Although smart devices are intuitive to use and ubiquitous in North America, with global sales reaching over $489 billion according to the IDC (2011), they are nominally capitalized on and difficulties persist in their incorporation into a school-wide educational framework. This is due to the fact that the use of smart devices requires a shift in pedagogy, adjustments to school policy, and broader educator development, which can be very difficult for schools to manage and implement, particularly if resources, experience, and funds are scarce.

E³'s mission is to facilitate the establishment and revision of e-Learning in schools through smart devices, the use of open-source Learning Management Systems (LMSs), and modalities that digital natives expect, and today's global workforce and citizenship require. As such, we provide:

- Feasibility assessments
- IT and infrastructure assessments
- Development and implementation of mobile e-Learning programs
- Guidance on crafting policies and setting attainable goals and benchmarks
- Staff training and development to ensure effective implementation
- Specialized and customizable on-going support
- Interactive and immersive learning environments via *Mindstorm*

With the completion of a Masters in Educational Technology from UBC and 10 years in education and administration, I bring the experience of building mobile e-Learning programs, as well as the supporting policies and frameworks that schools need. I am supported at E³ by a small team of dedicated, experienced designers, teachers, and IT specialists. This consolidated approach means that schools save both time and money during the design and set-up phases of their e-Learning programs, while at the same time they can capitalize on the content area, administrative, and IT experience of our team to ensure the effective and coherent professional training and development of their staff.

We have partnered with *Mindstorm*, specialists in the development and installation of interactive surfaces. This allows us to provide schools with the opportunity to create digitally immersive learning spaces, which will increase the learning opportunities, experiences, and levels of engagement for the students and staff. This

digitally immersive environment is in line with observations by Milne (2007) that today's learners not only expect to access information and spaces, but also to interact with and transform them. As the participation in educational endeavors provides *MindStorm* with exposure and feedback, we have an initial three-year partnership wherein they will cover 25% of our consulting fees and install two interactive areas within a school at no cost. E^3 will work with *Mindstorm* in an ongoing manner to research and refine the capacity of their interactive surfaces with users directly and via mobile devices, thereby generating higher quality user experiences through improved functionality.

Preliminary testing and development has been done, so next we will consult with independent K-12 schools and community colleges in Canada and the United States. We feel that these are ideal first targets, as independent schools and colleges are more flexible and responsive in terms of adopting methods and the allocation of budget funds. These initial testing grounds will allow us to collect data, refine and revise our delivery, and build a base and reputation to move onto individual school boards. At that point, opportunities to expand into other markets will also be explored using the smaller and more flexible international schools to make contacts, employ new staff, and step into the wired-European markets.

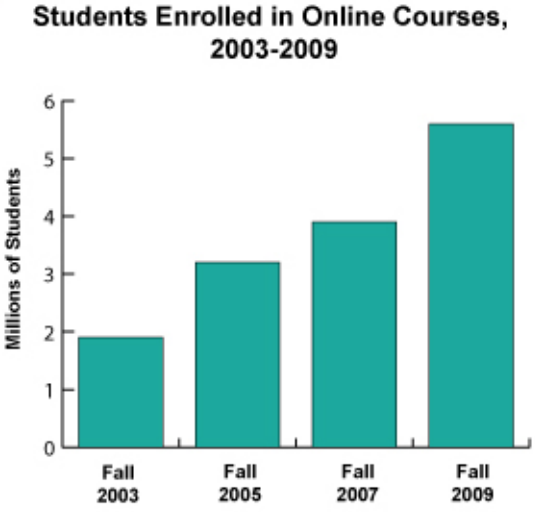
There are a number of potential risks and difficulties associated with e-Learning in general, and also in consulting with educational institutes. Because e-Learning requires significant infrastructure, including capacity for WIFI, bandwidth, and server capacity, inadequately fitted schools would face increased costs when moving to an e-Learning program. This could be further compounded by a lack of IT or network support within schools since the management and development of e-Learning programs would be made more difficult, which could result in a failed program. Although schools may be interested in moving towards e-Learning programs, they may not be open to capitalizing on smart devices due to philosophy, inflexible policies, content filtering, and pressure from parents. If we are unable to secure enough schools interested in using *Mindstorm's* interactive surfaces, *Mindstorm* could withdraw from the partnership early, thereby increasing our costs to schools. From experience, mobile learning programs require access to supporting tools such as computers and laptops within the school and at home, which may be more difficult depending upon the economic background of the learners.

While there are risks associated with any venture, there are also vast potentials, and several recent advances make mobile e-Learning a feasible and lucrative option. First, smart devices can capture, create, transform, and output information in a number of forms, akin to a personal computer (PC). For the first time, sales of mobile devices are outstripping the demand for portable computers, and over 50% of today's youth own mobile devices, as visible in the figure below (Franklin, 2011).

Table 1: Personal Access to Mobile Devices				
Device	**K-2**	**Gr 3-5**	**Gr 6-8**	**Gr 9-12**
Cell phone (without internet access)	21%	29%	51%	56%
Smart phone	16%	19%	34%	44%
Laptop	37%	42%	60%	67%
MP3	37%	55%	79%	85%
Tablet device (iPad)	10%	8%	13%	10%

Second, they support personalized learning and personalized learning environments, simply as a device with the use of Apps and programs like *Symbaloo*, *Moodle*, *Evernote,* and the community of the Net at large. Since schools in their current form are not meeting needs of students, personalized learning on smart devices increases connectivity and relevance. As well, recent increases in cloud computing capacity also facilitates the anytime-anywhere-functionality of mobile learning, as information can be accessed from a number of different sources using such tools as *iCloud*, *Dropbox*, or *Google-drive*.

Furthermore, the increasing enrollment of students in online higher education courses (nearing 6 million in 2009 according to the *Sloan Consortium*) is reflective of the type of students entering post secondary, and a growing market for e-Learning.



With the educational technology market itself being second only to health care according to *Research and Markets*, and given that 150 million smart devices were sold in the first quarter of 2012 (IDC, 2012), the demand for mobile learning will only increase. In conjunction, the drive for professional development and skill-building for educators will also grow to meet this shift away from the industrial model of education. The use of e-Learning hardware and software in schools represents a forecasted $69 billion market in the US according to *Spire Research & Consulting*. As budgets are frequently constrained for schools, the use of a bring-your-own-device (BYOD) model or variants thereof, facilitated by mobile devices means significantly reduced expenditures for the school in terms of managing, purchasing, maintaining, and upgrading large arrays of hardware and software. E^3 aims to capture the portion of this market in terms of the accrued budget savings that schools will have and then need to apply to teacher training and program development. The successful implementation of any form of e-Learning programs ultimately rides on the shoulders of the educators.

A need for development and training is also supported throughout the academic literature. Keengwe & Onchwari (2008) found that in schools where technology is present, teachers often still focus on traditional methods and approaches to teach content. This is likely an outcome of the findings from Kimber, Pillay, & Richards (2002), who found that if teachers do not receive adequate support and training with the implementation of new technologies, they often feel resentful, unwilling to incorporate modalities, and a decreased sense of self worth. Conversely, positive outcomes and associations were connected to educator development and building an understanding of the importance of their role as designers and facilitators (Beyers, 2009). The interactive platforms and professional training necessary for success will be provided by E^3.

A $250,000 investment will be used to create initial digital modules and components, which can be used to train teachers and establish e-Learning programs at schools, as well as data collection, marketing, and revisions to the program during the first year's test phase. We expect to be entering the broader educational market of individual school boards by the end of the second year. Returns of between 8%-25% are then expected within three to five years. We recognize that technology and e-Learning are ever-evolving fields, so ongoing staff training and program development will be funded through revenues generated from E^3 to keep us on the leading edge of 21st century education.

In the end, mobile e-Learning means that schools yield a higher quality learning experience, as they are more relevant, interactive, and engaging, which will help them to attract pupils in a competitive environment. The reduced expenditure also means that resources can be cycled back into the school for further improvements. This will in turn continue to drive the growth of the market for training, program development, and interactivity.

We look forward to a partnership with you as we build the education of the future.

Sincerely,

Dave Horn

Founder & CEO of E^3-consulting

Reference:

Beyers, R.N. (2009). A five dimensional model for educating the net generation. *Educational Technology & Society, 12*(4), 218-227.

Franklin, T. (2011). Mobile learning: At the tipping point. *The Turkish Online Journal of Educational Technology,* 10*(4), 261-275.*

IDC (2012) Nearly 1 billion smart connected devices shipped last year (press release). Retrieved from www.engadget.com/2012/03/28/idc-1-billion-smart-connected-devices-shipped-2011.

IDC (2012). Worldwide smartphone market continues to soar, carrying Samsung into the top position in total mobile phone and smartphone (press release). Retrieved from: www.idc.com/getdoc.jsp?containerId=prUS23455612.

Keengwe, J, & Onchwari, G. (2008). Computer technology integration and student learning: Barriers and promise. *Journal of Science & Educational Technology, 17,* 560-565.

Kimber, K., Pillay, R., & Richards, C. (2002). Reclaiming teacher agency in a student-centered digital world. *Asia-Pacific Journal of Teacher Education, 30,*(2), 155-167.

Milne, Andrew (2007) Entering the interaction age: Implementing a future vision for campus learning spaces. *Educause, January/February*, 13-31.

Mindstorm www.mindstorm.com

Research and Markets (2011). Global education sector and changing trends. Retrieved from www.researchandmarkets.com/reports/1496888/global_education_sector_and_changing_trends

Spire Research and Consulting (2010). A brave new world: The changing landscape of education and technology. Retrieved from http://www.marketsize.com/blog/index.php/category/educational-services

Image: Student online enrollment -- Sloan Consortium Entering the Mainstream: The Quality and Extent of Online Education in the United States, 2003 and 2004. Retrieved from www.sloanconsortium.org.

E^3 logo designed by Dave Horn