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CHOOSING THE RIGHT PLATFORM FOR MOBILE LEARNING

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1. Introduction

Mobile devices are reaching new levels of sophistication today. The growth and penetration of mobile communication technologies, with up to 4.5 billion expected subscribers in 2012, has determined a scenario where users can access the Web directly from their mobile devices [11, 12]. Mobile devices, like smartphones and tablets are likely to become the favorite platform of connecting, interacting and sharing information with other people. They are increasingly being used for functions other than making calls and texting, such as e-mailing, collecting and managing multimedia, playing games, browsing the Internet, and performing many other business and personal tasks. The latest mobile devices cover miscellaneous functionality in many areas, such as entertainment, personal management, social activities. One specific area of their application is Mobile learning.

2. Mobile Learning

Mobile learning, or mLearning, is the intersection of mobile computing (the application of small, portable, and wireless computing and communication devices) and e-learning (learning facilitated and supported through the use of information and communications technology) [2, 7].

Mobile learning through the use of wireless mobile technology allows anyone to access information and learning materials from anywhere and at anytime [4, 8]. Learners have control of when they want to learn and from which location they want to learn. Mobile learners do not have to wait for a certain time to learn or go to a certain place to learn. Such learners do not have to learn what is prescribed to them. They can use the wireless mobile technology for formal and informal learning where they can access additional and personalized learning materials from the Internet or from the hosting organization.

Many benefits for the learners, educators and authors of learning content have been identified [1, 3, 9]:

Benefits for the learners:

- Accessing information when it is needed anytime and anywhere;
- Tracking learning using personal portals and viewing transcripts;
- Watching streaming videos;
- Listening to podcasts;
- Acccessing unstructured learning with wikis and blogs;
- Engaging in testing and surveys;
- Receiving mobile reminders and notifications;
- Keeping the learning content.

Benefits for the authors of learning content:

- Special mobile authoring environment;
- Create once and publish to multiple devices;
- Create and deploy mobile assessments and surveys;

- Ability for real time updates on product information;
- Create and manage blogs for multiple products and audience;
- Real time update on information;
- Create expert support forums.

Mobile learning has become common practice not only among universities and schools, but in governmental and business organisations too [6]. Numerous research results confirmed that learning and teaching can be extended to anywhere and anytime. Mobile learning goes beyond the limit of computer desks, classrooms, and campuses. Researchers show that mobile learning is very popular among students and potential learners. Many new courses have been adopted the mobile learning platform to enhance learning. Mobile learning is the platform that can greatly enhance collaboration and group activities. Due to its special features mobile learning continuously attracts attention from educators and trainers.

A lot of researchers are exploring new ways of utilizing mobile technologies coupled with prooved instructional and pedagogy theories to leverage the potential of mobile learning. The use of mobile technologies and digital media to support learning also requires reforming educators and learners' thinking and practices on how to design learning courses compatible for dissemination on mobile platforms. This also requires for adequate mobile learning tools to support to the instructional designers and teachers working on the learning course content.

3. Choosing the right platform for mobile learning

Various challenges associated with delivering learning content on mobile devices create barriers in adoption of m-learning by organizations [5]. The biggest challenge is devices working on varying platforms and supporting different formats. There is no formal standard to ensure the adoption of content on different devices. The screen size of most devices makes it difficult for users to go through a lot of content. Other challenges include connectivity and bandwidth issues, concern for content security, difficulty in integrating devices to learning management systems, and high costs of designing programs compatible with different devices.

Tablets are the ideal e-learning platform. Smartphones are also suitable for video content, but perhaps a bit small for a comfortable e-learning experience with interactive content [10].

The learning on mobile devices can be delivered as an application or in web-page format. Applications have the advantage that they can be downloaded and stored locally from the relevant application store (iTunes or Android market) for use offline. Apllications make are designed with advanced programming languages, that enable more sophisticated interactions and animation, compared with the relatively limited HTML5 environment for browser based mlearning. They can also interface with mobile specific hardware like GPS for determining location and built-in camera to enable highly sophisticated learning applications, for example, involving augmented reality [4, 10]. Currently applications are relatively expensive to produce, but new authoring tools are beginning to appear to change this quickly. Web-based learning content can be delivered on tablets or smartphones. However, content in Flash format is not supported on iPhones and iPads and it accounts for a very large proportion of existing e-content since it is the prefered publishing format for most of the mainstream authoring tools.

Hardware characteristics/number of the mobile divices and functionality/number of applications are another important factors to account for when choosing a platform for mobile learning. Nowadays the dominant mobile platforms are Google's Android, Apple's iOS and Microsoft's Windows Phone, although there some other small players on the market. Conducted analysis and comparisons can be summarized in the following table [14]:

Table 1. Comparison between Android, iOS and Windows Phone

Functionality	**Android**	**iOS**	**Windows Phone**
Number of devices	100s	11	20
Number of applications	➢ 380 000	➢ 500 000	➢ 43 000
Applications optimized for tablets	100s	140 000	n/a
4G networks	LTE, HSPA+, WiMax	HSPA+	HSPA+
Voice control	commands / transcription	natural language / transcription	commands / transcription
Cloud integration	3rd part apps	iCloud	SkyDrive
Multitasking	+	+	+
Search	Google	Google, Yahoo, Bing	Bing
Dual core devices	many	2	0

Android is the most customizable mobile platform targeted for use with many different hardware vendors; iOS is a rather closed system which restricts customization and is tightly bound to one hardware manufactirer only; Windows Phone is trying to find its identity on the market.

The tendencies for developing specific applications and content for mlearning, related to different mobile platforms, are shown on the following figure according to conducted numerous surveys [13]:

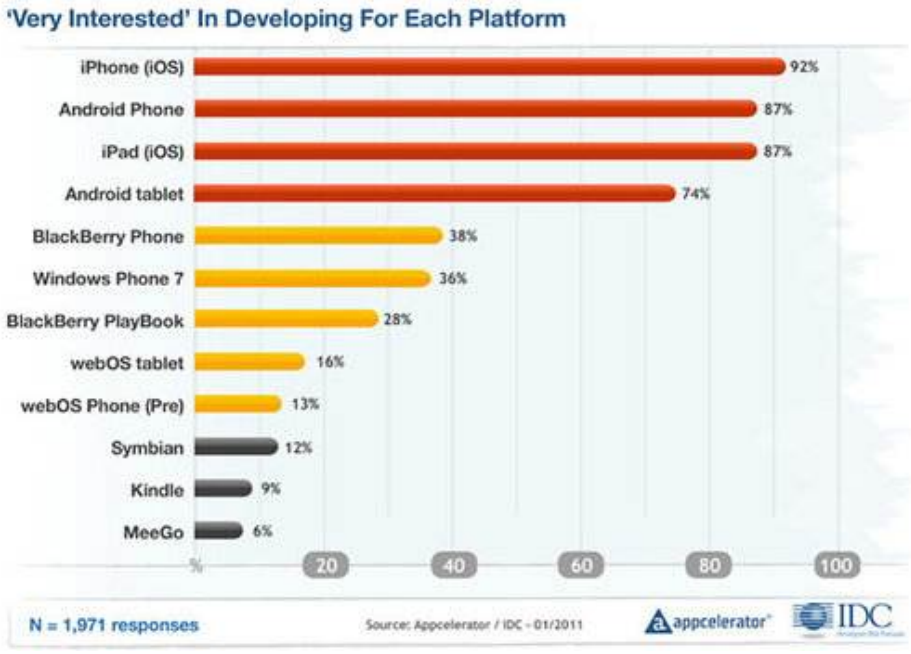

Fig. 1. Attitude for developing applications for mobile platforms.

Evidently there is not a clear winner between the first two main platforms – Android and iOS. From sales' perspective Android leads in the market share, but on the otther side the iPhone and iPad are currently the best selling mobile devices. In the following several years they will be the predominant systems to choose from.

4. Conclusion

The increasing use of mobile devices and wireless connectivity provides for the possibility mobile learning to engage a growing number of learners. Since there are several existing options, perhaps the decision for choosing a suitable platform for mobile learning will depend on many factors, the main of which should be the price of mobile devices, level of acception in the public, hardware features and options for developing mobile learning applications and content.

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