

# Integrating Technology with the Classroom Experience: Learning and Leadership in the Internet Change World of Today

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## Abstract

Today, in a changed world brought forth by the internet, questions arise on the matters of learning and leadership in educational institutions. To answer these questions, the inductive approach is taken up entailing the surfing of the internet to look for the relevant materials. Through the analysis done over a section of these materials, the following is found: the emergence of a new mode of learning and teaching with Web 2.0 tools; the development of new policies in the education system of a number of countries; and, the multitude of challenges faced by those with interest in integrating technology with the classroom learning experience. The challenges of concern are internet access, teachers' education, teachers/lecturers modeling for the students, new additional skills or literacies and alternative paths in integrating technology with the classroom experience. Several forms of assistance could however be developed to help teachers/lecturers to bring technology into the classrooms. Also, to ensure smooth integration of technology in the classroom, the collaborative or shared leadership style appears to be the most appropriate for those concerned.

**Keywords:** internet, learning, leadership, educational institutions, challenges, classrooms

## 1. Introduction

*Change* is all around us! But is *change* already within us all?

What or which *change* that is of utmost concern here?

As noted Dr. George Siemens, the connectivism guru, the last decade has fundamentally re-written how we (Siemens, 2006b):

- consume media (music, TV, news – all moving to web-based models)
- collaborate (wikis, groupware, skype)
- find information (Google)
- authenticate (trusted networks instead of established sources)
- express ourselves and our ideas (blogs, podcasts, vlogs)
- relate to information/knowledge (the relationship time is much shorter – compare 1/2 hour reading the morning newspaper vs. reading 50 news sources online in 10 minutes...or the deluge of information, requiring that we become much more selective and that we start using external resources (tags, OneNote, Furl, del.icio.us) to cope)

These he mentioned a half decade ago. To be more exact in a blog post dated 27 June 2006. In a more recent time, he pointed out that the change shall continue for the next several decades (Siemens, 2009b). Specifically, in a September 2009 blog post, he mentioned that numerous change pundits suggest any combination of the following changes shall influence society: workforce change; globalization; environmental concerns; technology; knowledge remains king; everything digital; cyber-security; multinationals; economic shifts; education; new sciences; advanced research in the field of change; demographics; and, amount of information.

In regard to four of these which are concerned with the current paper, Siemens had among others these to say (Siemens, 2009b):

- *technology*: more, better, faster.
- *knowledge* remains king: societies around the world will continue to compete for the gains of a knowledge economy. University systems will become more prominent and important.
- *everything digital*: business meetings, publications (newspapers, books) and information in general will continue to be digitized. Once RFID tags are prominent in all information and physical products, the internet of things will blend the digital with the physical. Digital is not simply an add-on to physical. It's a separate world.
- *education*: complex integrated societies and an economy based on knowledge will require continued education. Lifelong learning – touted for decades – is quickly becoming a reality for many individuals. Education will become more specialized,

raising the importance of cross-discipline conversations and information sharing.

Siemens ended his expose on change by saying among others the following (Siemens, 2009b):

Many more elements of change can be considered, but, for now, the above list provides a bit of an indication of what's happening. For educators, trainers, and others somehow involved in the field of learning, the big questions boils down to: so what? We know things are changing. What does it mean? What should I as an academic or learning and development leader do with the list you've provided? What is the core, the central element of change (assuming one even exists)? What does it mean?

That's where I'm stuck, and it brings me to the start of this post: What possible metaphor can capture the impact of these many change elements on education? On learning and development? How should organizational leaders respond?

Truly, these questions point clearly to one and only one thing: the current work is not alone in trying to figure out answers to the question of learning and leadership in education in today's era of the internet. Such answers may perhaps be derived through various approaches. For the current paper, it is the inductive approach whereby relevant materials are found through the surfing of the internet which took place over a period of two recent months. Such laborious work had led to the amassing of thousands of pages of materials associated with hundreds of websites. Due to the constraint of time not every single material had been analyzed within the following few weeks. As a result, the paper is having a limitation on the extent and details of the topics covered. Future paper shall attempt to rectify this limitation by looking at the rest of the materials left unstudied.

It is notable that the inductive approach for the collection of relevant materials and the time constraint for the analysis of materials have straight forward explanations. The inductive approach may be explained by the fact that yours truly whose forte are in accounting and auditing is very much lacking in knowledge and understanding on the subject matters of (new) learning and leadership. As for the time constraint, it is caused by the fact that the paper has its origin in the writing assignment of a keynote speech for the then key member of the higher institution that yours truly is attached to. Such work had dateline for completion.

The rest of the paper comes in five sections. The first is specifically concerned with the meaning of learning in the internet change era. The second is on the related policies change instituted by the authorities in countries coming from several parts of the world. The third covers the specific challenges faced by educational institutions in integrating technology with the classroom experience with an eye to the goings on in Malaysia. The fourth is on several forms of assistance for teachers/lecturers to integrate technology with the classroom learning experience. Finally, the fifth and final section of the paper is divided into three subsections: first, the new style of teaching and learning versus that of the old; second, the question mark on the state of technology integration in Malaysian classrooms; and third, the need for collaborative leadership for collaborative learning and teaching in the internet affected educational institutions of today.

## 2. New Learning and the Internet Change Era

That internet has made a big difference to one's life style is captured well in the following quotation coming from Siemens and Tittenberger's *Handbook of Emerging Technologies for Learning* (Siemens and Tittenberger, 2009, p. 4):

The internet is "changing traditional behaviour" as daily activities (shopping, playing games, research) are increasingly done online. Canadians, in particular, enjoy high levels of broadband connectivity and make extensive use of the internet for social, information, and entertainment purposes.

And, when it concerns the social media networks and their affect on the youth in particular, note the following coming from teacher-blogger Akune (2010):

Everywhere you turn nowadays, you see evidence of the popularity of social media networks. They are on our laptops, Ipods and Smartphones. Our students are even more connected and engaged in various forms of social media websites. Facebook, MySpace, Twitter, the list goes on and on. Our students are far more confident at navigating their way through social media sites than the average adult is. ... Social media has become so popular that some students no longer have email addresses. Many students no longer communicate in that way. Facebook is by far the most popular network used by students. Kids use Facebook for social reasons because it is one of the easiest ways to contact their network of friends. Facebook also provides students the ability to control who views the information they post.

Hence, make no mistake about it: the youth of today would surely constitute a significant section of those known as "digital natives". Downes (2005) had these "digital natives" described in the following manner:

As we approach the halfway mark of the new millennium's first decade, the nature of the Internet, and just as importantly, the people using the Internet, has begun to change. ... One trend that has captured the attention of numerous pundits is the changing nature of Internet users themselves. Sometimes called "digital natives" and sometimes called "n-gen," these new users approach work, learning and play in new ways. They absorb information quickly, in images and video as well as text, from multiple sources simultaneously. They operate at "twitch speed," expecting instant responses and feedback. They prefer random "on-demand" access to media, expect to be in constant communication with their friends (who may be next door or around the world), and they are as likely to create their own media (or download someone else's) as to purchase a book or a CD.

As to how technology in general and the internet and social media networks in particular affect change in the learning experience, various parties have come out with the revealing remarks. For example, Siemens and Tittenberger (2009), while discussing change pressures impacting the future design of education, mentioned in their *Handbook of Emerging Technologies for Learning* the following (Siemens and Tittenberger, 2009, pp. 5-6):

The participative web (also known as web 2.0), mobile phones, social networking services, and netbooks have given individuals greater control over information creation and sharing.

Information services like Google Search, Google Scholar, GPS-enabled devices, and e-books, are improving access and communication for learners. Technological innovations in bandwidth, storage, processing speed, and software directly impact education, creating new opportunities for learner-learner/educator and learner-information interactions. ...

Many tools are now available for educators to open wide the doors to learning, reducing barriers to information access and to increase the opportunities for learning with colleagues and peers from around the world. As more information is freely available online (OCW, Open Yale, Open Learn and numerous related projects), tools of collaboration grow in prominence (wikis and blogs), and means of discovering and networking with others (social network resources) become more popular, substantial change can be expected in education.

As for the prominent American learning technologist Will Richardson (2006, as found in Nussbaum-Beach, 2008a), he mentioned in his bestseller book:

Today, new and emerging Web technologies are connecting our children in ways never before possible. Through blogs, social networking sites, multimedia and other “Web 2.0” tools, their worlds are becoming more and more networked and engaging, creating environments for learning and collaborating that look little like our traditional classroom spaces.

(See Appendix A for other revealing remarks coming from various parties.) In other words, there is the emergence of online networked learners who are involved in a community approach rather than a classroom approach to learning. In the words of Nussbaum-Beach (2010b): “Everyone is a colearner, coleader, co-creator of knowledge.” Also, as far as these networked learners are concerned, the learning is no longer restricted to a particular place at a particular time. In the words of Will Richardson (as found in Aakune, 2011): “Individuals can learn anytime, anywhere, as long as they have access to the Web and, in turn, to other people with whom they can form groups.” All in all, under the new learning in the internet change era, as Will Richardson had noted succinctly following his previous quoted marks, “[l]earning is creative and collaborative, cross-cultural and conspicuous, and products are shared widely for others to learn with and from.”

Further elaboration on new learning marked by technology integration with classrooms and online networked learners is next. Following this elaboration, there is the discussion on higher order learning which is often associated with the use of Web 2.0 tools.

### ***2.1. Integrating technology with the classroom learning experience***

Various remarks made by a teacher-blogger Akune (2010) in a spirited blog post on the use of social media networks augment those made earlier by Siemens (2005a, 2005d, 2008a). Noted Akune (2010):

Often times, we work with students who have posted inappropriate photos, comments or messages on Facebook or other social media networks. I'm not advocating for social media to become the content or to be included in every lesson of every class, but when and where it is appropriate as a learning tool for students to engage in the curricular content, we should encourage the use of social media in the classroom. Examples include using Twitter as a

forum for a class discussion around an open-ended question or topic. Twitter could also be used as a way for students to request ideas and thoughts of others. Facebook can be used by students as a way to promote or market an idea to the student body or the local community.

Now, what exactly that Siemens had mentioned earlier? In his early March 2005 blog post, Siemens had this to say on the contemporary meaning of learning which is different to what it used to be (Siemens, 2005c):

Perhaps we need to rethink the term “learning”. So much of what I need to do today, I don’t possess within myself at the point of need (I find many of my answers via other bloggers, Google, communities, my own personal digital knowledge base, etc.). ...

Learning (in today’s era) isn’t something that we necessarily possess. A few generations ago, fixing a tractor required knowing how to fix a tractor. Today, most of our challenges aren’t physical in nature – they are knowledge based. This requires core skills of the field, augmented with knowing where to go to get the information needed for the task. Things are too complex. Effective workers (especially knowledge workers) need to create a personal network that enables access to answers when needed. Knowing how to do something now requires knowing where to go in order to do something. Learning isn’t always possessed at the time of need.

Next, in the reply he gave to a comment made to this very blog post of his, he specified the various ways that classroom teaching and learning will now need to change. These are (Siemens, 2005a):

Getting educational institutions to realize that their first task is to create competent learners. Learners need to be given the skills to provide for their own learning needs in the future. This involves teaching critical thinking, reflection, the skills to create a personal learning network, etc. Learners need to be taught how to synthesize influences and messages from multiple sources.

Extending the classroom. Educators should introduce learners to different tools and resources. This may involve joining a community of practice (virtual or physical), joining listservs, etc.

Documenting learning. eportfolios are a great way to assist learners in recording their education and collecting artifacts that prove learning. An eportfolio can be seen as a personal, life-long learning tool.

Rethinking course design. Not all learning has to start with content. Real life doesn’t. Design courses that are centered around provocative questions. Let the dialogue (not socializing) create the “learning”.

Teach learners to review and consider multiple, external, often contradicting viewpoints. Let them understand diversity before making decisions.

Use technology as a tool for storing knowledge (i.e. furl, del.icio.us, pubsub, blogger, personal database, etc.)

Use technology as a tool for creating connections – blogs, wikis, IM, social network tools.

Use technology as a tool for collaborating – wikis, groupware, synch tools.

It is also notable that later in 2005, Siemens (2005d) have additional suggestions to make.

Blogs, like wikis, have many limitations (but that's another post). They do, however, enable a personal experience for learners. They do allow educators to adapt to a greater degree than most classroom environments. Consider a class with 30 learners – all blogging. An RSS feed aggregates their combined voices. As the teacher, I am able to see how they are/aren't "getting the content". Their knowledge needs will most certainly not be fully met by the work of the instructional designer. As I hear the aggregate voices of learners, I will recognize large-scale knowledge gaps...and be able to fill them by providing supplementary resources. Instead of a canned course on Macbeth, I'm able to provide a course that adapts to learners needs based on how I see them interacting and learning.

Additional value is provided in the ability for learners to teach each other. Reading the opinions of 30 classmates is a far richer learning ecology than hearing the opinion of one teacher. The learner is the teacher is the learner.

Following the posting of the various remarks in 2005, Siemens revealed in his mid February 2008 blog post a list of 12 practical ways to implement connectivism in classroom environments (Siemens, 2008a):

1. Create a class blog...have students blog. Compile their work in an aggregator – such as PageFlakes – that will provide learners with a single page to refer to in order to get an overview of what other learners are blogging about. From my experience, many learners find it stressful simply blogging and are somewhat lost in a highly distributed environment. To build their comfort in these spaces, the use of a central starting spot can be valuable.
2. Use collaborative learning activities – have learners contribute to wikipedia or conduct group work in their own wiki. Better yet, find a colleague at a different university (or school) who is teaching a similar course and create cross-institution collaboration projects.
3. Open your own resources to collaboration and sharing. Start a "english wiki" or "physics wiki" or "psychology 101 wiki" and network with colleagues at other institutions or other countries in developing the resource and keeping it current.
4. To be networked, resources and conversations need a degree of openness. This is one of the drawbacks of an LMS. Learners need to develop comfort with transparency and see the impact. In a recent course on digital literacies, Peter Tittenberger and I found learners can be uncomfortable with posting thoughts in an open public forum. There is something personal (vulnerable?) about learning that certain individuals prefer to keep "secure". To balance openness and privacy, tools exist, such as ELGG, that allow educators to create mini-networks with greater privacy than the open web.
5. Use existing open education resources in planning and delivering course materials. Focus on using a variety of media – games, videos, podcasts, interviews. Many resources already exist for this type of content...and the list grows daily.

6. Direct students to conference proceedings, recordings, and keynote presentations from recent conferences within the field. Many conferences now record keynote presentations. If the class is focused on a particular theorist or scientist, instead of talking about him/her, direct learners to the source – a recorded keynote or interview.
7. Contribute to the resource pool. When attending conferences, conduct podcast interviews with speakers...or grab a FlipVideo and record the interview...highlight a few key theorists and conduct and email interview and post it on your blog for future class references.
8. Experiment with different tools and instructional approaches. Build a “let’s play” component into your course. Spend a class in Second Life. Create podcasts. Involve learners – have them brainstorm learning activities.
9. Provide learners with resources that will continue to feed their learning after the course is complete. Direct them to blogs, listservs, ning networks, or other communities and networks. The content of a discipline will change. When learners are “plugged in” to a network, they have the opportunity to stay current.
10. Develop learner’s skills in participating in and contributing to networks. Detail meta-skills such as evaluating authenticity of information...encourage them to develop conceptual skills – such as accepting ambiguity and functioning in uncertain environments. Learning projects that focus on building specific cognitive skills can also be wrapped with meta and conceptual skill development components.
11. Combine worlds – involve 4th year (or graduate) students in interacting with 1st year students (in blogs or wikis, for example). Or, as one faculty member has done at U of Manitoba, have 3rd year students write the text book for first year students ([http://webmail.cs.umanitoba.ca/mediawiki/index.php/Main\\_Page](http://webmail.cs.umanitoba.ca/mediawiki/index.php/Main_Page))
12. Bring in virtual guest speakers through elluminate, skype, or ustream. Reduce the centrality of one educator and shift the role of teaching to a network of external experts and other learners (graduate level, other institutions).

It is notable that Siemens had this to say about this list of his (Siemens, 2008a):

[I]t is a list intended for educators who are just beginning to explore networked technologies, so advanced bloggers/wiki’ers/twitterers will find it to be somewhat basic ...

While this is simply a starter list, the key concepts I’m hoping to communicate is the ability to offload content creation, learner interaction, teaching, and skill develop to a network that exists beyond classroom walls.

## ***2.2. Online networked learners***

These days the emergence of online networked learners is perhaps inevitable. Sener, a pioneer on online education, had this to say on the subject of knowledge in the world today in his recent journal article (Sener, 2011):

For one, the “global knowledge base” is not just “expanding,” it is exploding; in fact, it’s



growing so fast that we're having trouble coming up with new *names* for the quantities of data being generated. You've heard of megabyte, gigabyte, and probably terabyte, but petabyte? Exabyte, zettabyte and yottabyte?

Knowledge is increasing in volume and production rate so fast that mastering "bodies of knowledge" or content has become less important, even pointless.

That is, with knowledge expanding so very fast, no single human being possesses every single one of them. In consequence, as noted Siemens (2005b): "We can't stand alone on our own knowledge. We have to aggregate with other nodes (people, content, knowledge) in order to meet the challenges of a complex information climate. ... The network becomes valuable once we combine and connect separate nodes of knowledge." But not just any nodes, for these have to be those which continually filter and update content (Siemens, 2006a).<sup>1</sup>

All in all, learning in the era of the internet entails learners being parts of local and global framework. In an interview, Siemens had this to say regarding these learners (A new narrative, 2008): "Learners have the ability to create, co-create, and re-create content. Learners have opportunities to participate in global conversations and to directly access expertise. Learners once again belong in the dialogue, creation, and exchange of knowledge." In short, there is now networked model of learning replacing that of hierarchical command and control model unsuitable in playing catch up to complex interactions and information abundance (Siemens and Tittenberger, 2009, p. 7).

### **2.3. Higher order learning and Web 2.0 tools**

Just what are the so called "Web 2.0" tools? And how do these tools affect learning? To answer these and other related questions, there is a need to consider Burns (2009). Burns mentioned in her article on the training for trainers of Indonesian teachers that her Austin Texas based Education Development Center (EDC) has since 2005 focused on helping teachers shift to innovative instructional practices that focus on higher-order thinking, collaboration, and creativity and use and integrate information and communications technologies to support these pedagogical shifts. She claimed that one of the arguments for introducing and using technology in education has been that technology, *ipso facto*, leads to development of higher-order thinking. This she said has proved not to be true. Nevertheless, as she put it next: "But it does appear that the *intentional design* of certain Web 2.0 technologies, nested within larger cognitive tasks that deliberately capitalize on these design strengths, does lend itself to the development of higher-order skills with greater ease than other types of technology." And, later in her article, she mentioned:

Can't the desired cognitive behaviors of analysis, synthesis, and evaluation occur via email, chat, and a traditional online course or through other uses of more robust software (spreadsheets, databases)?

Yes—but arguably with greater difficulty. Most Web 2.0 applications possess a number of inherent characteristics that make them more intuitive learning tools, more suited to the promotion of higher-order learning, and more appropriate to our particular audience of novice technology users, than stand-alone applications, such as word processing software, and older

"1.0" uses of the Internet, such as Web sites and even email.

Following these remarks, she delineated the specific qualities of Web 2.0 tools to make them most suitable for the emergence of higher order learning. As she explained it:

First, Web 2.0 tools are *dynamic*. Users can constantly update and refresh their own content as well as that of others. This "harnessing of individual and collective intelligence" (Cobo & Pardo, 2007) yields a variety of information in multiple formats with multiple inputs to create content that is iterative, relevant, and current. This is no small feat for countries like Indonesia, which lacks digital educational content in local languages.

Next - though this varies among particular applications - Web 2.0 tools possess some degree of *interactivity*. While "interactivity" is used so frequently *vis-à-vis* technology as to be almost meaningless, Richard Mayer's (2000) work on multimedia learning points out that interactivity is critical to long-term retention of information. Although the design and degree of interactivity may vary, Web 2.0 applications do allow users to interact (cognitively, manually, emotionally, and socially) with content, technology tools, experiences, and most importantly, with one another.

Third, Web 2.0 applications - unlike many traditional types of software that suffer from feature creep - are easy to use. (This isn't uniformly true. Arguably, a Web 2.0 application such as Google Earth is fairly complex.) For the most part, interfaces are simple so they're easy for technology novices to learn, thus obviating the need for a lot of skills training (we've been able to provide online training via the Web 2.0 application, Dimdim). This relative ease of use means that users are less daunted by an overabundance of menu choices. They don't get lost in a thicket of software features or excessive functionality. And the restrained design of many Web 2.0 applications means participants are able to focus on the core feature(s). For example, social bookmarking sites essentially allow for a few actions - annotating and sharing sites and communicating and collaborating around these sites. But the fundamental action of social bookmarking is tagging - developing metadata based on summations of the attributes of each site (keywords) so that information can be organized and retrieved by these keywords, a process that requires the cognitive skills of classification, categorization, and organization.

Fourth, we've seen some evidence that Web 2.0 tools can diversify and broaden traditional online structures of communication in ways that non-Web 2.0 applications may not. For example, the dominant pattern of communication in online learning discussion forums tends to be a hub-and-spoke structure of facilitator (hub) and participants (spokes), with much or most of the discussion emanating to and from the facilitator. The facilitator poses a question, participants respond, and the facilitator acknowledges responses.

An examination of the discourse of our online coaches reveals a less facilitator-centered and more networked structure. Participants communicate with one another more frequently. The facilitator is one of the voices in, but not the driver of, the discussion, as is the case in our learning management system (LMS) discussion forums. This shift may be in part due to the threaded, more hierarchical nature of an LMS such as Moodle and the "flatter" structure of

Web 2.0 applications such as VoiceThread and Dimdim, which allow for simultaneous and multiple responses.

Finally, designed for purposes of communication and collaboration, Web 2.0 applications can connect individuals to and within a larger learning community. Utilization of applications such as Voice Thread, Dimdim, and Ning for sharing, dialogue, and discussion can facilitate the types of communities of learning and communities of practice that reduce isolation, make learning and experimentation less risky, and promote mutuality and reciprocity.

In her article, Burns explained that the training of the Indonesian trainers used a variety of Web 2.0 tools: Diigo, VoiceThread, Ning, Dimdim, Flickr, Word Press, TeacherTube, and Curriki. She also said that among other activities, participants use these tools to upload video examples of teachers' and coaches' own model teaching, and hold real-time discussions about video content; meet as a whole group and as small groups; collaborate and share lesson activities; identify good Web-based teaching resources; and develop and share a final electronic portfolio.

It is perhaps worth noting that her article's Table 2 outline some of the ways that EDC's teacher coaches are using Web 2.0 applications, the activities associated with each, and the specific "cognitive level" of Bloom's Taxonomy that each addresses. Note also that aside from that very interesting Table 2 and the fact that there is the accompanying list at the end of the article which provides a brief description of a number of Web 2.0 tools, her article dwelt to some extent on two examples of coaches' assignments and how Web 2.0 applications figure in each. Here are the two examples:

One of their assignments is to use the social bookmarking site Diigo to gather approximately 10 Web-based resources to share with teachers. Each resource must be tagged and vetted with online colleagues. Coaches must identify resources, evaluate the worth of the site based on their own criteria, synthesize for their colleagues the main attributes of each, and justify their choice.

A quick glance at Table 1 reveals that such a process scales Bloom's cognitive continuum - from identifying potential resources, comprehending that information, thinking of ways teachers can apply that information, analyzing content, summarizing the content of a particular site for colleagues, and evaluating its worth.

In another activity, one coach is asked to co-teach a computer-based lesson with a teacher (coaches provide the laptop), while the second coach records it. The video is placed in VoiceThread, and coaches hold a virtual discussion in which they assess and provide feedback on one another's co-teaching episodes. They must analyze their colleagues' practice, distill their reactions into a concise verbal message, mentally compose the verbal message they wish to share with colleagues, and provide verbal feedback in ways that are constructive yet sensitive. Another brief glance at Table 1 indicates that in so doing, they are touching on Bloom's cognitive domains of *analysis*, *synthesis*, and *evaluation*.

Before moving to the next section on the impact that internet appears to be making on learning in a number of countries around the world, it may be worth reminding the following

which Burns (2009) mentioned early on in her article: “The use of Web 2.0 - the so called "read/write" Web - has increasingly found a home in U.S. education as tools for both teachers and students. But in much of the developing world, Web 2.0 applications remain little known and are rarely used as formal educational tools.”

If she is right on what is going on as far as the developing countries are concerned, this calls for spirited change on many. It would not perhaps be easy. But, it is something which appears to be necessary. As she put it next: “Indonesia, like many nations, is struggling to refashion its educational system from focusing on rote learning, lower-order thinking, and learning as a solo endeavor, to more "21st century" learning based on creativity, collaboration, higher-order thinking, and technology use that promotes these characteristics.” Indeed. Creativity. Collaboration. Higher-order Thinking. Three sufficient reasons as to why Web 2.0 apps need to enter the classrooms in the developing world just like in their counterparts in the United States and several other developed countries already – in case these nations aspire to be competitive and want their people to continue living the good life on earth.

### **3. Around the World on Internet Change for Learning**

In recent years, several countries have made efforts to integrate technology with classroom learning experience. Rowell (2010b) provides some sketchy overview of the concerned development in Britain, Canada, New Zealand, Singapore and Malaysia. In the case of Britain, Rowell mentioned that in 2009 the publicly funded Joint Information Systems Committee (JISC) which oversees technology's use in higher education in the country issued a report called *Effective Practice in a Digital Age*. Also, in 2009, the Canadian Council on Learning (CCL), a non-profit national research organization, published their 145-page report *State of E-learning in Canada*. It chronicles the government initiatives for information and communication technology initiatives in education, involving a complex of government and industry collaboration. As for New Zealand, the 2007 centrally mandated New Zealand curriculum recognizes the role of e-learning in the country's schools. All this appear to have been pale in comparison to what is found to be taking place in Singapore with the government's “measured, proactive approach to e-learning” which comes with a series of master plans directing the use of technology in schools. As noted Rowell (2010b):

The current Third Masterplan for ICT in Education *promotes collaboration among teachers, promises trials of new assessment approaches, and anticipates improved connectivity and universal technology access for all students in public schools*. The plan also calls upon *businesses and institutions of higher learning to partner with government* for innovation in technology-based educational efforts. Singapore's highly centralized approach also includes *a government-designed syllabus with electronic learning support imbedded in it* and *FutureSchools*, a program that designates specific schools for experimentation with immersive environments, interactive learning, and other technological innovations. (Emphasis added.)

As for Malaysia, Rowell (2010b) referred to a number of developments over the years including the 2005 Smart School Roadmap and the 2010 National Broadband Initiatives (NBI). Though she did mention early on that the country has taken an aggressive approach

toward technology in general and e-learning in particular from the time Malaysia's Vision 2020 Development Plan was proposed back in 1991, nothing of the sort mentioned earlier for Singapore schools and those described next for the United States can be found in her brief overview – or for that matter elsewhere too in the internet search of materials mentioned earlier.

So, would one dare to say that all in all in Malaysia so far there appears to be no serious rethinking of the field of education at various levels that gives emphasis on the collaborative use of the internet in teaching and learning? In other words, is it safe to say that as far as learners in the country are concerned there is no move away from the memorization of facts and into the realm of collaborative problem-solving made possible through the internet?

Would this then mean Malaysia is badly in need for a national e-learning framework a.k.a. Singapore above and the United States next? Or perhaps it is more preferable to have the Malaysian educators and the educational institutions to work together with whosoever they want from within and outside the country with little involvement from the government to build the kind of learning environment that they have in mind. If the latter were to be the path taken, it would mean that the nation's schools, universities and other types of educational institutions are given the chance to innovate in any way that supports raising student achievement in their communities across the entire range of e-learning possibilities. Wouldn't that be great? After all, as mentioned Rowell (2010b), the development and implementation of government policy can't match the ever-accelerating speed of technological innovation!

### ***3.1. The United States***

It was on 9 November 2010 that the United States Department of Education, Office of Educational Technology, released the *National Education Technology Plan, Transforming American Education: Learning Powered by Technology* (United States Department of Education, 2010). The NETP 2010 is presented as “A Model of Learning Powered by Technology,” which is divided into five “essential areas”: Learning: Engage and Empower; Assessment: Measure What Matters; Teaching: Prepare and Connect; Infrastructure: Access; and Enable, Productivity: Redesign and Transform. The following provides interesting excerpts from three (out of those five) areas:

**Learning: Engage and Empower** – The model of learning described in this plan calls for engaging and empowering learning experiences for all learners. The model asks that we focus what and how we teach to match what people need to know, how they learn, where and when they will learn, and who needs to learn. ... Many students' lives today are filled with technology that gives them mobile access to information and resources 24/7, enables them to create multimedia content and share it with the world, and allows them to participate in online social networks where people from all over the world share ideas, collaborate, and learn new things. ... *The challenge for our education system is to leverage the learning sciences and modern technology to create engaging, relevant, and personalized learning experiences for all learners that mirror students' daily lives and the reality of their futures.* (x) (Emphasis added.)

**Infrastructure: Access and Enable** – *An essential component of the learning model is comprehensive infrastructure for learning that provides every student, educator, and level of our education system with the resources they need when and where they are needed.* The underlying principle is that infrastructure includes people, processes, learning resources, policies, and sustainable models for continuous improvement in addition to broadband connectivity, servers, software, management systems, and administration tools. (xiii) (Emphasis added.)

**Teaching: Prepare and Connect** – *The model of learning calls for using technology to help build the capacity of educators by enabling a shift to a model of connected teaching.* In such a teaching model, teams of connected educators replace solo practitioners, classrooms are fully connected to provide educators with 24/7 access to data and analytic tools, and educators have access to resources that help them act on the insights the data provide. ... *In connected teaching, teaching is a team activity. Individual educators build online learning communities consisting of their students and their students' peers; fellow educators in their schools, libraries, and after-school programs; professional experts in various disciplines around the world; members of community organizations that serve students in the hours they are not in school; and parents who desire greater participation in their children's education.* (xii) (Emphasis added.)

It may be worth pointing out that the NETP 2010 has also provided a specific roadmap for “revolutionary transformation rather than evolutionary tinkering” (v) to raise expectations for the American educational system from “adequate” to “exceedingly proficient.” Also, the NETP 2010 provides specific examples, methods and resources that offer educators guidelines to begin disrupting the current model for education and positively affecting student learning.

#### **4. Learning and Leadership Issues in Integrating Technology with the Classroom Experience**

In Malaysia, and perhaps is the same case in many other parts of the world, the field of formal education at various level appears to be in the news all the time. The issues debated seem to go unabated. And over time, new issues emerge bringing further complication to those concerned with the education arena. Now, with the power of the internet that is within reach to so many, as to be expected, it brings with it various issues for the education field that various parties from policy makers to administrators to teachers/lecturers to students need to deal with for the benefits of everyone concerned.

Based upon the internet search done for the present work, the issues identified are:

- the use of free online apps for digital portfolios
- internet safety
- localization of software and related materials
- students from poor or with disadvantage background and internet hope for their advancement

- educational institutions' partnership with peers/community/businesses
- students' mentoring/coaching one another
- teachers-students collaboration
- research and publications on internet and social media use in classrooms in Malaysia/South East Asia
- internet access
- teachers' education
- teachers/lecturers modeling for their students
- new additional skills or literacies for the students
- alternative paths for integrating technology with the classroom experience.

The last five issues are of concern for the present paper and are presented next one after another. The rest shall be covered in some other works in the future. Finally, it is notable that in the case of Portugal, Cyprus, Africa, the United States and Canada, the internet search has identified writings which reveal the multitude of issues that are brought about with the effort taking place in integrating technology with the classroom experience. Appendix B gives out the details of those issues.

#### ***4.1. Internet access***

Obviously only with the internet access made available to classrooms that teachers/lecturers and students can access many free web tools that can enhance their lessons. Hence, the widespread practice in Malaysia - whereby students and teachers/lecturers need to be in school computer labs for their ICT learning experience to take place - is not acceptable. But, is Malaysia ready to have such classrooms to come into the picture which apparently is an urgent work in progress in countries such the South Korea, France, Japan and Singapore (Kim, 2011) when in some parts of the country there are schools which are still without electricity and running water and that there are schools in urban centers without the internet access?

Perhaps one could be convinced why some schools in some parts of Sabah and Sarawak fail to have the internet connection for the fact that in the first place they are without the basic necessities such as electricity and running water. But, what to explain the lack of internet access in a school in a place such as Sungai Buloh, Selangor which is just a few kilometers from the Kuala Lumpur city centre?<sup>ii</sup> Related to this, and this may be view to be a pre requisite before any efforts are embarked upon to the idea of internetizing Malaysian schools, a rightful question may be asked: is there around any official document stating out vision and related matters over the idea of integrating technology with Malaysian classrooms nation wide?

By and large, to embark on a journey of integrating technology with the learning experience at various educational levels, policy makers at the national level have an important role to

play on a number of areas. There is a limit to what teachers/lecturers and others who are directly involved with the Malaysian educational institutions can achieve on their own. For certain, the policy makers need to ensure that Malaysia has the right setting for such integration in the form of fast internet connection (and the availability of the necessary devices packed with high quality digital content for the students and their teachers/lecturers) before any other move that they themselves and others in the field may embark upon. Beyond these, however, the ever-accelerating speed of technological innovation can bring stiff challenge to the development and implementation of the so called grand strategy that these policy makers may come out with. Noted Rowell (2010b):

Sadly for the educational system, technology does not wait for policy. It leaps ahead on its own timetable. Thus a teacher may find it necessary to grab the tech as it zings past and work it into a syllabus on the fly. Trends and students move faster than policy makers can dream up policies, approve them, fund them, and roll them out. And that means there are going to be spots in our national educational policy that lag behind what is happening in the classroom.

Since there is limit to what the policy makers at the national level can do, it goes without saying that other parties such as teachers play an important role in successfully integrating technology with the classroom experience. Such a role may however come to void when the training that these teachers have to undergo prior to being absorbed in schools has failed to give strong emphasis on the use of appropriate technologies within the classroom learning experience.

#### ***4.2. Teachers' education***

In the United States, colleges of education are not at the forefront of the so called 21st Century skills movement. This is as noted Ken Kay (Nussbaum-Beach, 2007c). He argued that teacher preparation programs should be embedding 21st Century skills with their content courses, modeling 21st skills in their instruction and delivery, and helping trainee teachers use Web 2.0 tools to collaborate and build community so that they can get the support they need outside of the classroom once they are on their own. He emphasized that teachers should share best practice first with each other and then beyond their own schools through virtual learning communities. Should not all this be found too in Malaysia's teachers' education programs?

Indeed, they should. To be more concise, the concerned institutes of higher learning in the country need to take a serious look at how they are educating the future teachers – even when there appears to be hardly any move from any party to date to have Malaysia to move urgently in integrating technology with the classroom learning experience. Why? For at least three reasons:

First, because technological training could very well become an integral part of the delivery of their lessons not too long in the future after they start teaching or lecturing. That is, following the realization by the power-to-be that it can no longer ignore the move made in the field in a number of countries such as Singapore, the United States and New Zealand (see earlier discussion). Second, these teacher trainees may one day be among those who shall



play an important role in ensuring that the future generations are provided with the kind of education needed for jobs that have not been invented yet. Finally, the day may arrive sooner rather than later when teachers who know how to use technology effectively to help their students connect and collaborate together online will replace those who do not. Surely no one in his or her right mind associated with teachers' education in the country ever want to see his or her students be faced with such predicament?

It may be worth mentioning that at Purdue University Calumet there is a new course being developed for those who shall become teachers once they graduate. It is called *Educational Technology for Teaching & Learning*. The objectives of the course are to explore classroom applications of educational technology in K-12 settings and to address strategies for effectively integrating technology into the teaching and learning process (Zimmerman, 2011). In this regard, Emily Hixon, Assistant Professor of Educational Psychology and Instructional Technology, who developed the course was quoted to say (Zimmerman, 2011):

There is a big difference between being able to use technology in a classroom and being able to effectively integrate technology into instruction to promote and enhance student learning. As noted in the research literature on this topic, the latter is more difficult to do. There has been much research focused on how to best prepare new teachers to be able to use and effectively integrate technology into their instruction. The research suggests that a more integrated, authentic approach where teachers can observe models integrating technology and “try it out” in an authentic context is the most effective way to prepare teachers. It is our hope that this new course will bring our approach more in line with best practices.

On the whole, in taking the course, the concerned students of Purdue University Calumet will learn about technology-based instructional resources and the pedagogical processes they can facilitate. The students will also know how to integrate technology into a real-world teaching situation. And the ultimate aim of having such a course is to benefit those taught by these Purdue students when the latter become teachers. Note the following that Ms. Hixon had mentioned (Zimmerman, 2011):

The whole push for this new course is really to benefit the K-12 students that our preservice teachers will ultimately be teaching. Technology is very rapidly changing the world we live in and is becoming critical to our ability to function in society. Similarly, it is permeating how children learn and interact with their environment. I watch my two-year-old playing “games” on the iPad and am amazed by how easily he is able to navigate programs and by how much he is LEARNING! This is how today's youth are learning – in a very interactive, engaging, and entertaining way. If a teacher thinks that she/he is going to be able to talk “at” students and they will learn, she is mistaken. Teachers must be prepared to engage students and use technology to support an interactive, meaningful approach to learning. (Emphasis already around.)

#### ***4.3. Teachers/lecturers modeling for the students***

For students to learn from the world in the new learning model of the internet age, it is crucial that their teachers/lecturers first own these emerging technologies and the culture that

surrounds them. This would mean that Malaysian teachers/lecturers need to form what is known as either Personal Learning Network (PLN) or Personal Learning Environment (PLE). The educator-blogger Nussbaum-Beach is a strong believer of PLN/PLE. Note, for example, the following that she wrote in her July 2007 blog post (Nussbaum-Beach, 2007a):

It is about ownership, developing your online voice and joining professional networks. As teachers we must first own these concepts and skills before we can give them to our students. And by using these 21st Century strategies to create networks of ‘teachers teaching teachers’ we can ensure that none of us get left behind and that every child will be prepared to meet the future that awaits them.

Later, in a February 2008 blog post, Nussbaum-Beach mentioned the following (Nussbaum-Beach, 2008c):

Do we want what we are preaching or not? Do we want kids who know how to use these tools in powerful and pervasive ways to connect and collaborate with others from around the world - even at the cost of breaking our comfort and relationship with the status quo. Are we willing to unlearn most of what we know and relearn new ways - new norms - for how healthy relationships are established and nurtured in the 21st Century? Do we believe in learning ecologies made up of very diverse people who help inform our student’s interests and passions?

It may be instrumental to know what exactly the PLN and PLE are. From a website Personal Learning Environments Networks and Knowledge (2010) the following is stated:

A Personal Learning Environment is more of a concept than a particular toolset – it doesn’t require the use of any particular tool and is defined by general concepts like: distributed, personal, open, learner autonomy. These conceptual attributes influence the types of tools individuals select to engage in learning. Often, PLEs are presented in contrast to organizational learning management systems ... A Personal Learning Network is a structure that reflects relatedness to other people. Information sources (such as Google or databases) can be part of a PLN. A PLN is grown by adding new people or connections. A PLN is a reflection of social and information networks (and analysis methods).

In the same website, it is also mentioned that there is a degree of overlap between the two terms whereby PLE has received greater adoption in higher education, while PLN seems to be more prominent among the so called K-12 (primary/secondary) educators.

As for Siemens, he had this to say on PLEs (Siemens, 2010a): “A variety of informal, socially-based tools comprise this space.” And these are:

- (a) blogs,
- (b) wikis,
- (c) social bookmarking sites,
- (d) social networking sites (may be pure networking, or directed around an activity, 43 Things or flickr are examples),
- (e) content aggregation through RSS or Atom,

- (f) integrated tools, like elgg.net,
- (g) podcast and video cast tools,
- (h) search engines,
- (i) email, and
- (j) Voice over IP.

Finally, it may be worth pointing out the following coming from Shimabukora (2011c): “In the student-centered model, students can use technology to develop a personal learning environment (PLE), and school can be a part of it. They can also link to other students’ PLEs to form a personal learning network (PLN), and the PLNs, together, form a MOOC (Massive Open Online Course).”

To see how PLN/PLE has become such a fruitful device to some, check out the following remarks:

I am thankful that I live in such a time as this and have the participatory media available to develop my own personal learning network made of educators from around the world. How awesome is it that we can bring others into our classrooms who represent such diverse thought and culture with a few simple clicks. What is good and right? Having John Norton, Barnett Berry, Chris Gareis, Meagan Tschannon-Moran, David Jakes, Gene Roche, Cathy Gassenheimer, Will Richardson, Darren Kuropatwa, Barbara Mocariski and many others from TLN, the Blogosphere, and my PLNs as my friends and mentors. These precious souls hold me accountable in my thinking and stretch me in ways I would never have had possible without technology providing instant access to them regularly.

Sheryl Nussbaum-Beach in her early February 2008 blog post (Nussbaum-Beach, 2008b)

I’ll comfortably say the writers and thinkers I follow online are at the centre of the most intense period of learning in my life. Key ideas and critiques put forward by others are quickly dissected. It was apparent with Andrew Keen’s book. And it is apparent now with Gary Stager’s contentious post on the state of web 2.0 adoption. Now, Andrew wrote his book to sell copies. He is intentionally antagonistic in order to gain attention. That’s why he’s on talk shows, radio programs, and the conference circuit. He’s the anti-voice to what is starting to look less like a trend and more like a revolution. And Gary may well have had a similar intent in mind when he wrote his post. Some have provided a thoughtful analysis (Stephen Downes, even David Warlick who was one of the sources of criticism in Gary’s article), others opted for a bit of humor and mockery (James Farmer), some offered support (Miguel McGuhlin), and some shifted the focus back to learning (Jeff Utecht). I find this type of dialogue rewarding and satisfying. A simple concept or article is filtered through multiple lenses, providing a rather complete analysis. I would suggest, this is likely our greatest strength as edubloggers. How many traditional academics have access to a network that can pick apart an idea or concept in a matter of 48 hours?

Dr. George Siemens in his early September 2007 blog post (Siemens, 2007d)

As a secondary school teacher this has been the case. I have never learnt and connected so much as in the past years. If I had not done this, my mind would have been geographically

and intellectually restricted to the four walls of my classroom, of my home and of my close friends. I would have never had the chance to interact with experts and peers from different areas and my knowledge would have been limited to the books or conferences I was never able to afford the time or the money.

Barbara Dieu, as quoted by Dr. George Siemens in his early February 2007 blog post (Siemens, 2007a)

Needless to say, all of this sounds great. In the Malaysian context however one may be tempted to ask as to how the overworked but underpaid teachers/lecturers in the schools/institutions of higher learning who in big numbers are lacking in both spoken and written English are capable of building up effective PLNs/PLEs? Surely such PLNs/PLEs would be hard to come by without efforts taking place on the power-to-be to reduce the various burdens and to improve the spoken and written English of these teachers/lecturers? So, again, as in the case of internet access mentioned earlier, there is a role to be played by the policy makers for there is a limit to what teachers/lecturers can do on their own. The failure to act accordingly could very well mean that the students are without the role model for the new learning experience. When that is the case, it would seem that the journey to integrate technology with the classroom learning experience shall be longer and more arduous than ever before.

#### ***4.4. New additional skills or literacies for the students***

It seems that various parties are not agreeable on the same set of skills needed by students in the internet era. For the National Council of Teachers of English (NCTE) which is based in Urbana, Illinois, it mentioned the skills needed by the so called twenty first century readers and writers are as follows (National Council of Teachers of English, 2008):

- Develop proficiency with the tools of technology
- Build relationships with others to pose and solve problems collaboratively and cross-culturally
- Design and share information for global communities to meet a variety of purposes
- Manage, analyze and synthesize multiple streams of simultaneous information
- Create, critique, analyze, and evaluate multi-media texts
- Attend to the ethical responsibilities required by these complex environments

As for the educator-blogger Nussbaum-Beach (2007c), she mentioned:

We also need to teach students adaptive expertise. They need to not only be self-directed but have the ability to embrace ambiguity. In their future, our students will be working with teams in virtual spaces that they have never met, on goals that are abstract. They need to understand how to adapt and create. In fact, it is a tough call even trying to predict what they will need as for the first time in educational history we are preparing students for jobs that haven't even been invented yet. What skills do kids need now? They need the ability to

redefine themselves and the way they do their work. They need critical thinking skills, self defense tools that will help them redefine the value of the enterprise in which they find themselves.

Another blogger who is also a teacher and who goes by the name of mrkaiser mentioned that there are five technology skills that every student needs before they enter middle school (mrkaiser, 2011c). These are: manipulate pictures; write a blog; record audio tracks; create a website; and, make a video. On the skill of manipulating pictures, mrkaiser claimed that it is a valuable skill, whether it be something simple like cropping or something more advanced like merging two pictures. As for blog writing, the skill is associated with many other valuable skills “that translate to other online activities.” On recording audio track skill, mrkaiser mentioned: “This is one of those technologies that opens up a whole world of project ideas for students. Recording is also a valuable skill for the future workforce as more and more of what we do goes digital.” And when it concerns the skill of creating websites, mrkaiser pointed out:

I don’t need to do much explaining as to why this is a valuable asset for students. Every business that wants to make money has a website. Every business, even if they don’t make money, has a website. More and more, just about everyone just has a website. At one time this was somewhat of an expensive proposition and took quite a bit of technical computer training, but that is not the case anymore. Using free apps like Lifeyo or Weebly, students can have a website up and running as fast as they can type and design. Being able to say that you know how to make a website is a definite plus on a resume.

Finally, on the video making skill, mrkaiser claimed that “[t]his may be the most important skill for students to learn.” In his or her view, it is quite an important skill which shows that a person knows how to think. All in all, mrkaiser had this to say on all the five skills: “These are the skills that allow students great freedom in expressing themselves in the 21st Century. Not only that, these are the skills that are increasingly valuable in the workforce.” The teacher-blogger mrkaiser also claimed that one might be tempted to say that students already have these skills. But, that is only true to a certain extent. As he or she put it: “Having worked with over a thousand students this year, I can tell you that the percentage of students who are proficient at these skills is quite low.”

In addition to the NCTE and the two bloggers, there are well known personalities whose views are probably worth looking into. These are David Warlick, Professor Howard Gardner and Professor Howard Rheingold. David Warlick who was recently named as one of the ten most influential people in edtech by *Technology & Learning Magazine* claimed that being able to read text, write a report, and calculate numbers on paper which are basics of the industrial age are merely a starting place for twenty-first century literacy which are comprised of the following 4Es (Nussbaum-Beach, 2006):

**Expose** them to valuable information from a global electronic library

**Employ** digital information in order to accomplish their goals

**Express** ideas compellingly so that they not only communicate, but also compete for the attention of the information customers

**Ethical** teach them the ethics of operating in an information-driven world

As for the world famous Prof. Gardner known for his work on multiple intelligences, he integrates cognitive science, neuroscience, history, anthropology, politics, economy and human values to offer five states of being that he speculates will be necessary in the new age of learning and work (Sisley, 2011). In his book *Five Minds for the Future*, he mentioned these to be: disciplined mind; synthesizing mind; creating mind; respectful mind; and, ethical mind.

On disciplined mind, it concerns the ability to make conceptual connections with notions that were abstractly related to things previously learned. On synthesizing mind, it concerns bringing massive amounts of data together whilst keeping a vision of the big picture. Sisley (2011) in talking about this particular state of being had mentioned: "Some examples of synthesis include the ability to transform learnings into narratives, taxonomies, concepts, general rules, metaphors, theories and metatheories. A little like Michelangelo's depiction of Christian history on the Sistine Chapel, impactful individuals have the ability to unify massive amounts of information in a way that is meaningful to their audience." As for the creating mind, it is one that, as Sisley (2011) put it, "should be able to envision possibilities that are different from the current reality and should be able to inject just the right amount of critical analysis to not stifle visionary thinking." Furthermore, the creating mind can be cultivated in groups leading to a situation whereby a lack of individual creativity may be improved with working together with others. Finally, when it concerns the last two states of being, the respectful mind and the ethical mind involve keeping an open mind and working to improve society around using one's talents, respectively.

Finally, when it concerns the famous writer, educator and thinker Professor Rheingold, in an interview he gave to *eLearn Magazine*, he mentioned that there are several literacies that the young people need to have (Rowell, 2010a). What he termed as "21<sup>st</sup> Century Literacies" are comprised of five literacies: crap detection, participation, collaboration, network awareness and attention.

On **crap detection**, he mentioned early on that librarians know it as "credibility testing." Next, he said anybody who's going to be cut loose on the internet anywhere in the world at any age needs to know are essentially two interconnected skills. One is "How do I find the answer to any question I would like to know?" The other question, closely connected to that one, is "Once I use search to find the answer to anything I want to know, how do I determine that the answer is accurate?" He claimed that that skill or literacy has not been taught to people before they get onto the Internet.

As for **participation** literacy, he mentioned early on that a majority of American youth not only consume, but create and author online, whether that's customizing their MySpace page, or running a blog, or even running a YouTube channel. He next claimed that the newcomers to this new world, the young people who are growing up with online media, are not just passive consumers of information but active creators of it. Unfortunately, as he viewed it, this doesn't necessarily mean that they understand the rhetorics of these media and how to interpret them to their own advantage. As he put it: "How do you use RSS to track an issue

that concerns you? How do you use a blog to advocate a position on the use of a wiki to organize a plan to action? These I think are appropriate places for interventions by educators. Although young people teach each other all kinds of things, they are not necessarily teaching themselves these rhetorics of participation...”

On **collaboration** literacy, he pointed out that from the web itself to Wikipedia to open source, people are doing things together online that they've never been able to do before. He said: “There are definitely skills and literacies around being able to collaborate online.” As for **network awareness** literacy, he proffered that humans have always interacted in social networks and that it is an essential part of being human. But for so long there are physical limitations on who you can network with, how many people you can network with and how far away they should be. In recent years, however, the technological networks from the telephone network to the internet have vastly expanded both in space and breadth and time the number and variety of people that one can contact in various ways in networks. Hence, he surmised that understanding the nature of networks, the relationship between the structure of networks and the function, understanding the way small-world networks work, the kind of structural knowledge of networks that's emerging from network theory is essential for anyone who's going to live in that world.

Finally on **attention** literacy, this is what he said: “I haven't really talked about attention. That's the whole issue about laptops in the classroom, people using their Blackberry while they talk with you. We really have not adjusted our social norms to these new technologies that enable people to be always "on" wherever they are.”

Aside from NCTE, bloggers Nussbaum-Beach and mrkaiser and famous individuals Warlick, Gardner and Rheingold, note that Jenkins, Purushotma, Clinton, Weigel, and Robinson (2006) stress on what they call the New Media Literacies (NML) that young people need in the new media landscape. In their work submitted as an occasional paper on digital media and learning for the MacArthur Foundation, they mentioned (Jenkins, Purushotma, Clinton, Weigel, and Robinson, 2006, p. 4):

Schools and afterschool programs must devote more attention to fostering what we call the new media literacies: a set of cultural competencies and social skills that young people need in the new media landscape. Participatory culture shifts the focus of literacy from one of individual expression to community involvement. The new literacies almost all involve social skills developed through collaboration and networking. These skills build on the foundation of traditional literacy, research skills, technical skills, and critical analysis skills taught in the classroom.

What exactly are these NML that the young people need to have? Here they are (Jenkins et al., 2006):

- **Play:** the capacity to experiment with one's surroundings as a form of problem-solving
- **Performance:** the ability to adopt alternative identities for the purpose of improvisation and discovery

- **Simulation:** the ability to interpret and construct dynamic models of real-world processes
- **Appropriation:** the ability to meaningfully sample and remix media content.
- **Multitasking:** the ability to scan one's environment and shift focus as needed to salient details
- **Distributed Cognition:** the ability to interact meaningfully with tools that expand mental capacities
- **Collective Intelligence:** the ability to pool knowledge and compare notes with others toward a common goal
- **Judgment:** the ability to evaluate the reliability and credibility of different information sources
- **Transmedia Navigation:** the ability to follow the flow of stories and information across multiple modalities
- **Networking:** the ability to search for, synthesize, and disseminate information
- **Negotiation:** the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms
- **Visualization:** the ability to interpret and create representations of data to express ideas, find trends, and identify tendencies<sup>iii</sup>

It appears that the challenge faced by many Malaysian students is this: the various digital skills or literacies demand the presence of self-motivation on the part of the learners. Note that Felt (2010) had stated out that “NML skills support *participatory* and *self-guided modes of learning*, both of which tend to better engage students' interest and therefore deliver superior learning outcomes.”(Emphasis added.)

Related to this, note the following coming from Mr. Tom Preskett, who is a learning technologist at the Institute of Education of the University of London, in his article for the online journal *Educational Technology and Change (ETC)* (Preskett, 2011): “The internet is well suited to learners who are completely self-regulated, aggregating learning resources from a variety of sources, seeking out their own channels of support and collaboration. There has never been a better time to manage your own learning experience.” It is notable that in response to this very point, Shimabukuro, the editor for *Educational Technology and Change (ETC)* had this to say (Shimabukuro, 2011b):

Tom's point is a simple one — anyone stepping into a virtual learning environment expecting to be taught via F2F methods will be lost. Students cannot simply park their bodies at a desk and expect to be taught. They need to initiate or activate the learning process by logging in, clicking, navigating, reading, etc. This is the basic concept of self-motivation in elearning. Without it, nothing happens.

The notion of self-motivation as a primary impetus for learning pervades the entire spectrum



of education, P-16 and beyond in both F2F and online classes. The online learning environment, in particular, demands it at the gate, and to enter, everyone must pay the price.

So, are the Malaysian students ready to be self-motivating learners to fit in with the new internet learning mode when the emphasis in going to schools or the institutes of higher learning is merely to pass the examinations leading to rote learning being the approach taken up by many? Without such learners, Malaysia may continue to hope but shall never be able to see the emergence of new learning in the nation's educational landscape.

But, could there be light at the end of the tunnel for the Malaysian education system? As noted Rowell (2010b), in the United States, the standardized testing has led to what is called "teaching to the test" education system. She claimed that there are some arguments in favor of multiple-choice bubble tests. On the other hand, unless very carefully constructed, these tests are subject to cultural bias, support educated "guessing" and fail to serve any useful pedagogical purpose! So, what is the way out? As she put it (Rowell, 2010b):

But while standardized tests may have a place, student scores on these exams probably shouldn't be sole evaluators of a student's ability, a teacher's worth, or a school's effectiveness. They don't promote discovery, creative thinking, or complex problem-solving. They certainly don't provide a clear link to the kinds of difficulties we confront in everyday life. As a result, a curriculum that focuses too heavily on getting students to pass such tests may not be teaching them any useful skills beyond the skill of test-taking.

Next, she mentioned what appears to be taking place in the future in the United States. She began by saying: "There may, however, be good news on the way for those who would like to see us move away from dependence on standardized tests." This would come in the form of what is called "Assessment 2.0" that shall be implemented in the 2014-2015 school year. As she put it (Rowell, 2010b):

[T]he Department of Education is spearheading a change in testing approaches. Secretary Arne Duncan's recent speech *Beyond the Bubble Tests* heralds what he calls "Assessment 2.0," citing two consortia of states (encompassing 44 of them) that recently won substantial awards from the Department of Education to develop new kinds of testing. According to Secretary Duncan's speech, the Partnership for the Assessment of Readiness for College and Careers (PARCC) consortium "will test students' ability to read complex texts, complete research projects, excel at classroom speaking and listening assignments, and work with digital media." The SMARTER Balanced Assessment Consortium (SBAC) will employ "computer adaptive technology" to "ask students questions pitched to their skill level, based on their previous answers."

Perhaps the Malaysian version of "Assessment 2.0" should also be what the country need to move away from "passing the exam" phenomenon that shall at the end match the move towards high technology integration in the classroom in the educational institutions? To ensure its success such an assessment may not need to cover all the subjects that students have to undertake. This could be especially true in its first few years of implementation. And if the United States model is again to be followed, there is certainly no pressure to have

“Assessment 2.0” for just any class subjects. As noted Rowell (2010b), for the United States, the new assessments cover only English and math leaving out science, history, foreign languages, civics, and the arts.

#### *4.5. Alternative paths for integrating technology with the classroom learning experience*

There appears to be at least three alternative paths in relation to the idea of integrating technology with the classroom learning experience. One path is as mentioned by Siemens (2007c). In his reply to a comment for the blog posting of his, he mentioned: “I think the issue of technology use in classrooms is one that requires a critical evaluation in each context. In some cases, technology can enable and extend classrooms significantly. In others, technology doesn’t provide as much value. One answer does not serve all situations.”

The leaders taking this path may be associated with the view that there is no need to turn technology into such a big thing in today’s education. After all, as in the words of Deutsch (2011a), “[t]echnology is just a means for teachers to teach for learning and for students to learn more effectively.” And, as commented brilliantly by Huett (2009), “[n]o doubt it has to be introduced; however, as far as they are concerned, it should be done in a seamless way and not as an overhead to students and more importantly to teachers as well. The goal I guess should be leverage technology and internet only to make it more fun and create a similar environment as in real life ...” In short, every time technology enters the classroom learning experience, as noted Nussbaum-Beach in her late September 2007 blog post (Nussbaum-Beach, 2007d), “[i]t isn’t an add-on, it isn’t one more thing they make us do, it is really an integral part of everyday life and should be an integral part of education.”

Another path which may be taken in relation to the idea of integrating technology with the classroom learning experience is to have it totally rejected. There may be at least four reasons for such a view. First, the belief that learning *can* and *does* take place even when computers, the web, whiteboards, and CMSs are not available! That is, as noted Shimabukuro (2010a), the basic element, interaction among the individuals in the educational setting, can be just as effective today as it is two thousand years ago. Second, the concern that limited class time should be for things one “can only do in a face-to-face environment” and the use of technology which can always take place outside classroom may be getting in the way of that happening. Note the following coming from Mota (2010) in response to a March 2010 blog post by Siemens (who mentioned that classrooms may not be the place to emphasize computer use and that the use of technology should take place outside of classrooms):

I totally agree with your view of using technology to extend learning beyond classroom walls, not have every student with a computer working in class. For one, it’s a nightmare to get everything to work, and it’s a missed opportunity to do other things you can only do in a face-to-face environment.

Class time should be used for modelling, tutoring, clarifying, organizing, reflecting together, developing good communication and collaboration skills, etc. One or two computers with an Internet connection, a digital board or a video projector are very useful in class, but then students should work online on their own or use a media lab.

The third reason for rejecting the idea of technology integration with the classroom experience is concerned with the issue raised by Dr. Nellie Deutsch. She mentioned (Deutsch, 2010):

I never thought I would say this but instructor enthusiasm for technology can turn sour in the classroom. Instructors can overuse technology if they don't plan the course carefully. I have heard this statement for the past 15 years but never really related to it until now. ...

My research findings on instructor experiences with implementing technology in blended learning courses in higher education indicate that learning how to use a new gadget outside the classroom does not mean knowing how to use the tool effectively in the classroom for instruction and learning. As Garrison and Onken suggested:

**It's easy to get carried away with technology. We've seen lots of colleagues input a particular technology into a course just because they can.** (Emphasis already around.)

It is noticeable that Dr. Deutsch had ended this particular August 2010 blog post of hers by saying the following:

There are many ways to use technology, but the excitement of using new tools generally overwhelms and causes many teachers to exaggerate and ignore the students. That's why a needs assessment survey is so important before planning a course to get to know the participants and prepare accordingly.

As for the fourth and final reason for the classroom technology rejection, it is concerned with all the talk and pontification that technology integration with the classroom experience fit in with the youth of today. That is, in the view of those negating the idea of technology integration with the classroom experience, these may be nothing more than wishful thinking on the part of the so called edubloggers. Note on the following comment made by Ryan (2007) in response to early September 2007 Siemen's blog post:

[W]hen I look around my classroom, I really don't see a bunch of disaffected 'digital natives' staring back at me. Many bloggers write about a homogeneous mass of kids who, by and large, don't actually exist. This simplistic reductiveness is, I believe, born of inexperience and ignorance; many of those offering opinions aren't teachers and haven't spent much time in schools or with young people apart from their own kids. As such, their opinions are certainly valid but need to be recognised for what they are. Much of the supposed iconoclastic theory informing much debate comes from the same place; people who are advocating complete change, who think that we need to completely abandon everything and start getting learning agents to facilitate learning via second-life based virtual nodes really need to think more about what schools do and what they're for. Or even go and visit a few schools (actual schools in session, that is, not schools that are hosting conferences!) I agree that change is needed, that it is coming and that technology offers probably the most powerful tools for facilitating these changes. I also recognise that, in order to initiate change, it is often necessary to overstate a case. The case for Ed 2.0 has been overstated in many cases, but there's a lot of valuable insight behind the hyperbole, pseudo-science, dodgy research and general waffle. It could well be time to start engaging and stop pontificating.

It may be worth pointing out that that Ryan (2007) is not alone with such view. Finnigan (2011) in a comment made in response to an article appearing in the online journal *eLearn Magazine* had among others mentioned:

These so-called digital natives use their technology in a very narrow context of gossip and entertainment. Most of the time it's not even gossip, but simply inane messages posted to relieve boredom or seek attention. They do not use the technology for any constructive purposes. Mobile phones, Twitter and Facebook have facilitated and amplified this babble. In education, the medium is not the message. Any message, be it printed, video, online, or mobile, that requires concentration and thought is treated lightly or outright rejected. The key problem is lack of concentration. Students seem to be increasingly unable to concentrate and focus on a task for any length of time. Mobile phones are not designed for periods of concentration. Twitter and Facebook are not designed for periods of concentration. Even surfing the Web (eg. Wikipedia or other forms of research) is borderline. The distraction may already be there, but these technologies feed it. Students must be able to sit down and focus on a task for more than 5 minutes at a time without being constantly distracted or seeking distraction. You may ask why? Why not let them be distracted, as long as they eventually get the work done? The problem is that they are not being trained to concentrate, so when concentration is required, they can't cope. And often, extended periods of concentration are needed to get something done. Also, weaker students who are constantly distracted may *\*never\** get the job done properly. If we encourage this in our eagerness to appear trendy and with it and progressive, or as a way to avoid throwing in the towel, then we have failed as educators. ... I don't think that this is just about me and my learning habits - I believe most things need concentration to be learnt properly. I have no problem with students using handphones and online technologies to augment their learning, even in class, and have developed Facebook pages, blogs and other resources in an attempt to guide them towards this. However, these technologies are designed and marketed in complete opposition to this form of use, and so most students are usually unresponsive. Like I said, it's the having to think that switches them off, not the medium of communication.

So, if it is mere wishful thinking that youth today are digital natives, what is then the truth? Note the following coming from Dr. Henry Jenkins, the former director of Massachusetts Institute of Technology's Comparative Media Studies graduate degree program and who currently is the Provost's Professor of Communication, Journalism and Cinematic Arts at the University Southern California Annenberg, in the interview that he gave to *eLearn Magazine* editor-in-chief Lisa Gualtieri (Gualtieri, 2011):

Clearly one of the things students have to know is how to use the technologies, and we again, should not naturalize that. This phrase "digital natives" is used so often and sort of implies that those who grew up in a society that had network computing know how to use network computing, and know how to do it better than their parents. But the reality is that *kids have unequal access to those technologies, they have unequal access to those skills, they have different degrees of scaffolding and support in and outside of school, which means those skills are unevenly dispersed across this generation. As new technologies emerge, they demand new ways of interacting and new interfaces, and that's not going to be evenly scattered across*

society. So the assumption that teachers are somehow digital immigrants and students are digital natives I think clouds us to the reality, *which is we are all in transition, dealing with emerging technologies and trying to learn how to use them.* (Emphasis added.)

Finally, the third and last path to take in relation to the idea of integrating technology with the classroom learning experience is that efforts must take place to bring systematic moves in kindergarten, primary, secondary and tertiary levels of education nation wide to take into consideration technology now and for the future. It may be safe to say that those choosing this particular path are associated with the view that there is a need for changes taking place in the education field to be aligned to societal changes. But, there is perhaps a need for caution for those taking this path. As stated Shimabukuro (2011a):

Plunking innovation into an existing curriculum is not the end all. In fact, it is only the beginning of a long period of trial and error, of countless ongoing additional innovations, tweaks, and changes to develop a model that actually works for a given teacher with a given group of students in a given learning environment.

To underscore the complexity of what we do as teachers, we need to point out that these working models are always evolving, even as we're applying them in current classes. They're never the same horizontally among different classes and vertically within the same class, day to day. In fact, they need to be adjusted for each class as well as for small groups and individuals.

In a very real sense, teaching is a lot more complex than brain surgery. The sheer number of critical variables defies attempts to turn teaching into a routine procedure, a science, leaving it in the realm of the arts where intuition still remains the best guide to practice.

Those taking the path of full integration of technology at various levels of the education system may also need another word of caution: classroom learning is not the only kind of learning around. In fact, these days teaching and learning are increasingly seen as things which take place beyond the book, the teacher, or the classroom (Reynolds, 2006). Hence, there is a need to keep this broad picture in mind in working towards integrating technology with the classroom learning experience. Better still, the pursuit for full integration of technology at various levels of the education system should be placed in the context of a bigger pursuit of a complete view of learning from cradle to grave needing equal level of technology integration throughout.

It is notable that various parties have in fact placed classroom learning within the very wide scope of learning process. For example, Siemens and Tittenberger (2009, p. 7) had mentioned:

[L]earning is generally only formally acknowledged when occurring under the aegis of schools and universities. Yet, as has always been the case, many important skills are developed outside of classrooms. Learning occurs through volunteering, hobbies, work-based, communities of interest, political and social activism, and raising or being a part of a family. As expressed by the Canadian Council on Learning, limitless dimensions exist in our learning.

Also, note the remark made by Withrow (2011a) on the impact of technology on learning:

With today's digital world, the classroom is not as critical as it was in a book based learning system. Today, information stored digitally can be retrieved 24/7. Moreover lessons can originate anywhere in the world. If, for example, I want to study Chinese, I can have lessons from China delivered via my computer and I can practice my Chinese via SKYPE with two-way audio-visual conversations with a native speaker.

And, finally, note the following that Shimabukuro (2010c) mentioned:

Up until recently, the focus had to be on the teacher because s/he was the only interactive medium in the classroom. For students, it was like viewing the entire learning process through a funnel, with the teacher as the only visible element at the narrow end.

With the web, we've turned the funnel around with the wide end taking in the world and the narrow end aimed at the student. In this model, the classroom and teacher are small and potentially negligible elements.

## **5. Helping Teachers/Lecturers to Integrate Technology with the Classroom Experience**

There exist several ways to help teachers/lecturers to integrate technology with the classroom learning experience. These include having teachers/lecturers working on their own; conducting professional programs for the teachers/lecturers; and setting up a "library of examples" to be followed.

### ***5.1. Self-help***

It was mrkaiser the teacher-blogger who appeared to truly believe in this strategy. In one of his or her blog post, he or she began by saying (mrkaiser, 2011a):

Teachers and administrators need to learn more about how to use the technology that is at their disposal. How is this done? The best way is to play with it and become comfortable with several different programs and computer applications. Some of this comes down to being comfortable with using new programs and apps and expecting that they will not all work all the time. Expect the unexpected and be comfortable with that. This is a hard thing to do.

Later, in the same blog post, he or she talked about having the necessary professional development training. But he or she did not have much optimism that such training would help much in the long run. As he or she put it:

Logical thinking would point to professional development training. Surely, this would be a way to help teachers use technology in the classroom, a way of spreading that knowledge, but it does not seem to be the best way either. Granted, it is the place to start, but it is not enough.

I like to think about this and compare it to the way I learned math. I did not learn much from my teachers when it came to math. The classroom instruction helped me get started, but the real learning came from working problems late at night, over and over, until I figured out how to solve the problems correctly. I had to learn it on my own. Only then did it sink in.

The same goes for learning to use technology as a tool in the classroom. Teachers need time

to learn on their own. They need time to play and explore. The spark may be started in a professional development training, but that spark needs time to turn into a fire.

So, his or her advice for the school heads?

First, take some time. If you aren't comfortable with the computer, sit down right now and explore a new application. Don't worry if it's relevancy to a particular class is clear at the moment. Just play and see what possibilities arise. They will, and this is where things get exciting because now you will have a spark to share with your teachers.

Next, give them some time to let the spark grow. Set aside some time, remember it doesn't have to be long, where the teachers can play and explore and apply. Most teachers I work with know that technology is one of the best ways to reach and teach their students, but the lack of knowledge is holding them back. In order to gain this knowledge all teachers need is a little time. A little time and a spark.

Before moving to the next approach in helping teachers/lecturers to integrate technology with the classroom learning experience, in working out on one's own, it may be advisable that the parties concerned note the following: they are three individuals (Dr. George Siemens, Ms. Sheryl Nussbaum-Beach and Dr. Nellie Deutsch) and two online journals (*Educational Technology and Change* and *eLearn Magazine*) which have been found to be of much assistance in completing the present work. Words cannot fully describe how yours truly really feel about their salutary efforts in the field. The combination of these parties should provide interested parties on the self-help path with both theory and practice needed in bringing technology into teaching and learning.

Also, it is probably worth noting that among those five Dr. Nellie Deutsch has expertise in both English language as the second language and in learning technology. In regard to the former, Dr. Deutsch conducts English classes online ([leo4u.org/](http://leo4u.org/)). Her program includes live online events via WiZiQ that are conducted twice a week on a specific time and Moodle lessons that do not have specific times. The two formats provide a chance for students of English to practice listening, reading, writing and spoken skills in English with other participants from around the world. As for her work in learning technology, note the following (Deutsch, 2008a): "My path in life is to make e-learning available and free for all. I have just started developing free online courses for educators on how to use Moodle, WebQuests, WiZiQ blogging, Second Life, and other web 2.0 tools for effective instruction and learning. You are welcome to join." Lest this remark may be considered by some to be not valid anymore, note the following which appeared recently in her "Passionate About Learning (PAL)" blog (Deutsch, 2011b): "In my spare time, I mentor educators on how to integrate web 2.0 tools for instruction and learning. I would like to see e-learning available and free worldwide. I believe in free learning and promote free e-learning through various synchronous and asynchronous environments."

It is notable that Dr. Deutsch is also quite adept in combining both areas – English and learning technology – for the world to benefit from. As she mentioned (Deutsch, 2008b):

I have been trying to engage learners in teams so they can collaborate and learn from each

other. I find the jigsaw and WebQuest excellent means of connecting learners to each other and to the content. In the coming fall, my EFL/ESL students will be creating their own WebQuests, wikis, ning sites, and blogs. I would be interested in collaborating with other teachers and students worldwide. Please feel free to contact me so we can discuss how to engage learners as they learn English and become lifelong learners.

For more on these and other activities which she is involved in, go to <http://nellie-deutsch.com/about/>. Also note that Dr. Deutsch maintains an RSS feed ([nellie-deutsch.com/feed/](http://nellie-deutsch.com/feed/)) where its discovery by yours truly has proven to be one of the turning points during the internet surfing for relevant materials needed for the development of the present work.

### ***5.2. Professional Development Programs***

It was in a journal article that Ms. Mary Burns mentioned earlier had propounded a program which can help in integrating technology into the classroom experience. The technology professional development framework called the "5Js" was developed in the 1990s by an Austin-based educational organization the Education Development Center (EDC) (Burns, 2010). She claimed that the approach was used successfully with 150 teachers in five states to help them integrate technology into instruction and assessment. In Indonesia, where teachers' and students' technology skills are almost minimal at best, she pointed out that the EDC recently concluded two pilot technology-coaching projects in which every teacher (of approximately 280) integrated one computer into his or her classroom instruction as a part of a learner-centered activity. This was done by utilizing the 5Js approach as their "playbook."

In her article she argued that the approach contain little that is new. She also stressed that the approach is grounded in two basic premises. This is how she explained them:

First, if technology is used as a teaching and learning tool, tied to curricular goals and assessment and embedded within strong instructional techniques, it can promote better instruction and greater student collaboration, enhancing student learning. If not, it can't. Second, professional development can promote quality technology integration and learning by *minimizing* the importance of computers within professional development and concentrating instead on the core areas of teaching: content, curriculum, instruction, assessment, and classroom management.

Specifically, under the 5Js approach, the technology-related teacher professional development should be:

- **job-related**, focused on the core competencies of the classroom, not technology
- **just enough**, emphasizing increased comfort, not proficiency, with computers and management of limited technology resources
- **just in time**, meaning teacher are provided with skills as and when needed
- **just in case** teachers need to plan for contingencies
- accompanied by a "**just try it**" attitude, wherein instructors apply both pressure and



support to compel teachers to use what they've learned.

As to how these five principles relate to each other, she pointed out that the implementation of the first four Js can help to ensure that teachers "just try" technology. As she put it:

First, teaching the curriculum, not the technology, is the teacher's main "job" in a classroom, so any technology-related professional development should make sure that technology supports overall lesson objectives (Job-related).

Next, teachers should receive instruction in technology when (not before) they need it and follow-up support to plan their technology-related activity (Just in time).

Third, technology professional development should de-emphasize the importance of teachers' expertise with software and hardware (Just enough) and emphasize teachers' comfort and confidence with computers. Over the years, I've found it helpful to encourage teachers to envision themselves as project managers who set up the activity, with students as "technicians" who delve into the intricacies of the software.

Finally, teachers need to carefully plan for using technology in their classroom, including strategies to address things they think might go wrong (Just in case).

Only when these five 'J's come together in a systematic way might the story of technology-based trainings have a different ending.

It may be instructive to note that in providing details of each of the principles, she came out with some very interesting remarks. Among them include those that are concerned with first, second and final Js. For example, on the first J (job-related), she emphasized that the focus of any computer-related professional development should not be on the technology itself, but on how computers can improve performance in the core areas of the teacher's "job." As she put it:

Begin with instructional objectives. What should students know and be able to do?

Select appropriate technologies to support these objectives. What technologies can support these instructional objectives? How will the technology be used (with other learning tools) to do this?

Gauge the effectiveness of technology in student learning. How effective is technology in supporting these learning objectives? This allows teachers to make better planning decisions around technology as an instructional tool.

She had also pointed out that a professional development training need to be workplace-based. As she put it:

Conduct professional development in the very environment in which the teacher will be expected to use computers - her classroom. This builds confidence that teachers can use a particular piece of software given their own constraints. It removes the "deficit" excuse of "I can't do this in my classroom because..." Equally important, classroom-based professional development keeps technology instructors honest. If teachers can't use technology a certain

way given their physical or demographic constraints, technology instructors need to know so they can better support teachers with implementation.

As for the second J (just enough), she began by saying that teachers don't need to know everything about a particular piece of software. They only need "just enough" to help them complete a curriculum-related or instructional task. She next claimed that anything beyond this is wasted effort. In elaborating this very principle, her stance appears similar to that which was mentioned earlier coming from the teacher-blogger mrkaiser. This was what she said:

As part of the "just enough" approach, teachers are encouraged to find their own solutions to technology issues, through trial and error, seeking help from colleagues, or reading FAQs and help guides. If this fails, only then should the technology instructor intervene and help the teacher. This approach is often unpopular while it's happening. It may take longer, but in the end, teachers report that they feel more confident once they have solved their own problems. And that's what this "J" aims for-confidence.

It is also important to note that as far as she is concerned, the principle of "just enough" encompasses hardware access. That is, teachers cannot and should not be trained in an environment that is richer with technology than what is available in their own schools. As she put it:

Teachers often believe more is better, that more technology in a classroom will yield a more learner-centered environment, while having less hardware impedes such an environment. Limited hardware is often cited by teachers as a rationale for not attempting more collaborative approaches. In the U.S., teacher say, "I have four computers and 25 students. How am I supposed to do this?" In Indonesia, teachers say, "I have one computer and 60 students. How am I supposed to do this?"

The "just enough" principles says whatever the in-class ratio of learners to computers is, *it must be the same in the professional development sessions*. The sessions then focus on activities that emphasize collaboration and sharing of resources. (Emphasis added.)

As for the last J (just try it), Ms. Burns said that it is the most important 'J' principle of them all. Early on, she had this to say: "Central to change is action, and this is where professional development often breaks down." Next, she claimed that most professional development programs don't monitor or track teacher implementation of the knowledge and skills they've learned. So, under the "just try it" principle, as she put it: "[it] focuses on getting teachers to just try the computers in their classrooms, and making sure they do through pressure, monitoring, and support."

Specifically, as far as the Indonesian project is concerned, she claimed that teachers knew that after every single professional development session, upon return to their classrooms, they would be expected to apply what they had learned and report the results to colleagues and their coaches. To ensure these can take place, the EDC embarks on the following:

Instituting co-teaching between the coach and teacher

Organizing solo teaching where the coach observes and provides feedback to the teacher

Creating an ongoing practice of "open lessons" where teachers carry out a technology-based activity in front of colleagues.

In ending her discussion of the "just try it" principle, she disclosed that when teachers "just try it," they know that mistakes will be made. But then, as many have understood it, errors and failure are a natural part of learning. Also, when everyone in the school "just tries" technology, teachers can begin to help one another and build collaborative teams.

### 5.3. *"Library of Examples"*

For something as challenging as integrating technology with the classroom experience, it is crucial that the concerned parties have a collection of as many examples and success stories as possible so that these could be their models to follow. During the internet search, there do not appear to be any local best examples. But, there are three found from overseas.

The first is Connecticut Career Choices (CCC) Program public portfolio which contains more than 100 pieces of work completed by students (Cogan-Drew, 2010). The program has reached more than 1,200 students in rural, suburban, and urban public high schools of Connecticut, averaging 40 percent participation by traditionally underrepresented ethnic and racial populations.

Using a web-based development software package known as Expression Engine, the portfolio treats a single piece of student work as a blog entry, with two categories of tags identifying the 21st century skills evidenced in the work. Such identification is crucial so that members of the greater learning community can make the connection between the values and the evidence of these in the process and product. It is also perhaps worth noting that the portfolio affords community members, alongside the students and teachers, the opportunity to partake in a conversation since each of the pages in the work portal has a comment area, open to anyone to read or add a comment. Wrote Cogan-Drew (2010): "Beginning first with students and their teachers, we actively invite parents, faculty, and industry mentors to post remarks on the extent of the correlation they perceive between the type and quality of the student work and their own experience with comparable work either in the academy or in the working world."

Early on in his journal article, Dan Cogan Drew (2010) wrote among others the following: "... we lack a thorough and wide-ranging library of examples and case studies of 21st century learning and teaching." So, his fine effort in sharing an example of students' portfolio of their 21st century works appears to be an attempt of bringing up the numbers.

The second example that may be worth emulating comes from a late July 2007 blog post by the educator-blogger Nussbaum-Beach. She began her blog posting by raising the following questions (Nussbaum-Beach, 2007b): "Have you ever been part of something so significant that it almost seems surreal? Have you ever personally seen your vision, your hard work, your passion become a reality?" Next, she mentioned:

Well I have. These last two years working on the 21st Century Learning project with the

Alabama Best Practice Center funded by a Microsoft Partners in Learning grant have been incredible. Witnessing the culture shift of the teachers in the 40 schools we served across Alabama has been so affirming. It has instilled in me the faith that it is not as some say, too late for public schools, but rather schools can and are making principled changes in keeping with the needs of the 21st Century learner.

It is noticeable that in the last few lines of her blog post, Nussbaum-Beach detailed out a web address ([www.abpc21.org/](http://www.abpc21.org/)) showing what the successful project was all about. She had also uploaded the project newsletter in PDF format for those who are interested in having instead print copies of the successful project.

As she explained it, the two year professional development project was concerned with the following question: how do education leaders effectively promote the knowledge, skills and sense of urgency for 21st Century teaching and learning among all the teachers in their schools? As she put it, the project takes up a “champion-building” approach in spreading awareness and interest in Web-based teaching strategies. This entails the project developers to ask each principal in the forty participating schools to select a five-teacher team to join the so called 21st Century Schools professional development community. Next, each team was to share what they learned with their own faculties, including the rationale behind the urgency for change and the exciting possibilities of technology-infused learning. She mentioned (Nussbaum-Beach, 2007b):

Our goal was not to train teachers to use technology (a massive undertaking far beyond our means) but to create “aha” moments among creative, forward-thinking teachers by introducing them to the concepts of “Classroom 2.0”. We hoped they would be intrigued by - and ultimately be champions for - Web 2.0 and other social networking tools as a means for engaging students in higher order learning experiences.

Currently, I am in deep analysis of the data we have collected to look at outcomes and measured success of the project. But we also have collected a great deal of anecdotal evidence that this change initiative is one that has potential to scale in changing the culture of schools, the practice of teachers, and the processes we use to educate our children.

The third and last example is concerned with the Boston College in the United States. As mentioned Owens (2005), in that institution, they do not make any distinction between online education and traditional education. In their view, “[e]ducation *per se* is the only thing that matters.” She also mentioned early on that in Boston College, there was no mandate from the top for the presence of e-learning for every course. Instead, e-learning is to develop organically, driven by students, faculty and the academic environment. That there is around the right surrounding for technological integration in the classroom is reflected in the following remarks of hers:

We've networked all of our classrooms with state-of-the-art infrastructure. Faculty members are supplied with powerful desktops and laptops. Our students tend to be technologically savvy and often come to us with e-learning experience gained in high school. Not only are they comfortable with the technology, they virtually grew up online. Their demand for online

course components has propelled our e-learning adoption.

There is more. And this is concerned with the fact that there are well-defined "checks and balances" in Boston College to ensure e-learning was properly incorporated. These measures come in the following forms:

We have adopted a multiple committee structure that serves us very well. Our University Council on Teaching comprises respected faculty members who set strategy on how e-learning will play out on campus. We have an e-learning Action Group, a collaboration of college reference librarians and academic initiatives. My group, Academic Technology Services, promotes e-learning on campus and assists in training and technical support.

In the following section of the paper, Owens (2005) described a total of four examples showing strong results with e-learning across a wide range of disciplines. She mentioned next that every year these and other e-learning best practices are highlighted through multiple e-learning programs and symposia. These, she claimed, have led to the development of many fresh, creative ideas that directly improve the student experience the following semester. The experience has also brought them to some hard lessons that other institutions may want to consider before embarking on similar pursuits. She had these delineated at the end of the paper:

- **Take it slow.** We're in no rush to be the world's largest online university. While we want to offer all the advantages of a reliable, capable technology infrastructure, our first concern is preserving the quality of a Boston College education--not technology's undeniable power to make an institution appear on the "cutting edge."
- **Get consensus.** It's smart both practically and politically to ensure all stakeholders in the education process are well represented in every major decision affecting e-learning ranging from the selection of technology to the adoption of policies and processes for using it. Consensus leads to cooperation.
- **Novelty isn't everything.** Some of e-learning's most dramatic benefits arise out of applications that seem mundane: online office hours that give the student greater access to faculty, music clips that save wasted trips to the library, newsgroups to keep lively discussion going between classes.
- **Share what you learn.** We celebrate our successes and analyze our failures by discussing them at every opportunity, including weekly information sessions, lunch-and-learn programs and more intensive workshops.

## 6. The Way Forward

Up to this point in this paper, there is little attempt to compare and contrast learning and teaching with or without the internet in the classroom. Such effort is important in order to clarify the changes brought out to teaching and learning due to the internet power. Hence, there is an attempt next to compare and contrast the meaning of teaching and learning with or without the involvement of the internet. Following this discussion, the paper dwells on the stark reality of the new teaching and learning experience. The discussion revolves around

what appeared to take place in some of the most developed western countries some years ago. But, the concern is really over what is actually taking place *today* in the classrooms across Malaysia. With question mark on the goings on in the country vis-à-vis technological integration in the classroom, the paper comes to an end with a discussion on collaborative or shared leadership argued to be the style which fits in with the complicated process of integrating technology with the classroom learning experience and the new learning mode brought forth by the power of the internet.

### ***6.1. Old versus new teaching and learning***

It may be safe to say that in most classrooms in Malaysia today, teachers/lecturers are still using traditional didactic/lecture type of instruction. But, according to the literature and the latest educational innovations, learners should be actively learning rather than passively listening to the teacher (Phillips, 2005). Active learning is an instructional strategy that researchers claim transforms learners from passive to active participants of the learning process. Prince (2004, p. 7) had pointed out that students who engage in active learning even briefly during a classroom instruction, “will remember more content” as opposed to instructional methods that overload the learner with information at one time.

Teachers or lecturers may implement various approaches to have their students to be active learners. One of these is by making use of the internet. In this regard, it may be pertinent to note the various statements that WizIQ, a Web service that allows educators and students to meet online in real time for virtual classes, had mentioned for a class that it offered online (WizIQ, 2008). It began by saying: “In a world of big challenges, an area of positive significant change has been the **growing use of the Internet as a platform for active, authentic learning and effective constructivist teaching.**” (Emphasis already around.)

Next, it mentioned that

**[N]ew Web 2.0 technologies change the face and texture of education, open its borders and transform the meaning of learning and teaching in the information era.** ... Teaching 1.0 (i.e., traditional teaching) represents the authoritative, controlling, dominant environment separating those who own the information and those who passively observe it. Web 2.0 represents not only an array of dramatically different technologies, but it reflects a dramatically different underlying philosophy that informs what these technologies facilitate, namely synergism through full participation and rich interaction and high accessibility. (Emphasis already around.)

And one may ask as to how may this new development be connected to the old understanding of teaching/learning approach? This is answered rather well in the very same website. It said:

This platform fits naturally with the earlier evolution in education of approaches sharing a similar philosophy. **Constructivist teaching engages in mutual learning, high participation and involvement and that views learning as interactive, learner active and alive.** Constructivist teaching was bounded by traditional limits to information access. **Teaching 2.0 is the natural meshing of constructivist teaching with the emerging Web 2.0 technologies.** (Emphasis already around.)

Next, it stresses that Teaching 2.0 has opened the educational boundaries for both teachers and learners. This makes both parties to be equally active in the process of free, creative, and collaborative search and use of the information. In particular, with Web 2.0 tools, learners collaborate, communicate, produce and perform. By doing so, they make meaning of the flowing information.

In a nutshell, the difference between the old and the new teaching and learning may be expressed in the following manner (Artichoke, 2006): **the traditional picture** of “learning as listening/ teaching as telling/ knowledge is an object and to be educated is to know valuable content” - versus - **the alternative picture** of “learning is to be involved and understanding/ teaching is providing the conditions for effective learning/ knowledge is a structure or a story/ to be educated is to know how to relate to knowledge.”

### ***6.2. What is the Malaysian experience of internet-based learning?***

With the internet around for some years now and has been found to be of quite a powerful entity in human lives,<sup>iv</sup> it is perhaps to be expected that sooner or later the field of education has had to come face to face with the need for radical change. In close to 30 responses to an early June 2008 blog post by the earlier mentioned American educator-blogger Nussbaum-Beach, there is quite an interesting response that had among others mentioned the following (Robertson, 2008):

Education hasn't faced such a radical change for hundreds of years. We've had changes within education – learning styles, pedagogical models etc – and as you note some see these internal changes as not much more than a fad. The technological changes though are external and have entirely changed the way that we communicate, collaborate and connect. The whole landscape has changed and such fundamental changes haven't occurred since the invention of the printing press or the mass movement to cities in the Industrial Revolution.

But, as far as the matter of learning is concerned, apparently the change has not taken place as much as and as fast as some would like to see. Hence, their belief that there is a need to have others informed of the need to change. Note on the following that Siemens mentioned in late May 2006 blog post (Siemens, 2008b):

In a private email, an individual asked me how I communicate the need to change to organizations. In response, I stated that the need to change is already understood. We see the changes reflected in TV, newspapers, MySpace, iTunes, etc. Information is flowing through different channels than in the past. NBC (among others) is relying on iTunes to sell TV programs...Al Gore is distributing his documentary on global warming through MySpace. It's a changed world. We sense it, we know it, and we can feel it. Convincing others that we need to change learning is not really our task – media and life are doing that for us.

Indeed, there is no need for much communication with others that learning has to change for the fact that change is all around us! Nonetheless, a half decade ago, in the part of the world that may be considered much more advance in so many ways than the rest of the world, those mentioned by Siemens above have found opposition from some readers of the blog post. As mentioned Mark Berthelemy, a UK based expert on learning technology (Berthelemy, 2006):

I'm not sure I agree with your statement that "the need to change is already understood". I'm still finding that I get totally blank looks when I talk to people about this stuff in the context of learning. Yes, there's a bit of a buzz around MySpace, blogs, wikipedia etc. But I don't see people putting it together and saying that they need to change the way we do learning. The history of the past couple of hundred years is too ingrained in the educational/training psyche to change.

The problem I find is that you only start to understand connectivism, elearning 2.0, informal learning etc, when you start "doing" it, and getting involved in the network. Where do you start to explain it to someone for who it is **all** new. (Emphasis already around.)

Also, note on the following coming from a prominent learning technologist Will Richardson (Richardson, 2006):

I think I'd tend to agree with Mark in that while I think there is a vague sense that things are changing "out there", among the K-12 educators that I work at least there is very little movement to initiate any change inside the walls of the classroom. And I'd also agree that the only way you really get this is to start using it. I'm going to be addressing 50 superintendents on Thursday...this may become a part of what I say to them.

Finally, note what a person who signed her name as Karyn Romeis had had to say on the same subject matter (Romeis, 2006):

I reckon, in the UK at least, Mark and Will are on the money.

Currently on my Master's degree course are about 22 other people, most of them teachers across the full gamut of K-12, with a few FE and HE bods thrown in for good measure. We have only attended 3 sessions to date, so I have yet to chat to everyone, but those to whom I have spoken tend not to have engaged with social/collaborative learning tools. One response I got recently when trying to highlight the benefits of teacher blogs was a rather dismissive, "What if we can't be bothered with all that online stuff? We have enough to deal with here in the real world." None of the people I had spoken to seemed even remotely motivated to engage. In fact, when I mentioned having googled a paper we were critiquing, a woman at the table behind me positively spluttered at the notion. By contrast, the course leader recognises that this is the way forward, and declared that learner-directed learning should be the norm at university level. She is very keen to learn as much from me as she can, which is very humbling, since I am just a minnow in the vast blogging ocean.

Last week, we seemed to reach a turning point. I offered to create a jargon-busters' wiki for us to build together as we go along. The course leader was keen, which I expected, but what surprised me was the positive reaction from my classmates. I live in hope... Blogs next?

It is perhaps worth reminding that Siemens' blog post and the interesting comments coming from its three readers (two British and an American) took place some years ago. Those comments may or may not be valid today as far as Britain and the United States are concerned. But whichever it is should not perhaps be of an issue to the rest of the world. Instead, for the rest of the world including Malaysians, their concern should instead be over their nations' goings on in the arena of learning technology for the classroom learning



experience. Hence, as far as Malaysians are concerned, the question that they may rightfully be asking is this: wither Malaysia today vis-à-vis learning technologies in the classroom?

Anecdotal evidence coming from teachers attached to schools in different parts of the country plus one's own experience as a lecturer in a couple of local universities point to the direction that those mentioned above by Mark, Will and Karyn for what took place more than *half a decade* ago in their parts of the world appear to be quite valid for the Malaysian learning context of *today*.<sup>v</sup> Should not this then be a worrying phenomenon for all concerned? But perhaps a more important question to ask and which is more appropriate for the conduct of a research study is this: what is the state of play of internet-based learning in the classrooms of Malaysian educational institutions?

The recent limited search in the internet has found some interesting literature and works in the field including a blog ([zaidlearn.blogspot.com/](http://zaidlearn.blogspot.com/)) that should be worth some time exploring. However, several empirical studies appeared to be limited by small sample size of respondents and the lack of discussion of respondents' demography. Also, recent reports published in the local media point to the direction that the power-to-be are making the right moves in the field albeit the presence of some ongoing hurdles.

The Education Ministry and the Malaysian Communications and Multimedia Commission (MCMC) will distribute 51,698 1Malaysia netbooks to students and community leaders in Selangor. ... "The netbooks are for students who can't afford them," Deputy Education Minister Dr. Mohd Puad Zarkashi said yesterday. "We want all students to be able to hone their internet skills and increase their information technology knowledge." ... Puad said school principals should conduct courses for students on the usage of the Eduweb to give them a headstart in Internet-based learning.

(51,700 1Malaysia netbooks, 2011)

The communications and multimedia sector received the highest number of complaints from consumers last year, according to the National Consumer Complaints Centre (NCCC). ... NCCC senior manager M. Matheevani said the complaints against the communications sector were mostly on the services provided by communication companies. "More than half of the complaints were on poor broadband Internet service and misrepresentation. Customers will buy the most expensive packages but still receive poor service. More often than not, they are not provided with the actual service information."

(3,000 not happy, 2011)

The first report on the review process of Malaysia's existing education system is expected to be ready by year-end, said Deputy Prime Minister Tan Sri Muhyiddin Yassin. He said the report will be submitted to the Cabinet, which will study and endorse a special team to look into the whole process, including implementation of the country's education policies. "We will look at what we have been doing so far in terms of implementing our education policies and what needs to be done looking forward for the next 10 to 20 years. But this will take time," Muhyiddin said. ... Education was among the focus areas under the Digital Transformation Programme or called Digital Malaysia, which will be led by the Multimedia

Development Corporation (MdeC). Among the initiatives of the Digital Malaysia is to inject greater creativity and promote thinking skills throughout the education system.

(DPM: First report on education, 2011)

### ***6.3. Collaborative leadership in the Internet Change Era: The final word?***

It may be safe to say that policy development is a complex process with many variables that need consideration and teamwork to ensure successful development and implementation (Cooper, Fusarelli and Randall, 2004). This is especially true when it concerns the idea of integrating technology with the classroom learning experience where there exist various issues (including the five discussed earlier) which need to be dwelt with. But help may be on its way with the formation of “study circle dialogues” which can provide policymakers with information from experts in the field of education as well as from parents, students, and the community (Rouk, 2000). The study circles help policymakers gain a better understanding of the public needs and interests. In this regard, the policymakers a.k.a leadership from within and outside the educational institutions can be somewhat attended to by the contributions of many.

Note the following coming from Siemens in his March 2010 blog post (Siemens, 2010b): “[G]rand schemes and plans benefit from contributions of individuals. Ideas of reform should be shaped by the voices of those who are impacted. Leadership in education should concern itself with creating spaces for vibrant discussion and use these spaces as a means to test their ideas of change.” When help come in the form of contributions from many, the policy makers a.k.a leaders should find it less cumbersome in working out a successful integration of technology with the classroom experience which as stated out Siemens in the same blog post entails among others the following (Siemens, 2010b):

Leadership also faces basic tasks of managing supplies of technology, repairs, ensuring vendors (hardware and software) are held to established procedures and standards. It is difficult to establish the proper mix of pursuing innovation while addressing practical day-to-day details. Once Magellans are in the hands of students, the inevitable question of maintenance arises. What happens if hardware fails? What about new versions of the hardware or software? What about in-class technologies such as interactive whiteboards and LCD projectors? Initiating a project is often easier than sustaining it.

And then there is the difficulty of the social and organizational dimensions of change. Change management and incentive strategies can help move an agenda forward. However, leaders don't need people who do what has been planned. Today, leaders need co-leaders – people who are active in experimenting and exploring future directions.

Leaders face a large scale rebalancing of education. They need to find new points of balance: between teacher/learner, planning/emergence, organized/complex, top-down/grassroots. The entities that will shape our future are already in play. It's about new and novel combinations, finding new states of relatedness.

If one were to check on the various types of leadership theory, invariably the picture emerged

points to individuals who lead. For example, in the case of the transformational leadership, Kouzes and Posner (2002, as found in Nussbaum-Beach, 2010a) states that there is an individual at the head - the Transformational Leader - who seeks to transform the organization, promising to the followers that in this process will be transformed in some way. But, would anyone dare to deny that none of those in an organization including those so called leaders who are normally persons in the position of formal authority is as good as all of those in the organization? Hence, there is a need for a re conceptualization of leadership to include the wisdom of the crowd. In other words, there is now collaborative or shared leadership emerged from community based participation as opposed to leadership separated from others and predetermined by a set of behaviors of those in charge.

Specifically, as Nussbaum-Beach had interestingly mentioned, leadership is no more the case of “do it because I say so mentality” or a “do it because I am so awesome that I inspire you to participate mentality” or “do it for the team mentality.” Instead, as she put it (Nussbaum-Beach, 2010a):

There will be a realignment of power and authority from individuals to groups. Brave superintendents and principals will learn to release personal authority and instead develop capacity in their faculties to use their newly gained personal power in ways that enhance the value of the whole. Teachers need to see school change as a collective endeavor that they no longer can abdicate to formal leadership. In a learning community, leadership becomes the right and democratic duty of each individual in the school and in the transparent venue of learning together in the presence of others - excuses, laziness, and blame for why change isn't managed effectively or truly effective innovations aren't implemented isn't tolerated.

And since there is shared purpose by those in the educational community, there should emerge committed work by all. Noted Nussbaum-Beach (2010a):

There is a common purpose – the difference is that the common purpose is owned by more than one leader.

Let's say that I am in your school. You and I start thinking about a particular answer to an issue (improved writing scores). We do our homework and develop an action research piece that really could give us the feedback on whether this intervention would work. We implement in our classrooms. Because our formal admin believes in distributive leadership he isn't threatened that this isn't his idea and when we come to him with data we'd like to share at the faculty meeting he is supportive. He knows we will bring the school community into the discussions– of which he is a part.

We present our idea and our research backing that it worked in our classrooms. We suggest that we all start discussing and reflecting and sharing and pushing the ideas around — because it is a shared leadership culture several in the school community who have talents you and I do not offer to do this or that to make it stronger. Others are willing to roll up their sleeves and say – I will be the CEO of this piece (say communicating the idea to parents) and another says well I will lead and do everything related to this (preparing the materials to use with kids on the web). In the meantime others offer to try the strategy with their students and

bring their data back to the next meeting. The administrator volunteers to do his part (which is not overseeing and approving as that will be a collective decision — but real work). Some will take this to global community too and see what ideas and feedback they can get from the network and bring that back. Some will have resources in the community to bring. Everyone will lead from their strengths and passion.

In a culture of shared leadership folks are not going to quickly dismiss ideas rather they will be discussed overtime. Usually, power has a lot to do with what is tabled and what is taken seriously in the way schools are currently structured. That will not be an issue in a shared capacity.

Finally, it may be worth pointing out that even when technology integration in the classroom process necessitates collaborative or shared leadership style, some parties may find it very hard to accept. This is understandable: school heads and top administrators in the institutions of higher learning have the fear that if they empower their teaching staff things could get out of control. This is very similar to the belief that teachers have on empowering their students. As for the political executives and top administrators from the concerned federal ministries, departments and agencies, the collaborative or shared leadership would be out of the ordinary for they are used to a Malaysian administrative context largely marked with subordinates coming from the educational institutions following their instructions without raising even a single question.

But, from discussion above on the various issues such as internet access and new additional skills or literacies for the students which are part and parcel for bringing technology into the classroom learning experience, it appears that all of those parties from within and outside the educational institutions occupying the seats of power or authority have no other choice: they have to make an intentional shift in culture whereby replacing the top down leadership mentality for a collaborative or shared leadership model. There is also perhaps another reason for doing such a shift. That is, with the presence of new learning mentioned earlier which gives primacy to the idea of collaboration among learners in a learning network or environment, the leadership style that fits in with such learning mode within an educational institution cannot perhaps be anything other than collaborative or shared type. Such consistency between the leadership style (where all need to come together to lead since none is bestowed with complete knowledge and understanding) and the learning mode (where all learn best together) should strengthen the belief of all parties that the path of collaboration is indeed the right one for them. This can only mean greater probability for success in integrating technology with the Malaysian classrooms.

All in all, much sacrifice shall perhaps be needed from all concerned when parties in the position of leadership are now asked to identify with their subordinates as peers. But, as long as there is a clear understanding that Malaysia today may not find it easy to compete with others without its education landscape bringing in the internet into the classroom learning experience, no sacrifice shall perhaps be of too much to make. The internet has made it a necessity for Malaysians to change. Change agents are who we need to be. Leaders and followers designation have become of secondary importance. That is, under the Malaysian

sun, each and everyone associated with the educational institutions is playing the role of collaborating with others as equal members of communities to pursue the path of redefining teaching and learning and leveraging upon Web 2.0 tools in doing so.

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## Appendix A

### The Meaning of Technology in Education

Learners need technology! They are bombarded with technology on a daily basis. We should say that they are technological natives. We, the adults, on the other hand shy away from the use of technology. We should say that we are technological tourists. How can an educator educate a learner using only talk, chalk and the occasional technological device and expect to inspire/challenge a learner who multi-tasks with technology 24/7!

Comment made by Peplar-Chambers (2010) to a March 2010 blog post by Siemens

Personally, I'm well past asking "is technology effective in education". That question has been answered satisfactorily. Today, I'm focused on questions like "How do we best use these tools for learning? What systemic changes are required to enhance effective learning? What are the new skills learners need in order to succeed?"

Connectivism guru Dr. George Siemens in his early September 2007 blog post (Siemens, 2007d)

I think we stand at a precipice of an educational revolution akin to the Renaissance. The invention of the printing press, combined with other factors, changed the mechanics of education. I believe the Internet, combined with ubiquitous connected individual, will have a similar impact on education. I look at the simple Blackberry device as foreshadowing the revolution. This simple device has had a significant impact on how we do business. It is one of the key factors working to obliterate the 9-5 day in the informational work world.

A short time ago I was able to participate in 3 online classes at a school I have never been to, with teachers I have never met, with students all over the globe, on a cruise ship in the middle of the Atlantic Ocean. This is a glimpse of just one facet of the future of education.

Recent articles in the news magazines talk about the rewiring of the connected person. They are more capable of multi-tasking than comparable people of a generation ago. We are adapting to the nearly limitless amount of information, and instantaneous communications. Parents, teachers, and children must adjust to this trend or be like the Neanderthals.

This is the future I see as already here.

Comment made by David (2007) to a June 2007 blog post by Siemens

Teachers, who are passionate about learning and view other learners as partners in the learning process, realize the value of using technology in blended learning. Combining face-to-face and technology helps engage the teacher and students into a learning community where everyone benefits and grows into a lifelong learner. Learning is becoming relationship-based or a huge learning network.

Dr. Nellie Deutsch in her August 2008 blog post (Deutsch, 2008b)

He says that computers alone aren't enough. Applications that engage students are also critical. He cites two schools in the U.S. where iPads were given to all students, allowing them to become more interactive in their learning.

Digital technology also allows for personalized or individualized learning. Students can work at their own pace with online tutors and videos featuring, for example, master teachers from anywhere in the world. He cites a school where iPods are used to monitor each student's reading performance.

Murdoch sees technology as a means to expand the walls of the classroom, bringing the best learning resources to all the children of the world, regardless of where they're located.

Dr. James Shimabukuro in his article posted on the 7 June 2011 edition of the online journal *Educational Technology and Change* which is concerned with the speech made by Rupert Murdoch, chairman and CEO of News Corporation, on "Digital's Next Frontier: Education" at the e-G8 Forum, "The Internet: Accelerating Growth," which was held in Paris, 24-25 May 2011 (Shimabukuro, 2011d)

Problem solving is enhanced by learning how others are trying to solve similar problems. If we can teach students, educators, parents, donors, to constantly learn from on-line knowledge, and use their learning to innovate their own solutions to local problems, I think we can move to a new level of problem solving. If we're just innovating with the experiences of our own life, or what other people in the room offer, we're always going to be limited in our solutions.

Comment made by Bassill (2009) to an August 2009 blog post by Nussbaum-Beach

"In the dawning knowledge age, how well we live will depend on how well we learn," said the 24th Governor General of Canada, Ray Hnatyshyn, in the 1991 Speech from the Throne. Little did we know that with the arrival of Web 2.0 this statement would become the silent concern of every knowledge worker on the planet. It's not for nothing that *Time* magazine named YOU, person of the year in 2006 and that *Wired* magazine claims we are in the age of new socialism. Web 2.0 seems to be placing the power in the hands of the individual, while being self-propelled and digitally-savvy may be the most important meal-ticket of the future. The endless flow of connective knowledge is picking up strength, and finding our place in the chaos can be disorienting, noisy, tiresome and may even leave us feeling a little obtuse. So how can we harness the power of digital networks and Web 2.0 tools to thrive in the possibilities?

Ask a 10 year old who Catherine de Medici was and they will be able to Google it within minutes. But more than easy access to information, the evolution of Web 2.0 is providing a stage for anyone to express a digital presence and contribute thoughts and opinions. Not unlike the Renaissance, the technological revolution is making the individual the central element of importance in his or her own development. But are we changing our learning strategies as a result? And if we are not, should we?

Melanie L. Sisley in her article published for the March 2011 issue of the online journal *eLearn Magazine* (Sisley, 2011)

The digital world with iPads and ebooks and the vast amount of stored skills and knowledge on the Internet may bring about a change in the way we design and think about education. We have glimpses of what that new world of learning might be, but so far we have just tinkered around the edges of the old system.

We are in an age of major change. We can bring learning to all the world's children if we seek to use the new technologies. Essential to such changes, the wearable eyeglasses on a personal level and the electric light remain major players. We can bring the skills of reading and writing to all children. We can create digital libraries that include video lessons of building a human habitat on Mars or step-by-step repair of a motorcycle.

The change is upon us with digital technologies. The question is whether we will have the wisdom to break away from traditional schools to create true learning environments for all children around the world. Or whether we remain tied to yesterday's dreams. The challenge is up to you to design, develop and create learning uses for our new tools. Some visionaries like Rupert Murdoch see the software industry as a gold mine to be exploited. I see the change as a chance to provide all the world's children a viable education.

Where will you be in this changing revolution?

Dr. Frank B. Withrow in his article posted on 8 June 2011 issue of the online journal *Educational Technology and Change* (Withrow, 2011b)

## Appendix B

### Challenges to Learning and Leadership in the Internet Change Era

#### *Portugal*

In Portugal, as mentioned Siemens in his March 2010 blog post (Siemens, 2010b), the country is approaching at 2:1 computer student ration, though at younger levels, it is closer to 1:1. Siemens (2010b) also disclosed that the preliminary research by the country's Technology Plan for Education Observatory shows that students are heavy users of computers, but not for education; teachers make limited use of computers and other technologies in class; parents are limited computer user; and, teacher training is lacking in utilizing computers effectively in classrooms. Also, many students are helping teachers with setting up computers, using the whiteboards, and other technical tasks. Other concerns arise as to the physical set up of the classrooms such as classrooms now requiring curtains or blinds to reduce screen glare and that most classrooms are not equipped with sufficient power outlets for recharging laptops. Finally, Siemens (2010b) pointed out that as noted an external expert on the Scientific Committee of the Technology Plan for Education Observatory, for a successful national laptop roll out, practical concerns of this nature cannot be overlooked.

#### *Cyprus*

Cyprus is a small island in the Mediterranean. It is an EU member state since 2004. Approximately 7 percent of its GDP is spent on education.

Founded in Nicosia, the capitol of Cyprus, in 2004, the Center for the Advancement of Research and Development in Educational Technology (CARDET) is a non-profit research and development organization devoted to next-generation education, innovation, and social reform. Over the last three years, as reported by Vrasidas (2010), CARDET has led three large-scale evaluations of the use of ICT by K-12 (child and young adult education) teachers in Cyprus and the effectiveness of existing professional development programs. In May 2009, a large-scale survey was conducted to examine how teachers use technology in the classroom and what challenges they face.

The instrument was administered to a sample of 1,051 teachers using stratified sampling procedures - the total population of primary school teachers in Cyprus during 2008-2009 was 4,150. The response rate of the questionnaire was 50.5 percent (531 out of 1,051). The survey was part of the project OnlinePD (funded by the Cyprus Research Promotion Foundation, the EU and the Republic of Cyprus). It is noticeable that the results of the survey are in alignment with international studies conducted by CARDET and its partners in more than 20 countries.

Vrasidas (2010), the co-founder and executive director of CARDET, reported that many teachers who participated in the survey used ICT on a daily or nearly-daily basis for the following reasons:

- 72.3% for preparing educational material
- 67.7% for preparing tests and assignments

- 44.8% for preparing lesson plans
- 35.4% used ICT in the classroom

However, few of these teachers prepared activities which specifically required their students to use ICT:

- 15% for playing educational games
- 13.9% for working collaboratively on classroom assignments
- 12.9% for using the Internet to complete school work
- 12.4% for working individually on the computer in order to complete school work
- 6.1% for working on word processing tasks in the classroom

Teachers cited the following factors as barriers to using ICT in their classrooms:

- Extent of the curriculum that needs to be covered during the year (even without the ICT being included) (81.4%)
- Time constraints in integrating ICT in the classroom (71.7%)
- Time required (outside of the classroom) for preparing ICT-based activities (60.4%)
- Availability of infrastructure (53.5%)
- Amount of quality content (50.7 %)
- Lack of in-classroom teacher support (50.2%)
- Lack of participation of teachers in decision making (43.4%)
- Need for professional development (37%)

Note also the following that Vrasidas (2010) mentioned in regard to the time required factor being a barrier to using ICT in the classroom:

Furthermore, since *current curricula* and *school manuals* do not include ICT integration, there is no supporting material for ICT integration for the required learning units. This means Cyprus public school teachers need to spend an inordinate amount of time outside the classroom searching for supporting activities, materials and tools, some or all of which may require adjustments and revisions to fit the needs of students and satisfy curriculum requirements. ... Planning lessons that integrate ICT is a time-consuming activity according to these teachers, which is one of the key reasons there is so little integration of ICT in Cypriot public schools. As one teacher stated during the qualitative part of the study, "These lessons with the use of technology require too much time. I can't just prepare them like that. I need at least one to two days, and I only have time in the afternoons. I need to find materials, web sites, check them thoroughly. Are they going to work out well with my students or not?"

In ending his report, Vrasidas (2010) had this to say:



In order to aid teachers in integrating technologies, more robust professional development programs, as well as appropriate technologies, need to be developed, programs that would provide continuous support to teachers, so they can overcome these challenges and problems. CARDET hopes the survey results spark the integration of ICT throughout the nation's public schools.

### *Africa*

In his late May 2009 blog post, Siemens mentioned a two day face-to-face workshop which took place in Dakar, Senegal and which was organized by the University of Manitoba and the Association of African Universities (Siemens, 2009a). The workshop was concerned with the topic “the challenges educational leaders face in technology integration in African Universities”. In the very same blog post, Siemens delineated numerous challenges that the participants comprising of African university leaders had mentioned. These challenges included the following ones:

- Motivation and incentives: generally, teachers and researchers in African universities are highly motivated in publishing research articles because it helps their careers. Developing elearning content does not offer this motivation. They don't see how developing elearning will contribute to their university career. Should universities pay for content development as an incentive? Or pay a bonus (such as research bonus in some universities)? Content development should also contribute to promotion.
- What should be done to introduce elearning effectively in universities. Generally, there are no strategies put into place. There is also a problem of research. They are used to research (i.e. they are trained to write research papers). But for elearning, there is no training...but they do not have the skills or institutional strategy/support for elearning development. The background and support does not exist for people to do this. Universities should create a plan to support people in developing resources. Training should be continuous. A structure of support is needed that rewards elearning such as how research is rewarded.
- National ICT policies often do not favour the educational sector. Resources are not adequately channelled into elearning. We have frequent educational changes in policy, so it makes planning difficult. Government changes result in changes in policy, which makes it difficult.
- Where policies exist, there is often bad implementation. No enforcement of policies exists. No adequate incentives (such as technical support) and motivations exist to drive policies. Staff do not have adequate time to develop online content. ICT policies cannot be implemented due to work load. Monetary incentives do not exist, and quality assurance processes are not in place. For example, policy of staff development should be done on a gradient and tracked.
- Low level of knowledge of technology by leaders. This produces reluctance to implement technologies.

- Resources are limited. We don't have adequate skills around pedagogy and ICT skills.
- Inadequate infrastructure, low bandwidth, access, and energy (human and infrastructure is low).
- It boils down to habit. There is a human element: people find it difficult to change. Do we need to motivate through coercion?
- Infrastructure: there is instability in the energy sector. We need energy to make this infrastructure work. We need a permanent and reliable energy. Also a problem of computer equipment. In our country we don't have enough computer equipment. Problem of budget and financial resources. Connectivity: we need good connectivity, and we don't have it. It is very difficult for us to connect ourselves to the internet and put courses online and have everyone participate. Physical premises are also a problem (air conditioning).
- There is a genuine need for networking for training, libraries, faculty. LMD (licensed, masters, doctorate) programs need support with technologies. The need is there. But the means and resources are lacking. Counter point: is the will to network really there. We sometimes see networking between Europe and Africa, but not Africa to Africa. Sometimes we have concerns even within the country. We are doing less mentoring.
- In Africa, we talk too much about resources. We need to talk more about inter-continent partnerships. If we have partnerships, why don't we open up more to each other.
- Political commitment is most important (leaders to be dedicated to introduce technologies in education...political will can address problem of institutionalization).
- Human resources – training of new faculty (upgrading skills).
- Funding of educational institutions: need for governments to review the budget and engage in income generating activities and provide services and resources.
- Incentives: people may not be motivated to implement ICT (not interested in the challenges and overcoming challenges). When you ask a staff member to put a course online, he/she will say "I'll put it online, for what purpose? Am I not losing my advantages? Am I going to have allowances for extra hours? Now that I have my course online, everyone has the course...people will not need me anymore and I'll get fired". They should feel part of a big whole. The faculty should set up, with peers, a strategy for development of the institution. University should be an instrument for development. The elements within the university should generate its own resources, and create a system for revenue generation and knowledge development.

### *The United States and Canada*

The United States and Canada appear to face various hurdles in integrating technology with the classroom learning experience. For the United States, three individuals have made it clear what these are.

A former teacher Ms. Mary Burns mentioned in a recent journal article on American teachers' continuing difficulties integrating technology into classroom learning (Burns, 2010). She had pointed out the various causes for such happening: teachers may be overwhelmed by demands of testing; they may not see the value of instructional technologies in their particular content area; they may work in environments where principals do not understand or encourage technology use; and, the types of software most helpful in instruction are not always the types of applications students know how - or want - to use.

She who has worked with teachers in the U.S., Mexico, Caribbean, Asia, and Africa to help them utilize technology to improve student learning further argued that one other cause appears to be the types of technology-related professional development teachers receive. She disclosed that many teachers report that the instruction they receive in technology integration, whether online or face-to-face, is still too focused on learning how to use the software versus integrating it into the teaching and learning process. Next, she concluded:

After 25 years of incorporating technology in the learning space, we still may not have figured out how to do technology-related professional development that helps teachers use computers as part of the instructional process. After 25 years of having computers in schools, we still lack an approach that ensures teachers truly understand the benefits and appropriate uses of computers for instruction and that teachers actually use technology as part of teaching and learning.

This very view that lack of knowledge of the benefits and appropriate uses of computer for instruction is a stumbling block appears to be supported in a recent blog of an American teacher. On two consecutive days' blog posts, the teacher-blogger mrkaiser pointed out the various reasons and excuses that hinder the technology integration in the classroom. In his or her blog post dated 26 April 2011, after describing lack of fund and the law (which leads to a "daunting" list of restrictions) leading to a situation where schools failing to have more technology around, he or she mentioned the following (mrkaiser, 2011a):

This brings us to the biggest road block that keeps technology out of our schools: knowledge. This problem is as simple and as complex as that. A general lack of knowledge on the part of teachers and especially administrators stands as a wall blocking rich technological learning experiences for students around the world.

I don't mean to say that teachers and principals and superintendents aren't smart. That's not the point at all. What I am saying is that many teachers and especially principals and superintendents don't have a sufficient knowledge of two things: first, how to use technology, and secondly, the benefit of doing so in the classroom.

Not knowing how to do something often breeds fear, and when people are scared of something, they often stay as far away as possible. This is the case with technology.

As for the following day blog post (mrkaiser, 2011b), he or she began by saying that "[y]esterday I wrote about what keeps technology from being used, but then I started thinking about the excuses I hear from teachers and why they should never be used." Next, he or she went over a total of eight excuses. These are: I don't know how; I don't have enough time; I

only have one computer in my room, and the labs are full; technology is too expensive for my district; not every student has access to a computer outside of school; everything at my school is blocked! students get rowdy and distracted when working on the computers; and, I learned the old fashioned way, and it worked for me.

Finally, note the following coming from the American Dr. James Shimabukuro, the editor of the online journal *Educational Technology and Change*, in his comment to an article in the journal written by a prominent American educator Bonnie Bracey Sutton (Shimabukuro, 2010b):

With the real-world problems that impact learning staring them in the face, they still don't see.

But don't stop shouting — “Here! Here! There! Over there!” — and pointing to the gaping holes in educational resources, including the lack of broadband access and computers for many of our students.

Yes, we can test these students, evaluatively and “formatively” with IT-based systems, and we can report that the teachers in these under-resourced areas are failing miserably — but we're not addressing the issue.

The issue isn't “a better assessment plan.” *It's resources. Tools to do the job. Teachers and educators need the necessary equipment, funds, and instructional services to do their job. And they need time and compensation, too, to do it.* (Emphasis added.)

As for the United States' neighbor Canada, note the following coming in the form of a response (Robert, 2009) to a blog post of Siemens (2009a) which is concerned with the African experience in integrating technology with the classroom experience:

As a teacher of twenty years in Canada this sounds all too familiar  
[.....]Where policies exist, there is often bad implementation. No enforcement of policies exists. No adequate incentives (such as technical support) and motivations exist to drive policies. Staff do not have adequate time to develop online content. ICT policies cannot be implemented due to work load. Monetary incentives do not exist, and quality assurance processes are not in place. For example, policy of staff development should be done on a gradient and tracked.

Low level of knowledge of technology by leaders. This produces reluctance to implement technologies [.....]

Also, note the following rather depressing remark which appeared in late March 2007 blog post by the Canadian Siemens (Siemens, 2007b):

Our future hope for content, learning, and engagement clashes with our current reality. Too often the illustrations of what is possible centre on only a few illustrations (i.e. the use of blogs or wikis in a classroom). The skills and passion required by educators to use emerging technology are not distributed evenly across the academic community. We stand with a foot in the world of possibility...and a foot in the world of practicality with all its attendant

frustrations and limitations. The hype of a brave new tomorrow is dulled, as it probably should be, by the challenges of today. Our blog/twitter/wiki/podcast/user-generated/vlog/social-networked/distributed/decentralized/mas hed-up hype storm will translate into reality only if we are able to provide relevance today...and accept that implementation will be a function of sharpening our hope against today's reality. History is littered with numerous examples of great ideas that failed due not to validity, but to lack of connection to existing mindsets – essentially not providing a path for the majority to effectively adopt the ideas being espoused.

Later, in the same blog post, Siemens had this to say (Siemens, 2007b):

This is the backdrop of where many of us stand today in our desire to create a better learning environment...a more equitable future. Our unsettled visions of technology as an enabler are buffeted by the reality of today's institutions, society, and what seems to be, an emerging sense of distrust of technology as an academic tool ...

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<sup>i</sup> It seems however a learning network stressing on the currency of information is not good enough on its own. Noted Akune (2011): "Becoming an online networked learner requires much more than searching for people and filtering information. The people in our learning networks must include more than just people who share similar views as we do. We must embrace diversity in the connections that we establish to include people with different ideas who are willing to challenge our opinions and philosophies. It is through these types of connections that we become able to engage in debate and dialogue."

<sup>ii</sup> Based upon what yours truly was told by a trainee teacher who underwent practical training in 2010 at the concerned school.

<sup>iii</sup> In Felt (2010), it is mentioned that the visualization skill is formulated subsequent to the 2006 publication of the rest. The following is also stated in bracket next to the listing down of the skill: E. Reilly, personal communication, Jun 28, 2010.

<sup>iv</sup> It used to be that "knowledge is power"; but, with internet, one is forced to say that "technology is power".

<sup>v</sup> In particular, could it be then that the remark made by Siemens in late May 2009 blog post on challenges faced by African universities in technology integration is also true for the Malaysian universities of today? As stated Siemens (2009a): "Most universities do not have a strategic view of emerging technologies. This is partly due to the rapid change in society and technology. However, the lack of response to what is now a ten year trend, seems to be a failure of current policy approaches. A system is needed that is more adaptive and better integrated with the context of society today."