

Developing a Mobile Application to Support Student Learning during Clinical Rotations



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Session Objectives

At the successful completion of this unit, the participant will be able to:

1. Select the appropriate mobile application environment, given the current options available.
2. Develop a system to collect and organize the appropriate content and utilize the system to publish the learning objects to the platform.
3. Assess the instructional efficacy of and user preferences for the mobile application tool.



Disclaimer

- This presentation focuses on creating an app for educational purposes for a specific targeted group of learners. It is not meant to guide the audience on making an app for greater distribution or sale.
- The presenters do not promote any specific mobile app development tool. New relatively affordable development tools are becoming available and all options should be thoroughly reviewed to be sure it meets your project goals.



What is a Mobile Application (App)?

Application / software designed to run on a **mobile device** (smartphone or tablet)

- Mobile application operating systems (OS) include: iOS Platform by Apple and Android OS Platform by Google
- Apps not preinstalled in the device are available through app stores (distribution platforms)
- Two main distribution sites: Google Play for Android and App Store for iOS



What is different about the Mobile Environment?

1. **Smaller screen with fewer pixels** (much less information visible on one screen)
 - Requires scrolling
 - Important info near top of page
 - Easily read font
 - Sparser, simplified content
2. **Portrait Screens (default)**
3. **Slower processors** (simpler pages will load more quickly)
4. **Less bandwidth** (avoid large graphics and embedded videos)
5. **Touch input**

What is a WYSIWYG App Platform?

WYSIWYG – “What You See is What You Get” (aka WYSIWYM- “what you see is what you mobilize”)

Determining Factors

- Cost
- Content Creation / Ease of Use
- Level of Expertise Required
- Number of users
- Number of Platforms

Company	URL	Subscription
Appy Pie	http://www.appypie.com/	\$30 / month
Biznessapps	https://www.biznessapps.com	\$42 / month
iBuild App	http://buildapp.com/	\$40 / month
Ionic	http://ionic.io/products/creator	\$24 / month
Snappii	https://www.snappii.com/search	\$50 / month



Step 1a: Set your Goals

- What goals and objectives do you want to meet with the mobile app? (Prioritize these goals)
- How will it add to the learning experience?
- What is your target audience?
- How many users?
- What platforms are available to those users?
- How will you assess its use?



Step 1b: Map the Project (App Development)

1. There are approximately 8 general steps required to develop and launch an app
2. An app development team should be assembled which would map each step and the assigned responsibilities for all aspects of the project
3. In addition, considerations should be discussed regarding app maintenance and sustainability



Steps 1-2: Mapping our goals, project, & curriculum

Problem: EOR exam scores were dropping and practicum students said the content information was not accessible and/or was disconnected from the benchwork (in time and space).

Goals:

1. To increase the EOR exam scores
2. To determine if students perceived a more effective reciprocal reinforcement between the required content and skills on the bench

Target audience: students participating in clinical rotations

Assessments:

1. Compare EOR exam scores from groups pre-app & post-app
2. Survey students for feedback on perceived efficacy of the tool

Step 2: Map the Content (Curriculum)

GOALS	Objectives	Engagements	Assessment	COMPETENCY
	Cognitive	Learning Objects Practice Exercises (mobile app)	End-of-Rotation Exam	
	Psychomotor		Skills Performance Evaluation	
	Affective	Clinical Training	Professional Comportment Evaluation	



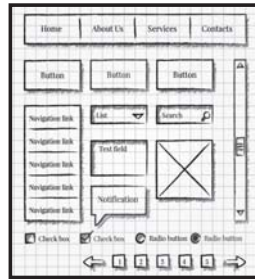
Steps 1-2: Mapping our goals, project, & curriculum

GOALS	Objectives	Engagements	Assessment	COMPETENCY	
Program Objective Prefix	Area	Cognitive Objectives	APP page	Learning Object (LO)	Assessment (EOR) I-4
4166	SPECIMEN INTEGRITY	1.0 Describe the specimen processing requirements for the performance of coagulation tests. 1.1 Identify the proper anticoagulants used in the collection of specimens for each test performed. 1.2 State the minimum quantity of blood required to perform requested tests 1.3 Discuss the storage requirements for coagulation specimens.		4166_LO1 4166_LO1_COL1 4166_LO1_COL2 4166_LO1_COL3	4166_EOR.1.1-4
	ROUTINE METHODS	2.0 Describe routine coagulation studies (prothrombin time/INR, activated partial thromboplastin time, fibrinogen, thrombin time, and D-dimer). 2.1 Describe each of the routine tests in regard to: principle, reagents and equipment, procedure, limitations, normal values, interpretation of results. 2.2 Correlate the results of routine coagulation studies with the corresponding clinically significant disorders.	21/23	4166_LO2.1 4166_LO2.2	4166_EOR.1.1-4

Step 3: Create a Wireframe

Wireframe

- the "app skeleton" or skeletons of the screens
- the display of functional elements used for planning the app structure and functionality
- The mockup or prototype of the app
- Provide structural look of the layout
- Screens to include (splash screen, registration/log-in, home screen, tutorials)



Step 3: Create a Wireframe

Wireframe Tools

- Pen/Paper
- Word (using shapes)
- Powerpoint (using shapes)
- PowerMockup (powerpoint-based)
- Other

(<http://www.creativeblog.com/wireframes/top-wireframing-tools-11121302>)

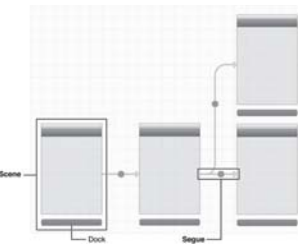


Questions To Answer

- How do you want the app to function?
- How do you expect the user (student) to navigate?
- Different orientation (portrait, landscape, or both)?

Step 4: Create a Storyboard

- Roadmap to illustrate the connection between each screen and how the user will navigate through the app
- Some storyboarding tools
 - <https://app.boards.com/>
 - <https://teamtreehouse.com/library/prototyping-an-ios-app-with-storyboards>
 - <http://www.windows8templates.com/>



Step 5: Design color scheme

- Decide an overall color schema and patterns from design template
- Decide on individual screen designs by screen type.
- Example screen designs: <http://www.mobile-patterns.com/>



Step 5: Design color scheme

- Use Custom Design option for more individual color settings



Steps 5: Our Colors

LOGOS – create your own logo or determine permissions for use of a logo logos or create



COLORS – we looked for GW colors and the HTML code



<http://html-color-codes.info/colors-from-image/>

Step 6: Build your App



Step 7: Manage your Users – User Registration

- **General mode:** anyone can register in app and use default user type
- **Logged in user:** more access
- **Anonymous user**
- **Logged-in user – more access**
- **App reviewer – used by Apple staff reviewers to access and review app for the App Store**

Step 7: Manage your Users – Predefined Users

- Predefined users: don't have to register to use the app – just log in
- User list is created and loaded in advance with required fields (see example below)

1	userName	emailAddress	password	memberId	userType	expirationDate	company	companyId
2	Jack Smith	jack_smith@gmail.com	qwerty123		staff member	12/12/2012 0:00	ABC	1241
3	admin	admin@gmail.com	admin		administrator	12/12/2012 0:00	ABC	1241
4	Olivia Jones	olivia_jones@gmail.com	qwerty321		staff member	12/12/2012 0:00	ABC	1241
5								

Step 7: Manage your Users – Load Users

- Define user access to the content
- Set up spreadsheet of assigned users – predefined user

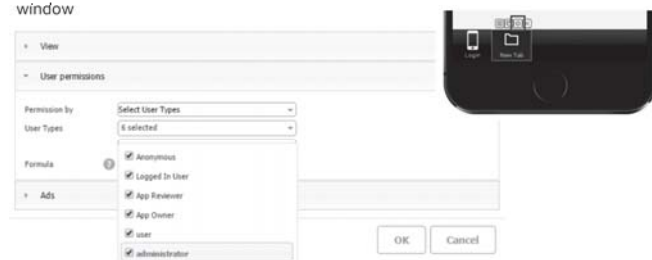
Predefined user mode allows you to add specific known users to your app. You can specify user types for these predefined users so that they have special access to tabs that general users cannot see. For example, employees may need to be designated as "Administrator" so they can access tabs general users do not see.

Your Excel spreadsheet should have the following columns: userName, emailAddress, password, memberId (will default to empty if not specified), userType (will default to loggedInUser if not specified), expirationDate, company, companyId.

1	userName	emailAddress	password	memberId	userType	expirationDate	company	companyId
2	Jack Smith	jack_smith@gmail.com	qwerty123		user	12/12/2012 0:00	Example	Example
3	admin	admin@gmail.com	admin		administrator	12/12/2012 0:00	Example	Example
4	Olivia Jones	olivia_jones@gmail.com	qwerty321		user	12/12/2012 0:00	Example	Example

Step 7: Manage your Users – Permission Settings

- For each tab, enter permissions in the "User permissions" window



Step 8: Test the App with Pilot Group

- Have 3 – 5 pilot users provide feedback on MVP (minimum viable product) usability and design
- Be sure to ask for a review of each page on the content and features
- All interactions and links should be tested
- You can will use this information to revise and complete the app



Step 9: Set up App Distribution

Signup for the app stores

1. Android Apps – Google Play Store (usually appears in store and is searchable within 24 hours of submission)
2. iOS Apps – App Store: Google Play and Apple). Will require an Apple Developer registration (\$99) and an apple computer.



Step 9b: Beta Test your App

- This is testing the completed app in the live environment before full release.
- **Android Platform** - upload your app file on any android device and test it in a live environment. You can then monitor your apps progress from your device
- **iOS Platform** - use a platform called **TestFlight** to beta test your app. Go over the directions and instructions for using this beta testing environment by inviting beta testers to review your app.

Step 9c: Release your App

- After you meet the standard of the store, you will receive an approval message.
- You select the app version that you wish to rollout.
- Review any warnings or errors.
- Review your draft release and make any additional changes that are needed.
- Select **Confirm rollout – your app has taken flight!**

Step 10: Assess your App

- Compare the **EOR exam scores** of the pre-app cohorts to the cohort currently using the app
- Use **embedded surveys** to determine the users satisfaction in general and specifically to gauge their **perceived efficacy** of the tool
- Canvas the students as to **which learning objects are more useful** or which **areas require further reinforcement**



For a complete set of notes after the presentation, please contact:

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Questions...

