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Abstract—Mobile learning is the use of any mobile or wireless device for learning on the move. It is any service or facility that supplies a learner with general electronic information and educational content that aids their acquisition of knowledge, regardless of location and time. Mobile learning systems should be capable of delivering educational content to learners anytime and anywhere they need it. Mobile learning, as a novel educational approach, encourages flexibility; students do not need to be a specific age, gender, or member of a specific group or geography, to participate in learning opportunities. Restrictions of time, space and place have been lifted.

Index Terms—Mobile technologies; platform; mobile operating system; applications.

I. INTRODUCTION

Since the 1970s, an approach to education has been articulated that neither embraces nor challenges institutional education, but is complementary to it. The approach, of lifelong learning, has gained currency through attempts to harness it as a means of providing people with the knowledge and skills they need to succeed in a rapidly changing world. [1] In future, learners need not be tied to particular locations. They will be able to study at home, at work, or in a local library or shopping centre, as well as in colleges and universities. People will be able to study at a distance using broadcast media and on-line access. Our aim should be to help people to learn wherever they choose and support them in assessing how they are doing and where they want to go next.

The basic premise of lifelong learning is that it is not feasible to equip learners at school, college or university with all the knowledge and skills they need to prosper throughout their lifetimes. Therefore, people will need continually to enhance their knowledge and skills, in order to address immediate problems and to participate in a process of continuing vocational and professional development. The new educational imperative is to empower people to manage their own learning in a variety of contexts throughout their lifetimes. [2]

There is no accepted definition of lifelong learning and the term has been interpreted in The Learning Age as the training of a workforce capable of adapting to a rapidly changing world. This paper takes a broader and more humanistic view of lifelong learning, as an extended and holistic process of developing skills and understanding.

The abilities, approaches and tools for learning that a person gains from childhood onwards provide a context and resource for learning and performing in

later life. Mobile technologies enable students to become more adaptable to flexible and contextual lifelong learning, a situation defined [3] as the “knowledge and skills” people need to prosper throughout their lifetime. Clearly, these activities are not confined to specified times and places; however, they are very difficult to achieve through traditional education channels. Put simply, mobile technologies fulfill the basic requirements needed to support contextual, life-long learning by virtue of its being highly portable, unobtrusive, and adaptable to the context of learning and the learners’ evolving skills and knowledge.

II. SYSTEMS, FEATURES, LIMITATIONS

There are many factors that play a part in mobile strategy, such as team’s development skills, required device functionality, the importance of security, offline capability, interoperability, etc., that must be taken into account. In the end, it’s not just a question of what the app will do, but how you’ll get it there.[4]

Each development scenario has its pros and cons, and those might in be inline, or at odds, with your means. There are three types of apps:

Native apps are specific to a given mobile platform (iOS or Android) using the development tools and language that the respective platform supports (e.g., Xcode and Objective-C with iOS, Eclipse and Java with Android). Native apps look and perform the best.

HTML5 apps use standard web technologies – typically HTML5, JavaScript and CSS.

This write-once-run-anywhere approach to mobile development creates cross-platform mobile applications that work on multiple devices. While developers can create sophisticated apps with HTML5 and JavaScript alone, some vital limitations remain at the time of this writing, specifically session

management, secure offline storage, and access to native device functionality (camera, calendar, geolocation, etc.)

Hybrid apps make it possible to embed HTML5 apps inside a thin native container, combining the best (and worst) elements of native and HTML5 apps.

Native Mobile Applications. Native apps are usually developed using an integrated development environment (IDE). Integrated development environments provide tools for building debugging, project management, version control, and other tools professional developers need. While iOS and Android apps are developed using different IDEs and languages, there's a lot of parity in the development environments, and there's not much reason to delve into the differences. Simply put, you use the tools required by the device [5].

You need these tools because native apps are more difficult to develop. Likewise, the level of experience required is higher than other development scenarios, you don't just cut and paste Objective-C and expect it to work. Indeed, the technological know-how of your development team is an important consideration. If you're a professional developer, you don't have to be sold on proven APIs and frameworks, painless special effects through established components, or the benefits of having your code all in one place. Let's face it, today a skilled native iOS or Android developer is a rock star, and can make rock star demands.

HTML5 Mobile Applications. An HTML5 mobile app is basically a web page, or series of web pages, that are designed to work on a tiny screen. As such, HTML5 apps are device agnostic and can be opened with any modern mobile browser. If you have experience developing Web apps, you'll take to HTML5 like a duck to water. If you're new to Web development, the technological bar is lower; it's easier to get started here than in native or hybrid development. Unfortunately, every mobile device seems to have their own idea of what constitutes usable screen size and resolution, and so there's an additional burden of testing on different devices. Browser incompatibility is especially rife on Android devices, so browser beware [6].

An important part of the "write-once-run-anywhere" HTML5 methodology is that distribution and support is much easier than for native apps. Need to make a bug fix or add features? Done and deployed for all users. For a native app, there are longer development and testing cycles, after which the consumer typically must log into a store and download a new version to get the latest fix.

In the last year, HTML5 has emerged as a very popular way for building mobile applications. Mul-

iple UI frameworks are available for solving some of the most complex problems that no developer wants to reinvent. iScroll does a phenomenal job of emulating momentum style scrolling. JQuery Mobile and Sencha Touch provide elegant mobile components, with hundreds if not thousands of plugins that offer everything from carousels to super elaborate controls [7].

Hybrid Mobile Applications. Hybrid development combines the best (or worst) of both the native and HTML5 worlds. We define hybrid as a web app, primarily built using HTML5 and JavaScript, that is then wrapped inside a thin native container that provides access to native platform features. PhoneGap is an example of the most popular container for creating hybrid mobile apps.

For the most part, hybrid apps provide the best of both worlds. Existing web developers that have become gurus at optimizing JavaScript, pushing CSS to create beautiful layouts, and writing compliant HTML code that works on any platform can now create sophisticated mobile applications that don't sacrifice the cool native capabilities. In certain circumstances, native developers can write plugins for tasks like image processing, but in cases like this, the devil is in the details [8].

Application's features

	Native	HTML5	Hybrid
App Features			
Graphics	Native APIs	HTML, Canvas, SVG	HTML, Canvas, SVG
Performance	Fast	Slow	Slow
Native look and feel	Native	Emulated	Emulated
Distribution	Appstore	Web	Appstore
Device Access			
Camera	Yes	No	Yes
Notifications	Yes	No	Yes
Contacts, calendar	Yes	No	Yes
Offline storage	Secure file storage	Shared SQL	Secure file system, shared SQL
Geolocation	Yes	Yes	Yes
Gestures			
Swipe	Yes	Yes	Yes
Pinch, spread	Yes	No	Yes
Connectivity	Online and offline	Mostly online	Online and offline
Development skills	ObjectiveC, Java	HTML5, CSS, Javascript	HTML5, CSS, Javascript

On iOS, the embedded web browser or the UI-WebView is not identical to the Safari browser. While the differences are minor, they can cause debugging headaches. That's why it pays off to invest in popular frameworks that have addressed all of the limitations.

Mobile development is a constantly moving target. Every six months, there's a new mobile operating system, with unique features only accessible with native APIs [9]. The containers bring those to hybrid apps soon thereafter, with the web making tremendous leaps every few years. Based on current technology, one of the scenarios examined in this article is bound to suit your needs. Let's sum those up in the following table.

III. STATEMENT OF THE PROBLEM

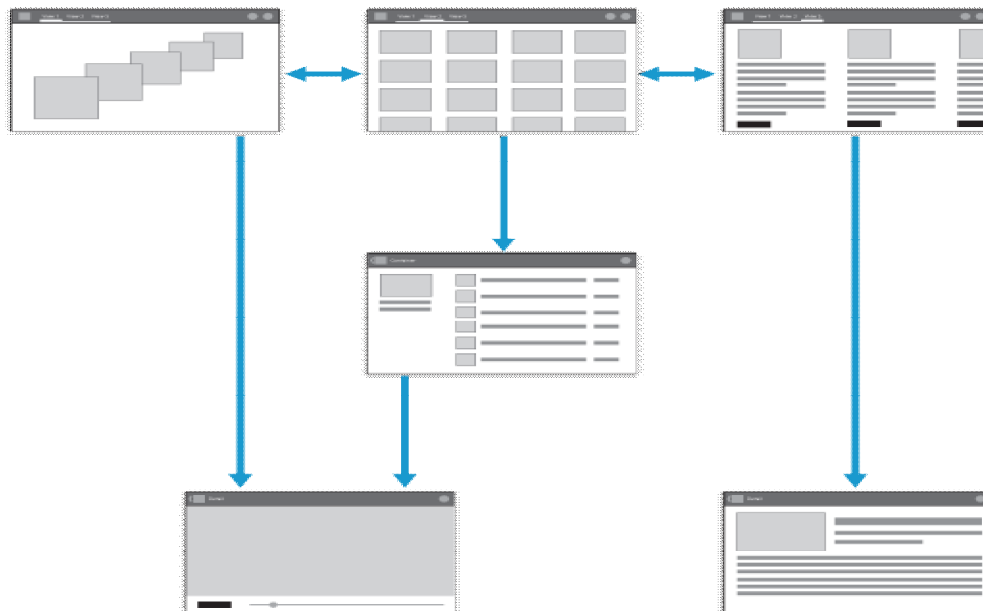
Literature Last 10 years have been great for mobility. There has been a consistent shift from web based applications to mobile apps development.

Branding, growth, marketing strategies are all connected to development of mobile apps. Delivering mobile apps, which can create the value for global audience is a challenging task and mobile app developers must have constant attention to technology shifts, global business trends and user inclinations [10].

Mobile app development revolves around the idea / concept and this moving to development before completing the tasks on the drawing board can cost dearly. As a professional mobile apps developer, one must give proper attention to drawing details, product outcome and target audience. This is certainly important to stay ahead of competition.

IV. GENERAL STRUCTURE

A typical application consists of top level and detail/edit views. If the navigation hierarchy is deep and complex, category views connect top level and detail views (Figure).



General structure schema

The top level of the app typically consists of the different views that your app supports. The views either show different representations of the same data or expose an altogether different functional facet of your app. Category views allow you to drill deeper into your data. The detail/edit view is where you consume or create data [11].

V. CONCLUSION

The challenges facing the deployment of mobile phones to support teaching and learning are social. The literature suggests if those challenges could be met then a positive change could occur in secondary schools. The advantages of using mobile phones for

teaching and learning are endless despite of the drawbacks that these tools bring. Like other technologies in the world, there are benefits as well as the disadvantages. It depends on how we use it; if we use it wisely, the outcomes will be positive.

There is a risk reward ratio with any technology utilization. It is the same with mobile phones, although there are risks in the use of mobile phones in education, but the reward is great if we use it sensibly. There are things which are usually seen as something negative, but when applied positively to the advantage of the school it can bring positive impact. This is true with the case of mobile phones. As a conclusion, it appears that it is a long way ahead to

implement mobile learning via mobile phones, but with a proper study and plan, the integration of mobile phones as part of technology application in mainstream schooling will become a reality.

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Мобільне навчання є використання будь-якого мобільного або бездротового пристрою для навчання на ходу. Це може бути будь-який пристрій або пристосування, яке забезпечує учня загальної електронної інформацією та освітнім змістом, що допомагає придбання знань, незалежно від місця і часу. Мобільні системи навчання повинні бути здатні забезпечувати освітнім змістом учнів у будь-який час і в будь-якому місці, коли вони потребують цього. Мобільний навчання, в якості нового навчального підходу, заохочує гнучкість; студенти не повинні бути певного віку, статі, бути членами певної групи або проживати в одній місцевості, щоб мати можливості для навчання. Обмеження часу, простору і місця були зняті.

Ключові слова: мобільні технології; платформа; мобільні операційні системи; додатки.

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Мобильное обучение является использованием любого мобильного или беспроводного устройства для обучения на ходу. Это может быть любое устройство или приспособление, которое обеспечивает ученика общей электронной информацией и образовательным содержанием, что помогает приобретению знаний, независимо от места и времени. Мобильные системы обучения должны быть способны обеспечивать образовательным содержанием учащихся в любое время и в любом месте, когда они нуждаются в этом. Мобильное обучение, в качестве нового учебного подхода, поощряет гибкость; студенты не должны быть определенного возраста, пола, быть членами определенной группы или проживать в одной местности, чтобы иметь возможности для обучения. Ограничения времени, пространства и места были сняты.

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