facing the teacher. There's a very good reason for this support the author: they are designed so that teachers can efficiently transmit information to groups of students. This made sense when teachers were students' most accessible information sources. But in an age in which wireless internet means we are literally surrounded by information, we no longer need students in rows facing the teacher (Hampson , Patton, & Shanks, 2006).

Educational actors need to have a clear vision, awareness and understanding of what innovation is by defining the concept to suit their sector and entails in order to fully comprehend how it can be enhanced. Judging the originality and value of an output entails seeing innovation within the education arena as a family member attribute (Ferrari, Cachia, & Punie, 2009).

The chase of the ICT Revolution skills in the like of collaborative problem-solving, E and M-learning, information and economic literacy require today teaching methods. The role of teachers discusses Hampson , Patton, & Shanks (2006) can no longer be to impart knowledge but to guide, discuss and, of course, measure the progress of students so that they know when more support is needed. Today, innovative schools are conniving classrooms for the pursuit of knowledge, rather than its conveyance (Ferrari, Cachia, & Punie, 2009). In the same way that education requires discipline, the same is true for innovation.

It is a must for us to acknowledge the following statement beyond our advocacy of the new ICT revolution in this paper. There is no effective evidence that computer supported instruction can help disadvantaged students by providing them with more individualised learning material and adjustable learning speed. Among many studies that evaluate specific software products which we come across with, there are some studies finding positive effects. However, it seems difficult to determine what makes these applications successful as a whole.

Having underline all of these factors or reasons, in fact, despite the fact that educators are working as hard as they have ever worked, schools are struggling to engage young people. One of the evidence of this era is that : as children grow older they turn out to be less and less engaged in school (Hampson , Patton, & Shanks, 2006). From today onwards, each country should have an Education Innovation Initiative as a holistic effort to encourage education sector to leverage innovation for the next stage of growth through small and medium enterprises.

3. Quality of Educators

In education, the work of innovation should take place at the student, school and system levels and should require reconfiguration of many incentives that currently drive behaviours. This is one of the considerations of this era when talking about quality of educators.

Speaking from the school perspectives, educators hold the key to transformation and change, because they are responsible of the learning environment. Learning environment been the traditional classroom, a content of the learning management system (LMS), extra mural activities for small learners, group activities for learners, syndicate assignments and project activities for young adult's learners.

Technologies play a crucial role in learners' lives and can enable educational change towards an innovative and creative school environment (Nair, 2003). They could act as a platform to foster creative learning and innovative teaching and are currently offering a variety of opportunities for constructive change (Ferrari, Cachia, & Punie, 2009). However, access to technology is not enough as both, learners and educators must acquire the critical skills in their use of technologies to be able to benefit from them in an effective and innovative way (Fraser, 2007).

Although the reality on the ground is far beyond been attractive but challenging with the resistance of some local government in some part of the globe, one of the main potential for innovation in education is in the classrooms. Students' skill development depends on a variety of other factors, but educator behaviour can more effortlessly be affected by local government interventions and school principals than most other

factors. This paper is trying to analyse issues which are believed to be closer in advocating ways of mitigating related or associated risks brought by the ICT revolution through innovation in education today where the responsibility of educators remains vital.

A basic observation made by the author in several schools in the Republic of Congo, South Africa and the Democratic Republic of Congo indicates that: innovative educators generally adjust teaching methods to the composition of the class and to the level of initial skills of their respective classes. They are more open to innovative thinking of learners and become flexible to accommodate these impulses by not severely running through the formal curricula, but act in response on changes in the outside world. They are able to use efficient teaching methods in the swing of things to characteristics of the class and individual understudies.

As a result, productive innovations in the classroom require educators that are enthusiastic and able to accomplish smart experimenting (Cuban, 2001). Because Innovations and innovative skills of educators are very difficult to measure. We therefore focus on more observable characteristics of the lecturers in the rest of this section to build ground of our belief of the transformation tool.

Regrettably, innovative skills of educators and learners also are hard to define and can hardly be directly observed especially in the learner's perspectives (Fraser, 2007). It includes the ability to invent smart changes, but whether a conversion is an innovation can only be observed by improvements in some skills of the students (Nair, 2003). Since innovation processes include experimenting, there will necessarily be some failures during the process. This is probably the reason why innovative skills are not measured in the empirical literature and why the literature focuses on lecturer quality measured by lecturers' value-added on learner achievement (Smith, 2009).

There are several key points to consider when assessing educator's innovative practices in the transformation of the curricula. It is not permanently clear what should be measured and when to do it. Educational innovations can produce a number of effects which may affect stakeholders in different ways. Choices have to be made about what and how to measure. Sometimes it is grades, attitudes, or even

cost/resource allocation. It is not always clear who is responsible for the outcome associated with an educational intervention or treatment (Blouin, et al., 2009). Deplorably, to our knowledge, fundamental evidence on which kind of teaching methods that yield the highest student achievement is missing in the literature that we came across with.

Grönqvist & Vlachos (2014) were able to match student-teacher data for Sweden, and investigate the effect of different measures of educator skills. They exploit measures of cognitive and social interactive abilities from military deployment, covering principally the entire male population. In addition, they use the grades of the educators at their last year of unavoidable education (GPA). They find relatively small average effects of these skill measures, but important heterogeneities. It seems to be strong positive effects of male educators' GPA, but not for female instructors GPA. Captivatingly, they find that higher cognitive skills at the military deployment increase the achievement gap between high and low aptitude learners of the educator, while higher social abilities reduce this gap.

The sad part about the quality of educators in general is that: the attractiveness of the lecturer education and the lecturer profession is crucial in the era. Question to directly ask is the following: are high-achieving scholars with high test scores choosing to become educators? Many debates and studies have discussed this issue in particular but reality remains painful for an educational system to remain sustainable in the new ICT revolution.

The evidence above implies that the employment policy of educators is crucial for overall instructor quality. If innovation is needed in the education sector today in order to improve efficiency and increase the economic outputs, educational institutions need to be attractive employers in order to attract innovative educators and to inspire high-achieving learners to choose the teaching path, and they must undertake critical considerations of applicants to vacant positions. If personages could be transformed, so could institutions (Cuban, 2001). The best practice is for educational system to adopt the internship programme culture from corporate because the ideal appearance of strong educational evaluation leading to a change in practice is the exception rather than the rule (Blouin, et al., 2009).

Educational system must be open to fundamental transformations in the current system of education as we leverage new information and communication technologies, learn from advances in cognitive sciences, and pay attention to effective models of learning (Smith, 2009). One main employment instrument in the job market is the remuneration. In most countries, especially in Africa, the educator salary is far less from the average benchmarking while in some countries including Africa and the rest of the world, the educator salary is almost exclusively determined by experience and formal education.

Largely, the literature review of some articles assessed, indicates that the impact of educator quality is of about the same magnitude as the impact of parental background, and in addition, that the importance of educator quality declines as the students' progress through the educational system. Unluckily for many, the knowledge base explored, includes only studies from the US. This must not stop the appetite for a country other than the US to embark into the journey of inclusive innovation into the education sector.

Innovation and research investments should be designed to change incentives in order to change behaviours and to support incessant learning cycles that build a vigorous and improving knowledge base that is widely accessible, actually useful to practitioners, and sustained and improved over time (Smith, 2009).

Many worthwhile vicissitudes in the education sector have failed because change was introduced prematurely (Blouin, et al., 2009). In higher education for instance, the learning style of most faculty members requires information and a rationale for change in order to understand and accept a proposed transformation (Nair, 2003). The time required for investigation, questions, dialogue, and reflection is essential to facilitate this process. It is equally important that educators and school's administrators take responsibility and be prepared to implement a proposed change (Blouin, et al., 2009).

4. Preparing learners for future workplaces

A driving force behind the effort to get more computers into education today is the result of the new ICT revolution characterised by the changing of the job market.

There are many examples of institutions that have responded to the call of the marketplace by improving the quality of student learning using online learning approaches. Innovation, in education or other venues, rarely waits on evidence of worth, and demonstrating worth does not guarantee adoption of the innovation (Blouin, et al., 2009)

When most people think of innovation, they picture a new product – something like the arrival of a new thing that has never existed before and seem to neglect the improvement of the existing product to be innovative (Smith, 2009). It is noteworthy to say that among recent innovations in the education system as a whole, the introduction of computers which describes the ICT Revolution in the delivery of content in classrooms is often referred to as the most significant innovation of our century.

The truth is that: the demand for different types of skills in the labour market depends on industrial structure and the applied technology. The greater than before intensity in the use of information technologies has changed the way workers and organisations operate and communicate today (Blouin, et al., 2009). The educational system must respond to such changes and adapt to the needs of the labour market.

There is no doubt about the new ICT Revolution been everywhere, from a smallest supermarket checkout lines to our telephone answering machine through our banking and daily life experiences, this revolution is everywhere, until recently, but in our schools. We are persuaded that technology, if applied thoughtfully and well-integrated into the education curriculum, can be utilised as a winning tool to assist student learning, provide access to valuable information, and ensure a competitive edge for our workforce (Cuban, 2001).

Since the most valuable workers for corporations are those who are able to innovate and to adapt to new technologies and other revolutions, this is the most direct way of examining the need for innovation in education (Hampson, Patton, & Shanks, 2006). So, we share the argument of many visionaries of our time. We believe and are firmly convinced that most well-paying jobs of the nearest future will have need of

technological knowledge and skills and that learners must be prepared for a far more demanding workplace than their parents faced.

Today, because of the ICT revolution, an increasing number of young people are learning by carrying out projects that require them to carry out research across subject boundaries, create a professional-quality product that demands multiple drafts, and far and wide present their work to their peers, their parents and the wider world (Hampson, Patton, & Shanks, 2006).

The advent of the Internet, coupled with other changes (decreasing costs of computer hardware, increasing computer literacy), has empowered incredible innovation in the business sector to require more technological skills people to contribute to the high-tech society of our time. An important caveat to the current pragmatic understanding of the effectiveness of ICT is that technology changes quickly, so is the industry or the workplaces.

Transformation is a real deal of today society, as the result, ICT is offering ways of motivating scholars to learn about subjects they would hardly ever engage otherwise and to come to grasps with real-world issues (Smith, 2009).

Further than the dynamism of the ICT market to foster change and adoption of technology in the education sector, it is vital to acknowledge the existence of some socio-economic factors outside education that affect the successful response of education to the workplaces in many countries worldwide – these factors take account of poverty, mobility, hunger, health, and safety issues. Nineteenth and twentieth-century campaigners understood that education—similar to anything else—has an economic side (Cuban, 2001).

And one of the biggest up taking in meeting the dynamism of the ICT revolution today, is to make educational institutions more efficient and productive than they currently are with technology. As a consequence, the introduction of technological tools must be the priority of every government towards education.

Granting from a policy perspective, the effect on student accomplishment is arguably most important in building a strong economy, although the use of computers can also affect a range of other educational and non-educational outcomes to foster change

and transformation. Software and its use by educators might have changed over time, but transformation will always impact education like it has changed the requirements of the working industry that is directly or indirectly concerned by the ICT Revolution.

The need of innovation in education is among many underlined reasons, to prepare learners to future workplaces, and this should not be interpreted as indication that specific ICT skills per se are important for efficiency and technological change (Cuban, 2001). Reasonably, it suggests that computerization makes companies able to use high-skilled and high-wage workers more effectively (Fraser, 2007). When new technology gets cheaper, a larger segment of the workforce gets access to the technology (Nair, 2003). New technology is introduced for high-wage workers to reduce costs, which subsequently leads to skill upgrading and is spread to other workers via training on the job as the price of the new technology declines and its suitability improves.

Nevertheless, the suggestion on how the education system might improve qualities such as meticulousness, emotional stability, and self-management above what it can currently provide or give to the job market is still debatable although some researchers suggest that ability to be fragile. Young adults Learning and Corporate Training organisations need to cater to the changing requirements of employees and employers while harmonizing the costs of customisation, and helping adults learn effectively despite increasing constraints.

5. Innovation at the heart of all interests

Behind the upwelling of automation in manufacturing, banks, insurance, and the new economy has been the impulse for efficiency—getting more work done at less cost today is the pursuit of every strategy worldwide. It is without any doubt that we share the view of Louis Gerstner, Jr., IBM's Chief Executive Officer, who once said about the task facing American schools: "Before we can get the education revolution rolling, we need to recognise that our schools are low-tech institutions in a high-tech society" (Cuban, 2001). This truth constitutes the basis of innovation in this era. High-quality disputably is a pre-condition in order to be able to innovate.

Competition is the fundamental premise for efficient use of resources and economic growth in the commonly known developed economies. Companies that are able to innovate increase their profit and expand their markets. Innovative motion has the best circumstances under external pressures from customers and other market accomplices in combination with deep-down motivation within the enterprise. This mechanism is the same for education as for other industries. Schools facing competition have stronger incentives for innovation.

The answer to these issues from this paper is simple and straightforward as each country should develop innovative solutions to overcome policy silos that fragment services projected for the entire education sector cause of unstable government after the term of office. Yet we must also come to an agreement not to let the other factors become excuses for not demanding and providing excellent schools and universities-ready education for all. Adoption of innovation should be based on solid evidence of a positive influence on learning outcomes.

However, although much innovation is in fact at the product level, some of the most important innovation in the ICT revolution is at the platform level. In technology, a "platform" is a hardware architecture or software framework that allows diverse producers to create modular solutions that run on a machine (Smith, 2009). The Internet of things and cloud computing today, are examples of different kinds of technology platforms that each enabled entirely new markets of independent innovators to emerge.

The term "platform" argue Kim Smith (2009) can and should also be applied beyond technology to refer to a shared conceptual architecture that includes a framework and a set of definitions, standards and protocols that provide an infrastructure into which modular components can connect, thereby paving the way for enormous innovation.

The whys and wherefores of many researchers, policy makers and educators believing in the potential of Information and Communications technologies - computer and Internet-based teaching and learning methods – are at least threefold.

First, computers have the potential to allow for individualized teaching and learning. Not only the pace of teaching, but also its content can be adapted to the needs of the

individual scholar. But the truth is that everybody has 'special educational needs': we approach problems in our own way, grasp concepts at our own pace, and respond differently to different kinds of feedback. Good educators have always taken account of this, but the structure of conventional schools limits the extent to which they can personalise learning (Hampson , Patton, & Shanks, 2006).

Second, from a humble opinion, one could firmly say that new technologies increase the transparency of student progress and allow teachers to more easily monitor and adapt to students. Without the need of manually checking homework or quizzing the class during lessons, teachers are able to track where each and every student stands. Digital technology underscore Hampson , Patton, & Shanks (2006) allows educators to hold onto track of students' progress all the time without spending hours on marking – thereby creating extraordinary opportunities for personalised learning.

From this follows the notion that a good educational model will "personalize" each student's learning experience (Nair, 2003). We should emphasize on the fact that: the idea that each student has an "Individualised Education Program" is not new in the education jargon for the simple reason that in many countries, when talking about a child with 'special educational needs', they refer to a child with diagnosed learning difficulties which Nair (2003) also refer in educating children with learning disabilities. The approach in this paper is far beyond these considerations because of the change brought by digital technology.

Third not least, computers and the Internet have the potential to engage students more than traditional teaching methods do (Cuban, 2001). This is an extreme instance of the potential for computers to help learners and educators to personalise learning, but it is only one of many examples of schools taking advantage of new technology.

If teachers decide to use innovative e-learning teaching methods, they do so at the cost of traditional teaching methods (Fraser, 2007). Therefore, when one looks at investments into, e.g., computers, one should ideally compare the effectiveness of a marginal classroom computer with the effectiveness of a marginal unit of traditional school resources. When one investigates teaching methods, the interesting question is to compare the effectiveness of an additional hour of e-learning instruction with an

additional hour of traditional instruction methods (Nair, 2003). Many studies that are discussed in several papers or articles of nowadays do not make a careful distinction between the relative effectiveness of e-learning (taking opportunity costs into account) and the effectiveness of additional e-learning instruction. Proponents of distance learning see these trends as enabling collaborative teaching and learning across institutional boundaries and opening the marketplace for educational services (Blouin, et al., 2009).

These non exhaustive list of beliefs have led to high investments into computers and software in education institutions across the world today. Introducing technology into learning in the era of new ICT Revolution can be as unpretentious as taking down an internet firewall to allow students to tap into resources on a scale and depth that no school library could ever match. And it isn't just about gathering information: social networking sites can encourage peer-to-peer learning and collaborative research (Hampson , Patton, & Shanks, 2006).

Because every application, system or policy has limitations, due to the dynamism of the ICT Revolution, education as a whole faces a small crisis due to the adoption of new technology which in essence is the key to transformation. Our argument is that: many educational institutions plan only for technology acquisition and not upgrades or maintenance, consequently, it is hard for educators and users to believe in the adoption of technology tools that may not be supported over time. This in return constrains innovation in technology applications. The holistic view of the dynamism of this market does not promote innovation in some extent.

The way forward to transformation - The responsibility of many actors as mentioned earlier on in this paper, constitutes a powerful weapon to foster innovation which should be questioned on a country level not at the institutional level when talking about individual school or university. Innovation investments should as much as possible prioritise students not being adequately served by the system, and the problems of practice that have resisted effective solutions to date, as they have the most to gain from urgent action.

The truth hidden behind this statement is that: While scholars who use the computer instead of normal lessons perform worse than others, students who use the computer in the form of E or M-learning on top of normal lessons perform better than the control group. Although a step ahead to innovation will significantly increase ICT investments to schools or educational institutions, the author finds positive effects on student performance as well, and because of this change in the teaching and learning method, transformation become a winning tool.

We are aware of numbers that dictate the belief of many if not of all, but besides many others studies that clearly advocate this view with tangible figures; Carrillo, Onofa, & Ponce. (2010) evaluate the effects of mathematics and language learning software in Ecuador. They find that students in the treatment group had higher math scores but not significantly higher language scores. This is to say that: the overall evidence on the effects of computed based learning on student performance is mixed. A large number of studies which we encounter do not find positive effects, even though the use of computer assisted learning is often additional to regular instruction.

Transformation is here - Many corporate leaders, academics, and practitioners believe that traditional forms of teaching (for example, reliance on text books, whole-class instruction, lecturing, and multiple-choice tests) are obsolete in the information age (Cuban, 2001). "Students don't have to be tethered to a desk at all times," says Hampson, Patton, & Shanks (2006).

Although visionaries focus on the social ramifications of E & M-learning, policymakers are more interested in what many believe to be the cost-cutting potentials of Internet-based education. There is a growing unanimity that educational institutions can avoid significant capital expenditures by moving courses, sections, or class meetings out of the classroom and onto the Web (Blouin, et al., 2009). Critics often compare traditional instruction with active classroom learning, in which educators are closer to being coaches than drill instructors (Cuban, 2001), and computer assisted learning in education today. Under some circumstances emphasizes the author, traditional teaching methods leave behind digital and online learning.

Additionally, the new ICT Revolution can create a deeper understanding of complex concepts by integrating different disciplines through work on individual and group projects. The revolution has already changed classroom practice by preparing the next generation for an emerging workplace whose texture and boundaries few can predict with confidence (Cuban, 2001). Technology develops quickly so is transformation in education nowadays, but empirical studies can only investigate how past experiments in teaching methods and the use of new technologies affect student achievement.

However, in education today, there is widespread support for the idea that every student is important and yet, in practice, systems are set up to favour a few at the expense of the many (Nair, 2003). As time is always a challenging pain, we need at the state's level to gear up our efforts and make sure that our actions and goals are in tune with the scale of the transition to sustainability within the education sector because the context is well known.

Taking a look from the political outset, few threats are constantly registered in the like of: innovations are rarely translated into policy changes, whether or not they instigate from players outside the education system; significant disagreements on the country level about the purpose and role of ICT in education; lack of common and single metrics for evaluation; brutal stop of initiated projects due to political agenda.

Although in the early days of computerisation a debate stormed among economists about whether or not the introduction of computers to the workplace was in fact increasing productivity; the economic prosperity of the 1990s, unchallenged in the twentieth century, has now convinced most doubters that information and communication technologies (ICT) have accelerated workers' productivity (Cuban, 2001). If economy sustainability resides among top priority of a local government agenda, so should education be, in order for a country to be sustainable.

The same ups and downs that have brought cataclysmic change to every facet of business in a country, can advance the way we give a grounding to scholars and educators. This can also improve the efficiency and effectiveness of how we run our educational institutions today and tomorrow underscores Cuban (2001). If administration is the continuity of whatever the previous regime has left like politicians

constantly claim, the new regime should carry on and mature the project initiated by the previous administration for the benefits of all.

6. Conclusion

It is so common these days that everyone is talking about Innovation and be creative, but no one tells you how to innovate or simply how to do it. Is the change of dynamics happening in the education today?

Consequently, the role of game changers of this era is to nurture disruption and to force adoption in order to transform the education sector by closing the gap between old, new and future technologies. The overall ability is not about who or what should accommodate innovation in the education sector today, it is more about the agility of meeting the dynamic of the ICT market. The question above all, is more about how innovative can an educational institution or a single economy be to keep the pace in order to remain as innovative as possible despite the constant change of the governing body every few years.

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