I Want To Know (IW2K)

A lightweight companion app for extension.org

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Abstract – The report presents our conceptual model for the I Want To Know (IW2K) project. The app is a lightweight frontend web application designed to give children easy access to the content provided by extention.org. It is an educational tool designed to let kids explore topics that interest them and to guide them through to new educational content. Eventually, the app will lead into a badge system that lets kids earn accolades for completing content, and probably leads them into more involved courses.

In order to design the system, we studied some published literature and summarized it in the background study section of the report. The following sections discuss the hardware and software requirements to develop and run our system in the production environment, lexicons involved, the software development process we chose to follow and the real-world scenarios of users interacting with our system. From these scenarios, we have identified the functional requirements. The final section illustrates our wireframe models that we believe fulfills the user requirements.

Background Study

[1] **From Dewey to Mosaic: considerations in interface design for children**

[Summarized by Brandon Atkins]

The paper discusses a case study of opening a taking a library's catalog to digital in 1995. I felt this case had lessons to apply to our work because it discusses the best way for children to navigate a labyrinth of information to easily find what they want. This is at the end of the day the goal of I Want to Know. It talks about how they found a few reasons children would fail at a search for content they wanted. One reason was the software implementation, one was the cataloging system and a third was a gap in the child knowledge. So to apply that to our project a kid may want to learn about the Space Shuttle but he might not know to look for that content under Science or Aerospace. We need to find a way to make multiple bridges to a specific piece of content so that a child can navigate to what they want. The obvious solution to this is a search function, which we will have but that does break our overall goal of wanting a very point and click interface.

[2] **Teaching Science with Mobile Computer Supported Collaborative Learning**

[Summarized by Samir Hasan]

In this paper, the authors introduce an effective technology for online education – Mobile Computer Supported Collaborative Learning (MCSCL) system. It uses applications running on wireless handheld devices that allow students to work collaboratively in a face-to-face manner, in contrast to the offline mode of online education. The system is designed to involve the students in activities such that they may infer new knowledge from what has already been provided previously in classes. Moreover, it allows the students to be in contact with their teachers from a distance through the handhelds, take

advantage of the mobility and availability of knowledge and collaborate in groups to make the learning effective. Results showed that students achieved a higher level of motivation due to the new dynamic classroom environment provided by the PocetPCs. They understood their subject better in an interesting and easier manner, and explored knowledge new to them by themselves, for example via collaborating with classmates.

[3] **Interface Design, Web Portals, and Children**

[Summarized by Seth Neil]

This paper focuses on the best methods of designing user interfaces for children. The main point emphasized is to have intergenerational design groups during all phases of development. Intergenerational means having adults and children. This concept provides not only pertinent input from the desired demographic (children), but also insight into the guiding forces behind the children (parents). This form of development, according to studies performed by the authors, produces code that reaches this largest audience possible.

Hardware Requirements

1. Web application server (backend)
2. Database server (backend)
3. PCs capable of running modern day browsers (frontend)
4. Mobile devices such as tablets and smartphones that support HTML5 (frontend)
5. Internet connectivity (both backend and frontend)

Software Requirements

1. Web browsers with HTML5 support (Google Chrome, Firefox, Safari)
2. Mobile OS such as Android, iOS, BlackBerry, Windows Phone, that support browsing HTML5 web sites

Lexicon

We have defined the following lexicons in our designs.

1. Banner
2. Search bar
3. Sliding image panel
4. Responsive layout
5. Composite image buttons
6. Footer

Software Development Process

We followed agile methodology for developing our project. Increments in our software are made iteratively in a prototype-driven manner. In each iteration, we involve the client of the software and the designers/developers in evaluating previous prototypes and identifying new requirements.

Scenarios

Exploration

As an eighth grader, Bryan has become very interested in science now that he started to have a class on it in school. Curious to know more, he visits extension.org, which he knew to be tailored as a learning platform for kids in school. He is particularly interested in exploring Water Science to learn how it affects our lives. He chooses to see what is inside the **Water Science** category, and finds that there are a few subcategories under water science. He clicks on **Rainfall**. A list of articles appears under the rainfall category. He likes a few titles, so he clicks on each of them to read the complete article.

Search

Bryan is having a hard time realizing how precipitation is measured, and so he's stuck with his homework. He remembers extesnion.org having excellent articles on water, so he jumps right in. He knows what he wants to find, so he uses the search box and types in **precipitation**. A list of articles related to precipitation appears, and he choses to read a few of them to finish his homework.

Mobile App

Adam, Bryan's younger brother, is studying on grade 5. He is struggling hard with his homework on Solar Systems. Adam finds computer browsers daunting. So to help his brother, Bryan downloads the companion Android app from Market in his tablet, which is simple and fun to use for kids. The app shows all the content available on the web, but with bigger pictures, lesser text and cleaner layout. Adam figures out right away that there is a **Astronomy** button on the app. He goes inside, and chooses **Solar Systems** to pull out a list of articles on this matter - something that seemed inconvenient through the desktop browsers..

Functional Requirements

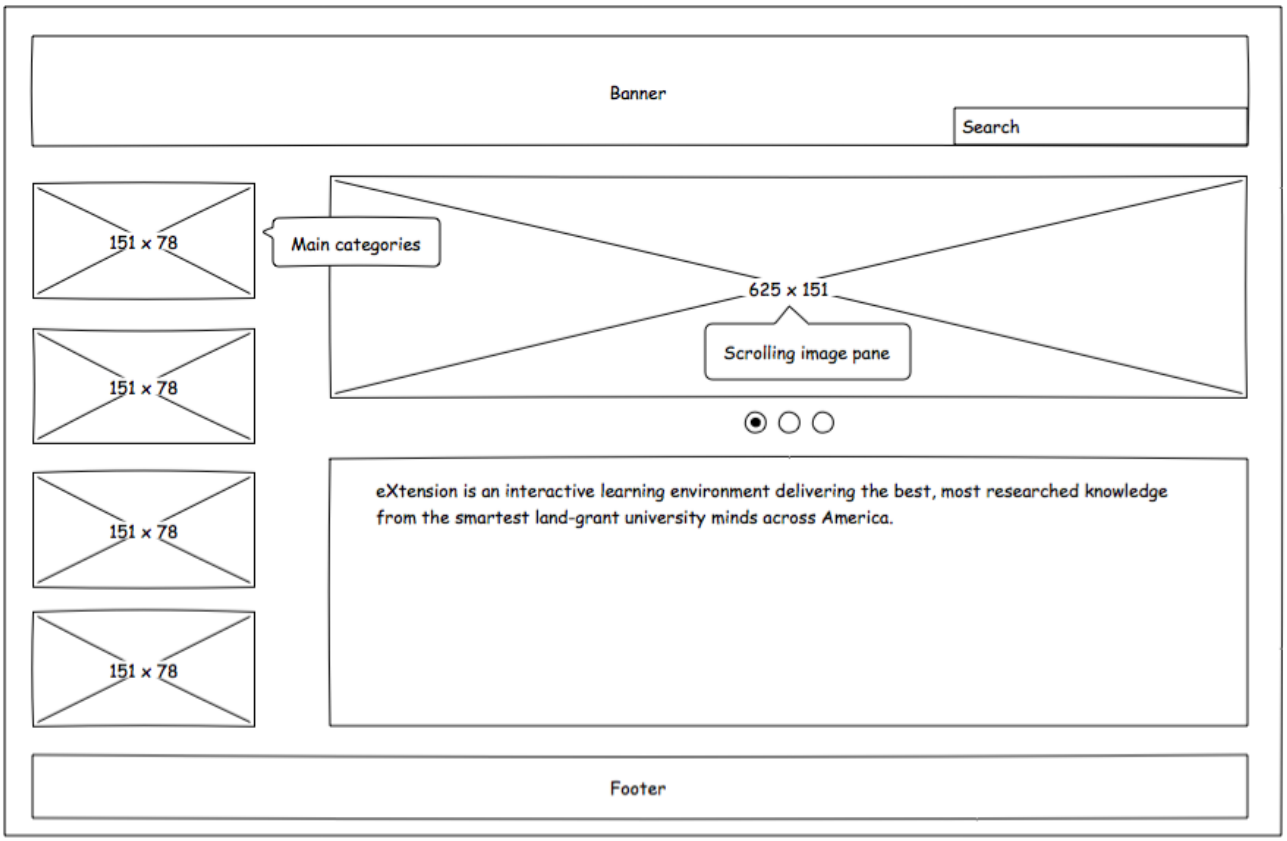
We have identified the following functional requirements from the user scenarios above.

1. The primary users of the system are children. Thus, the overall design, layout and user experience should be simple and attractive for school children.
2. The system should allow children to browse the major categories and subcategories of the articles.
3. On choosing a subcategory, the user should see all the articles in the system under that sub category.
4. The system should have a search facility, where the user may try to find a specific article by the title or category.
5. The app should be available as a standalone mobile application as well as on the web.
6. The mobile app should support multiple platforms (e.g. Android, iOS, BlackBerry, Windows Phone).
7. The apps should be distributable so that they can be obtained from the app stores like Google Play, AppStore and the Windows Store.
8. The apps should have very similar look and feel across all platforms.

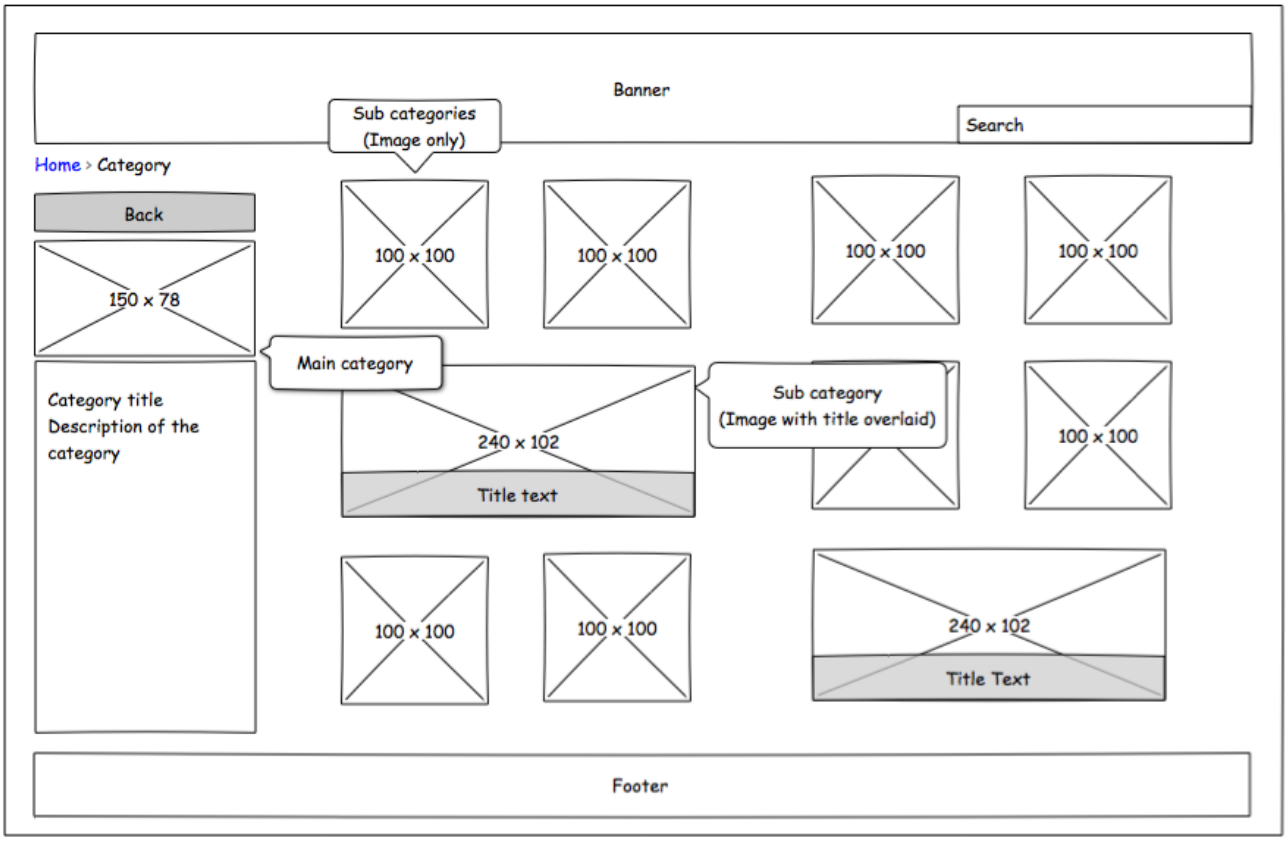
Scenario Demo

The Web App

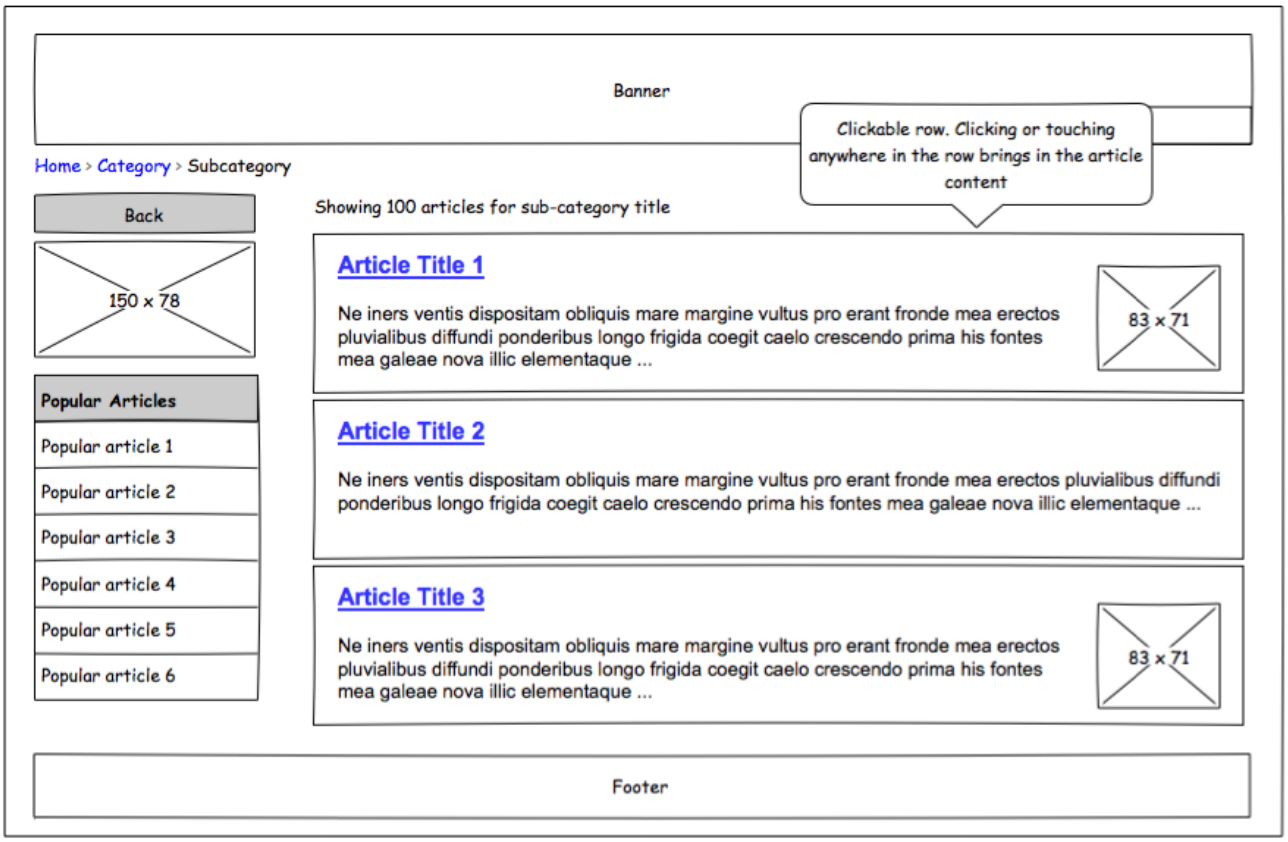
Step 1: The home page



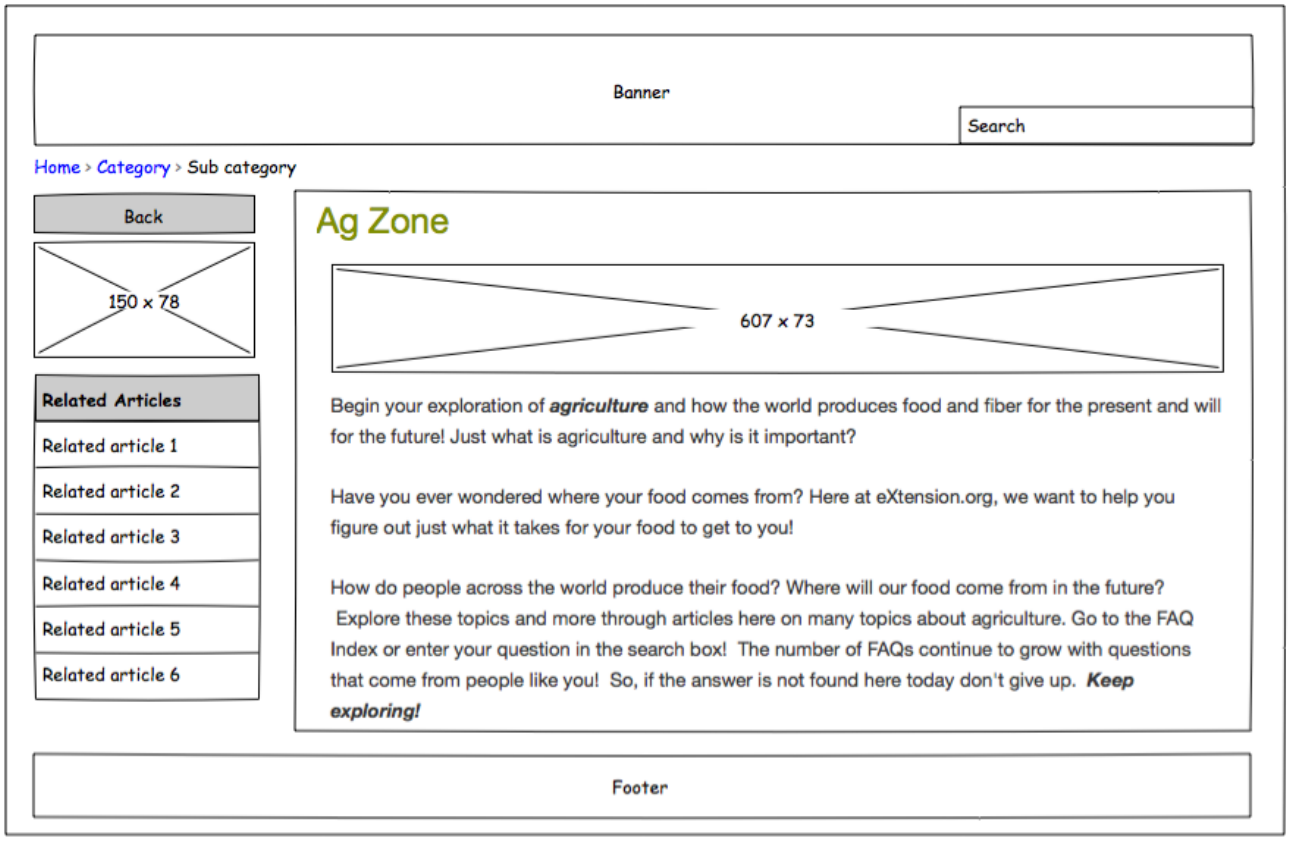
Step 2: Page displaying the sub-categories in a grid layout using images as buttons.



Step 3: The list of articles under a sub-category.



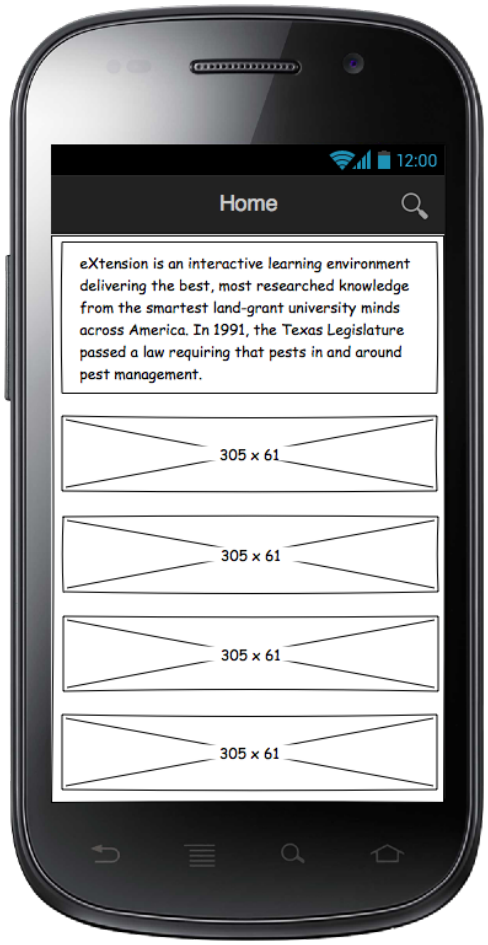
Step 4: Displaying a single article.



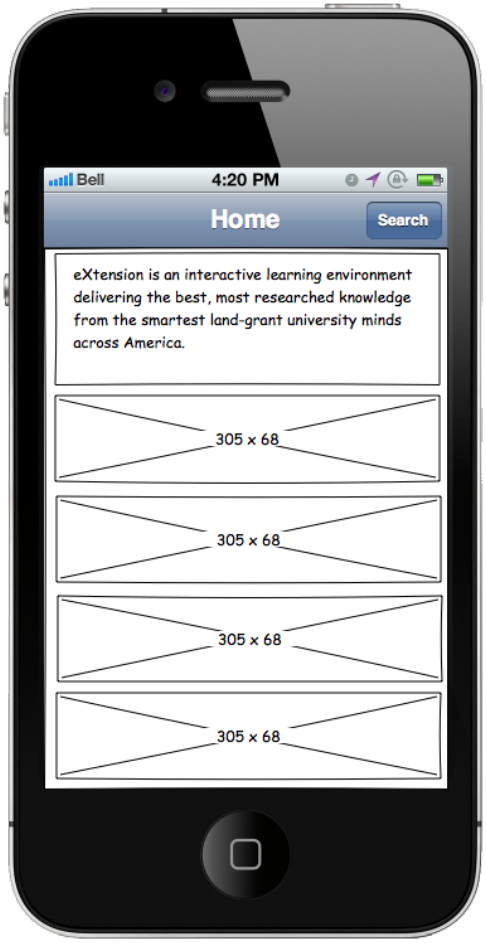
The Mobile App

Step 1: The home page

Android

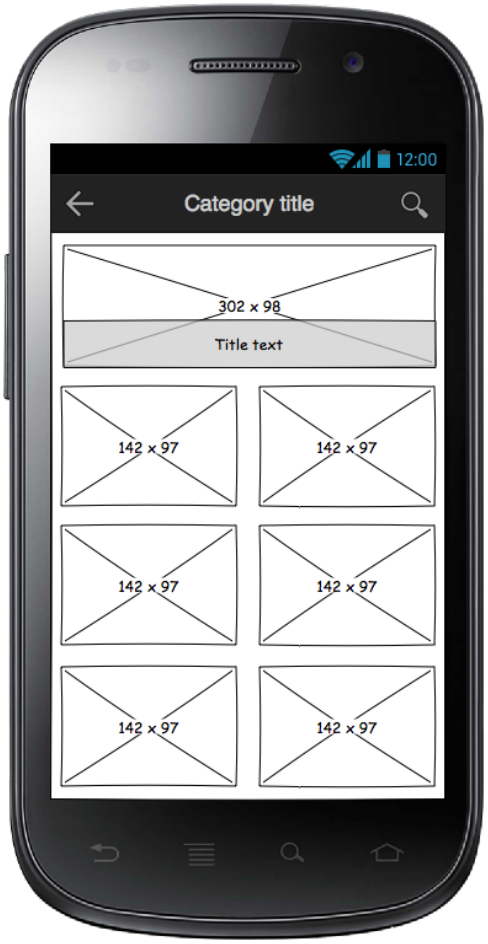


iPhone



Step 2: Subcategories

Android



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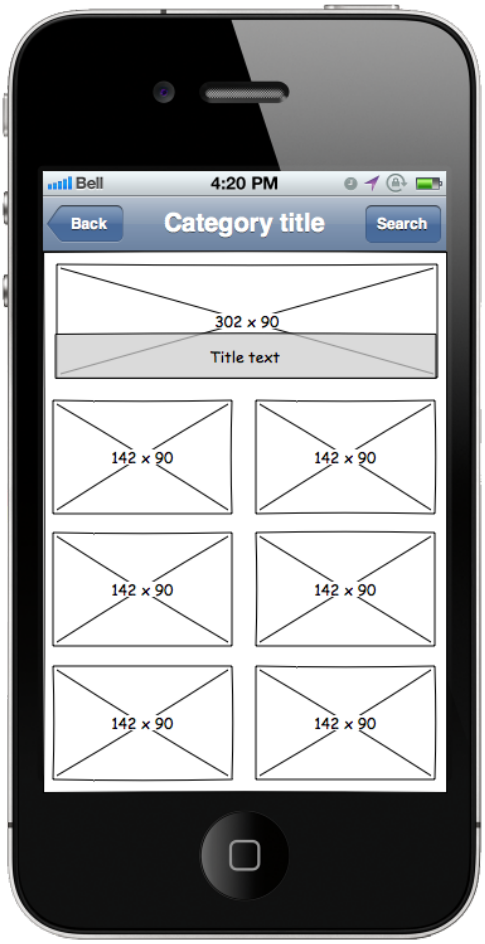


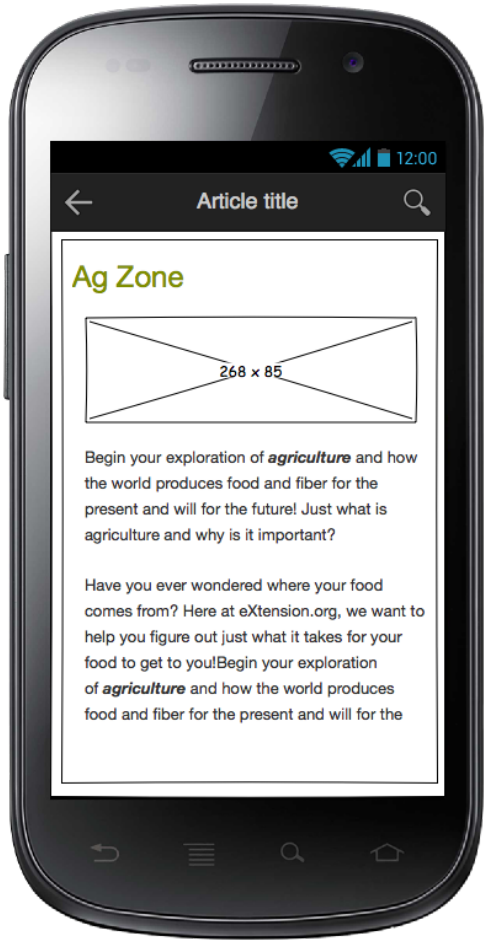
Step 3: List of articles in a subcategory

Android

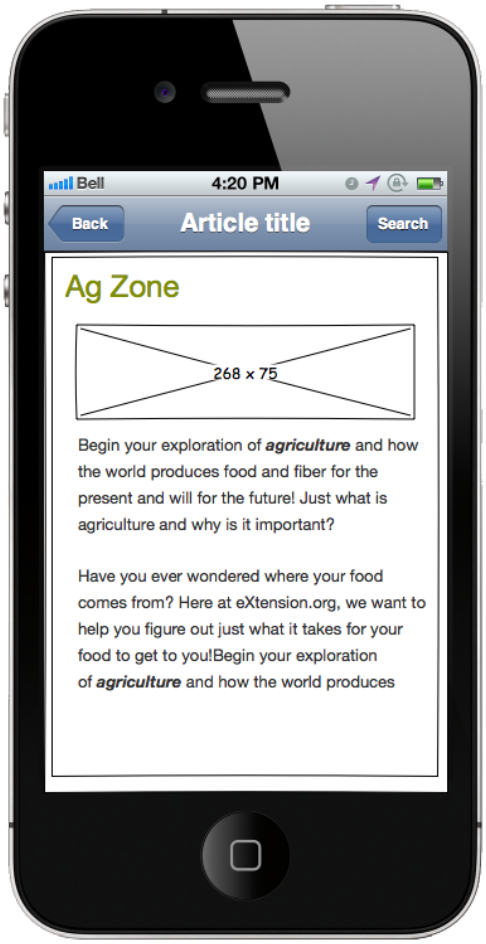
iPhone

Step 4: A full article display

Android

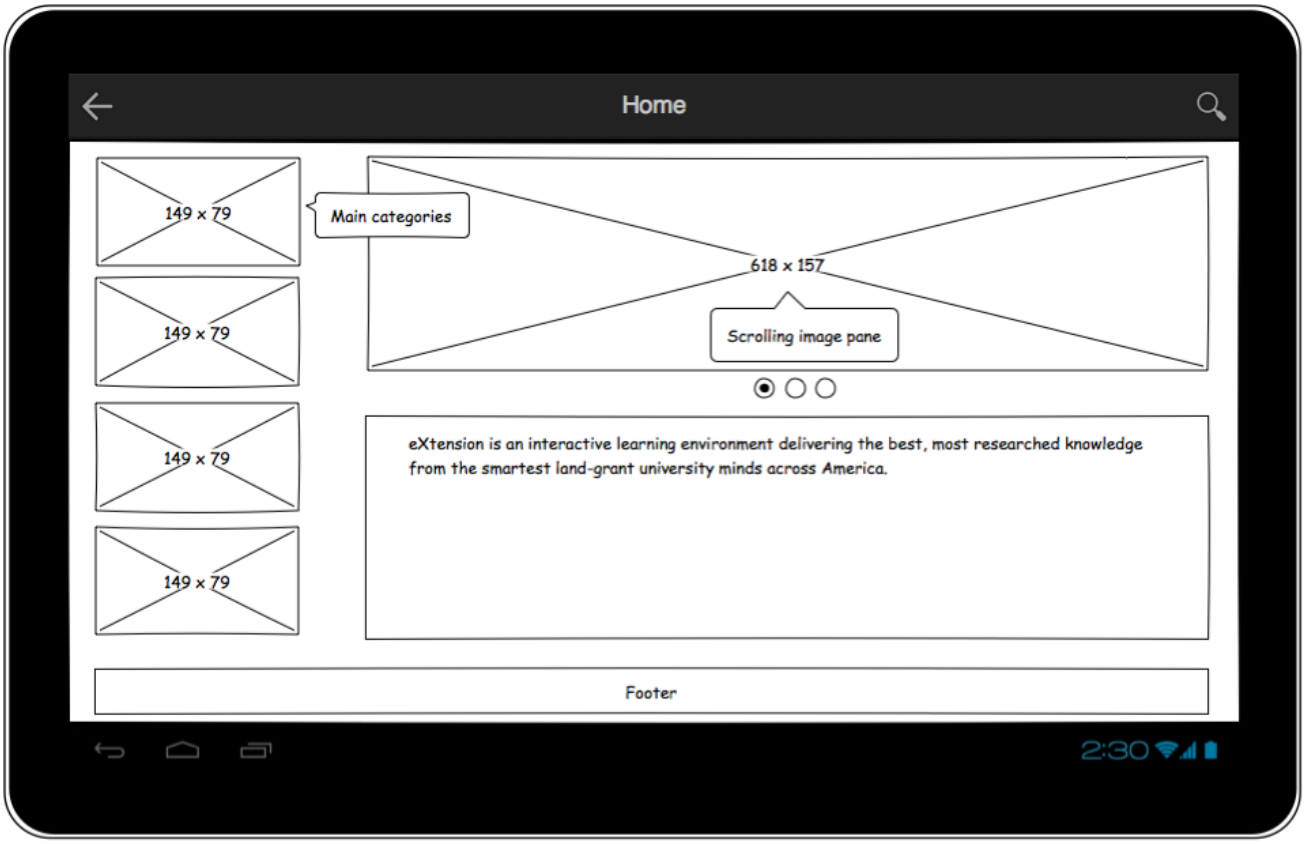


iPhone

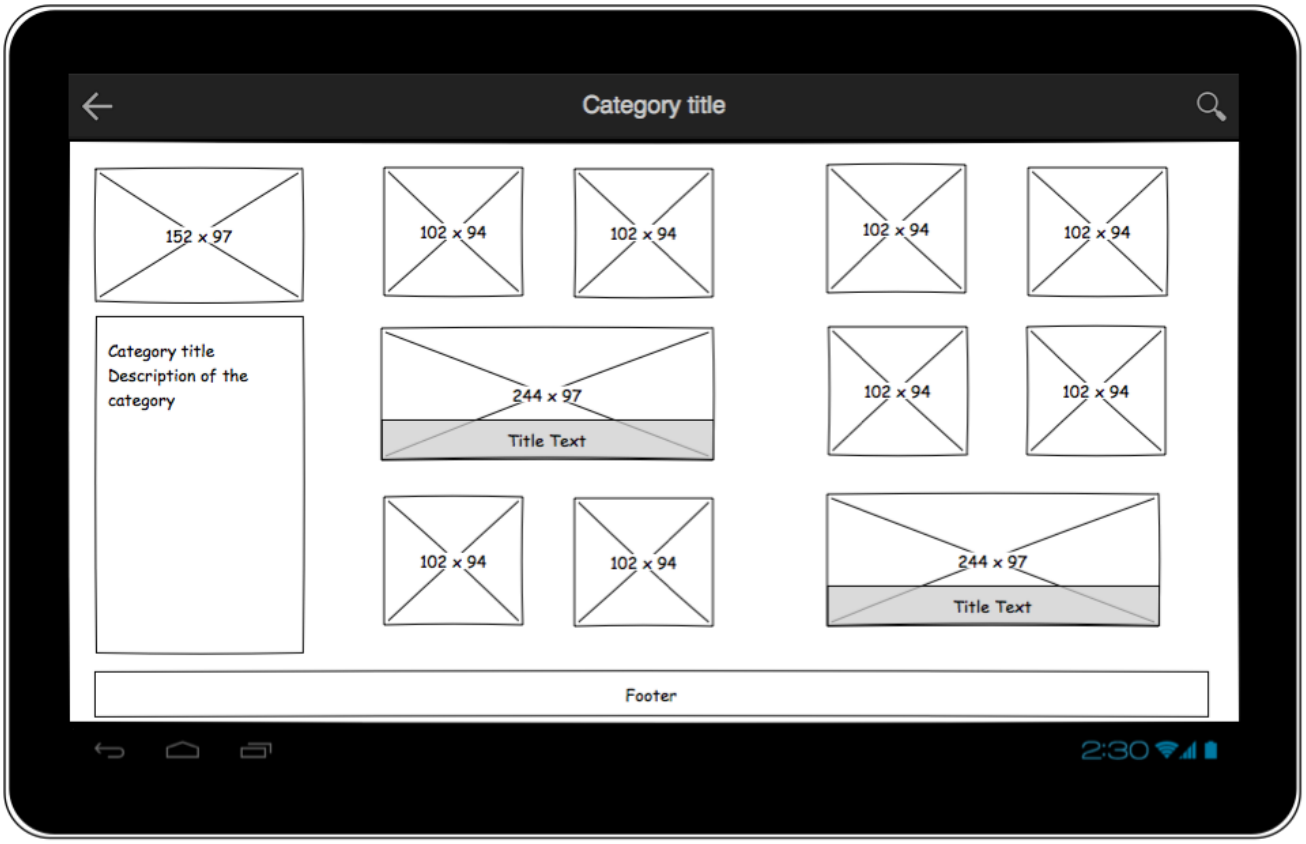


The Tablet App (Android and iPad)

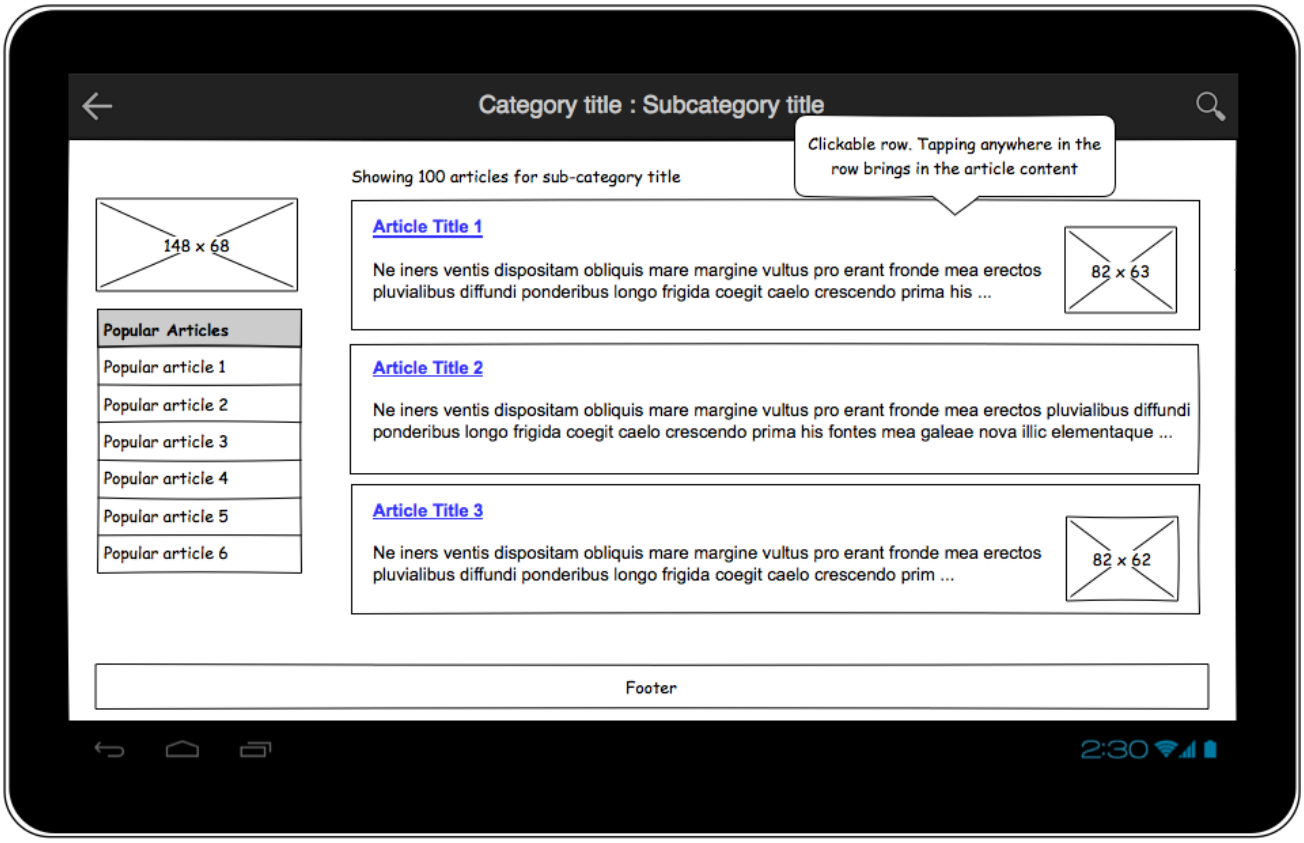
Step 1: The home screen



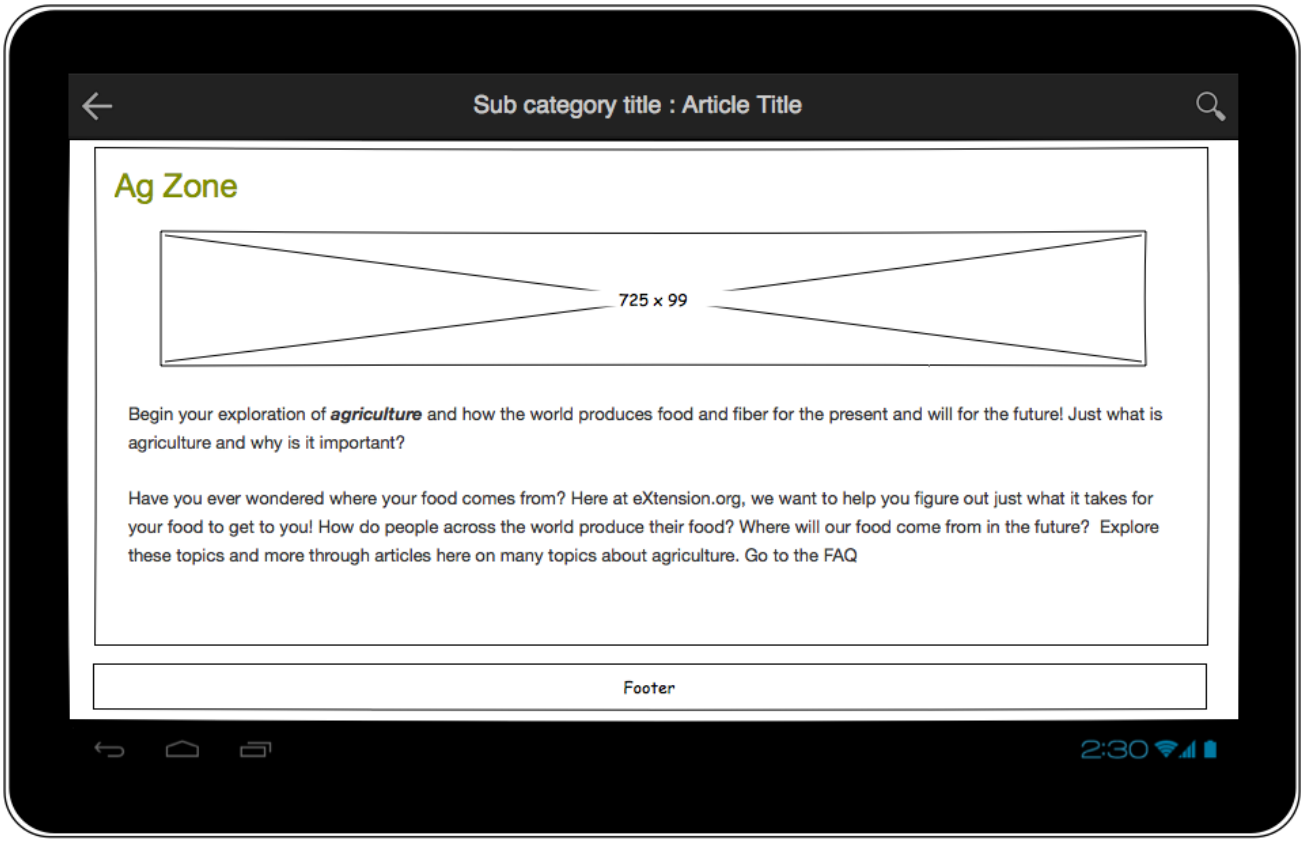
Step 2: Screen for displaying subcategories



Step 3: Displaying the list of articles in a subcategory.



Step 4: Full article display



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