Patrick Sebiro
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Collaboration – Academic Excellence – Research – Ethical Research

Final Paper
**Emerging Technologies and Learning**

**Introduction**

In the past years, a focus of my career has been to help people develop new skillset, mainly because job requirements and technologies are constantly changing. As I travelled the country with my slide decks presenting at various conferences or other corporate settings, I quickly noticed a direct correlation between the trainees’ level of commitment to the material and the overall design of the learning. Trainees were more engaged when the learning materials include audios, videos, games, or other fun activities. I came to the simple realization that learning was changing, even for adult learners.

*“No two persons can learn something and experience it in the same way” (Shannon L. Alder Goodreads inspirational quote writer)* and two persons adopting the same concept will argue or support it differently. The EME 6055 has offered a platform in which students were encouraged to exchange ideas via weekly submission. Like most students, I submitted my ideas, they were challenged, and this has shaped my viewpoint on trending technologies and learning.

Not all technologies are effective for all learnings. Adopting a technology to support a learning objective is not a “one size fits all” approach since the audience, subject, cost, scalability, and availability of the technology are also to be considered. My background is in the software industry where the learners are mostly adults, technologically savvy, and often early adopters of new technologies. The number of millennials in my audience is also growing. They enter the corporate scene feeling entitled, lacking in social capital and 21st century skills. They mostly interact with the community via social network.

The current workforce is cross-generational, a mix of gen X, baby boomers, and millennials. This presents a challenge to an instructional design standpoint as each group has different learning need. In the discussion below, I will attempt to explain those differences as it relates to mobile technology in training.

**Future of Training in the Software Industry**

Software companies generate revenues by licensing their products. They gain competitive edge by presenting the market with new and efficient tools. Another major revenue stream for those companies are the post-licensing dealings. Software vendors rightfully so and successfully convince buyers that the product must be configured and implemented uniquely to meet the need of the organization and that end users must be trained beyond the basic features (how to) to use the product effectively and deliver on its promise of better productivity. The type of training they propose go farther than the how to knowledge available on public domains. Those trainings are meticulously designed with clear objectives to support the business. In the software business, 3 types of training are available:

***Public:*** the learning objective is basic. It focuses on the functionalities of the product and explains its interface. It is delivered with the product or via how to videos and user guides available on the internet or other public domains. An example of which include user software tutorials found all over the internet.

***Private:***the learning objective is more focus. The learning materials are designed to support a methodology, a business goal, or how people work. It is a result of hours of consultation with users and businesses. It is specific to the need of a group and available on intranet or private domains.

***Internal:*** the learning objective is more complex. The learning design is branched to cover multiple subjects. It is designed for learners to achieve complex skills and focuses on advanced functionalities and backend structure. Participants in such training often have access to the application source code and business rules and logics. At times, non-disclosure agreement is required to partake in the session. This type of training is commonly referred to as “train the trainer”. It is internal to the software company’s employees.

Software public learning is mostly based on behavioral theory. Learners are taught to accomplish specific tasks using features of the product. Learning occurs when learners successfully exhibit the behavior that is a mastery of the functionalities. The design of private learning blends behavioral and cognitivism theories: how and what. Learners are forced to process sets of information to achieve a particular outcome. Consider the task of designing training for learners to add background image to a document using a word processing or other imagery software. On the public level, the learning objective is straightforward: how to add image to a document. The private learning of the same topic must include the overall design of the document: does the document even warrant a background image? Is the image compatible with the company color, logo, etc...? Do I want similar document to include the same background images, if so how do I configure the software so that the same background image is automatically added to similar document. Learning objective is achieved through internal processing of information. Both public and private design process often use ADDIE. The internal learning design process is more complex, it uses 4C/ID approach and focuses on problem solving. Adding background image to a document is learned by gradually solving problem related to the use of the feature.

In the corporate setting, training is still somewhat formal. A traditional training session includes a classroom, an instructor, slide decks, activities to support the learning and an assessment to measure the knowledge acquired. Depending on the topic, instructional designer are increasingly introducing the use eLearning to deliver materials that learners can review later, thus facilitating time management. Brainshark has now become the leading medium via which those training are delivered. Adobe Captivate and Articulate Storyline are also widely used to design and distribute training via company’s intranet.

From the type of training listed above, public and private are about to change. Last summer, I was invited rather accidentally to join a strategic planning meeting. The purpose of the meeting was to identify and develop strategies for new revenues stream. As the chief technology officer explained: “while our training and implementation team is on track to exceed the revenue target, it is time to rethink the entire concept or the existence of the team”. His words felt like a shockwave and the room went silent. He continued by asking the average number of app each person in the room has on their mobile phone. The audience reached a consensus of 20. He then delivered the blow:” from the 20 apps in your phone, how many times have you been trained to use any of them?” The next generation of software design will use the natural user interface approach. The same approach use to design mobile app, making navigation intuitive and end-user will require less to no training. So what really is the natural interface design?

*In*[*computing*](https://en.wikipedia.org/wiki/Computing)*, a natural user interface, or NUI, or natural interface is a*[*user interface*](https://en.wikipedia.org/wiki/User_interface)*that is effectively invisible, and remains invisible as the user continuously learns increasingly complex interactions. The word natural is used because most computer interfaces use artificial control devices whose operation has to be learned. A NUI relies on a user being able to quickly transition from novice to expert. While the interface requires learning, that learning is eased through design which gives the user the feeling that they are instantly and continuously successful. Thus, "natural" refers to a goal in the user experience – that the interaction comes naturally, while interacting with the technology, rather than that the interface itself is natural. This is contrasted with the idea of an*[*intuitive interface*](https://en.wikipedia.org/wiki/Usability#Intuitive_interfaces)*, referring to one that can be used without previous learning.*

**Mobile Technology in Training**

As a people manager, my position requires that I partake in a yearly situational leadership training. The goal of the training is to understand people well enough to adjust our communication style accordingly. This year, at the end of the training we were given the jewel: a mobile app on situational leadership to help us decide promptly which communication style to adopt when meeting with a direct report. At first I found it daring, but I gave it a try, it helped, and I now use it often. It is just as effective as a book with much better portability.

Across industry, mobile is recognized as one of the most promising technology, it is the game changer. Software vendors are striving to include mobile component while exploring the likelihood of converting existing platforms to mobile. The device mesh has expanded beyond laptop and desktop computers to include smart phones, tablets, and other mobile devices. Even cars and refrigerators are now part of the digital mesh, the internet of things. All these interconnected devices are providing unparalleled opportunities for virtual reality and mobile training.

In the paragraph above, we discussed how mobile technology is used to support learning. It is also used to deliver customized contents, assessments, or quizzes. Mobile technology expands learning beyond the office and helps workers share knowledge freely even via community. As organizations recognize the importance of informal or on-the-job training (OJT), mobile technology is best suited to support this learning format. As it relates to corporate training, mobile technology is still in its introductory phase. It is often used to support trainings with simple learning goals such as company’s policies, safety guides, compliance guidelines, securities, and other trainings. I have not yet to develop a training for mobile platform. The first reason being the complexity of the learning materials I teach. The second is linked to the cost of developing an adequate mobile interface for each training subject. While I have seen e-learning (website) being access via mobile devices, it is not the same as developing full training material for mobile devices (mobile app). Since I mainly train Application Support Analysts, Ideally I would like to introduce a mobile version of our knowledge base. Furthermore, develop a mobile platform to provide the team with troubleshooting tips and techniques as it relates to the most commonly reported issues. The content of the app will automatically refresh as new issues arise. In parallel with the troubleshooting technique the app will also deliver knowledge in forms of “did you know” notifications. For example an issue related to network connectivity, the app could additionally send a notification with the following: “*did you know that the ping command from command prompt or PowerShell can be used to test connectivity between 2 nodes? The syntax is as follow – ping hostname or IP address”* While condensed, this message contents a wealth of information for the trained mind.

Behaviorism and constructivism are learning theories most appropriate to support mobile training. Behavioral theory allows to simplify the learning experience and provide instant, fun, and sophisticated feedback to reinforce the learning process. A festive emoji flying of the screen could be used for correct answers while an opposite visual representation implies wrong answers. In mobile training, knowledge must also be constructed by interaction with other devices i.e. remote access to a server and with other learners via communities accessible through the mobile training interface.

**Pros and Cons of Mobile Technology in Training**

Margaret Driscoll and Angela Van Barneveld of IBM have nicely summarized the pros and cons of mobile learning in the table below. Their findings are the result of studies conducted on drivers and barriers of mobile learning from the dawn of mobile learning (2007) until now (2014). As I previously argued mobile training is mainly use for corporate policies, compliance training, or others and that is tied to point about increasing the distribution of best practices in pros column.

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| --- | --- | --- |
|  | **Pros** | **Cons** |
| 1. | Increase learning access and flexibility  | Cost of development , set up, maintenance |
| 2. | Increase on the job productivity  | IT Security issues |
| 3. | Support organizational change, speed contend delivery | Unreliable Infrastructure of communication |
| 4. | Increase the reach of learning solutions | Difference in learner’s preferences (screen too small) |
| 5. | Increase sharing of good practices | Complex to support  |
| (Applying Learning theory to Mobile Learning – Margaret Driscoll and Angela Van Barneveld 2/27/2015 IBM) |

Implementing a mobile training is an organizational wide effort. It requires an up to date communication and network infrastructure to be reliable. One major benefit of mobile training is that content can be made available offline but that will require the use of a mobile app.

**Recommendations**

Mobile learning is costly to implement. While the design of the instruction is the responsibility of the instructional designer, access the knowledge and the reliability of it require a robust IT infrastructure. When it comes to mobile training, 2 approaches can be used seamlessly: mobile website and mobile app, both offer the same benefits. Unless the mobile application is developed for a specific purpose, mobile website is the less costly alternative. A mobile website is a website designed for smaller screen and touch-screen capabilities of mobile devices. It supports mobile browser and can offer native functionalities of a mobile app. More so, mobile site can be accessed immediately and by many while an app must be distributed, installed, updated, and deleted.

In the planning phase of designing instruction for mobile training, a decision must be made as to the delivery method. This decision is informed by the objective of the training, the maturity of the training program, the audience, and the IT infrastructure. It is my recommendation that nascent mobile training program uses website as it is cost effective. Moreover, most instructional designer are skilled web designers.

**Sources:**

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