

Systematic Evaluation: Aquaponics System Design Website

Kaitlyn Dryer

Final Project Plan

Title: Aquaponics System Design

Objectives: To spread the word about a useful and efficient type of gardening and clear up widespread confusion about how to build an aquaponics system from scratch. (I had a lot of trouble building my own system and getting it to work, so I'd like to help others avoid the same frustrations. There's not a whole lot of literature out there yet on how to do this sort of thing, and the instructional books and websites that do exist can get pretty technical and confusing.)

Target Audience: Gardeners interested in trying out aquaponics and potential hobbyists (anyone curious about what it is and how it works).

Website Architecture: Flat—All pages are accessible from the navigation bar, and the home page is always accessible by clicking on the header itself.

Website Content: The home page will link to five pages illustrating different aspects of one particular system design, providing step by step pictures and instructions based on my own experience and linking to other websites and instructional materials that can provide further assistance.

- 1) A Flash Overview—An animation I've created in Flash to show how an aquaponics system works, explanation to go along with that animation (what kind of system this is, etc)
- 2) Ebb and Flow—How an ebb and flow system works, comparison to other types of systems
- 3) The Bell Siphon—pictures of parts needed, instructions, troubleshooting
- 4) Fish—guidelines, pictures, and troubleshooting
- 5) Plants—guidelines, pictures, and troubleshooting regarding grow media

Layout Design: Mockups of home page and standard page attached (page 2 and 3).

Two New Javascript Effects:

- 1) I will use an array to create a photo gallery on the home page. The gallery will automatically advance to the next photo, but users will also be able to turn off auto-advance and click to view the next photo instead.
- 2) "Steps" to creating the bell siphon will twirl down: initially the user will see:

Step 1: Understand the theory

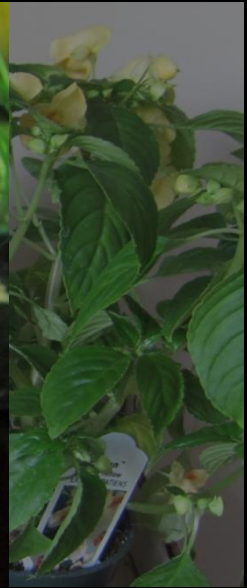
Step 2: Take some measurements

Step 3: Find the parts you need

Step 4: Assemble

Step 5: Test and try again

Clicking one of the steps will cause that div to expand or collapse. This will save space and hopefully prevent the need to scroll.





Aquaponics System Design

A Flash Overview

Ebb and Flow

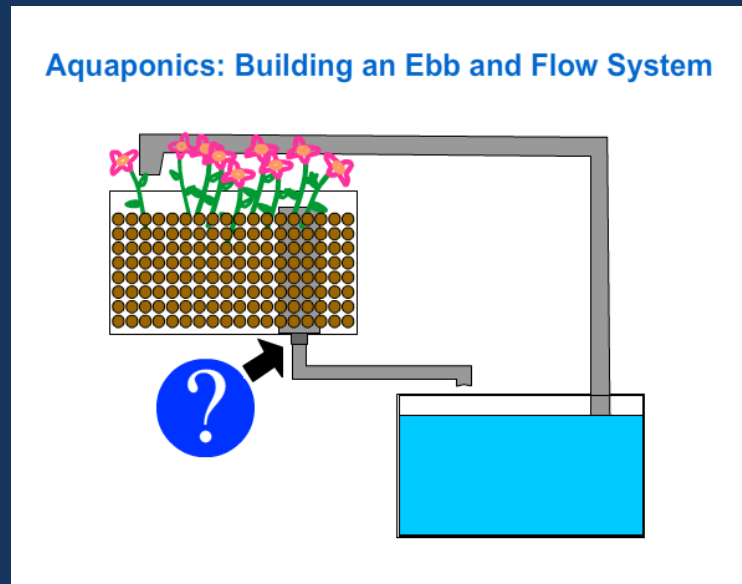
The Bell Siphon

Fish

Plants

A Flash Overview

Move your mouse over the flash animation below to view components of an ebb and flow system in action. For detailed information on any of the components click on one of the tabs above.



Peer Review and Usability Report Summary

Name: Kaitlyn Dryer

Course: Intermediate Web Development

URL of the Site Tested: http://web.missouri.edu/krdrkb/7370/finaldraft/dryer_home.html

I. Peer Review Summary

- Provide a summary of the peer reviews that were received from classmates. The summary should include the scores and comments.
- Indicate whether you agree and/or disagree with the feedback, and provide a rationale for any disagreements.

Summary of Peer Review Results

The Aquaponics Systems Design website received positive feedback and constructive criticism from four reviewers.

Two reviewers sought a more professional look for the site, suggesting CSS changes such as the use of a background image, borders, rounded edges, and two separate fonts. I found that these changes greatly improved the design. Three reviewers liked the light blue background for text and thought it fit the aquaponics theme; one wanted a more subdued color. Following their suggestions, I tried other shades but was unable to find a blue that was easier on the eyes.

I implemented all of the reviewers' ideas for improvements in navigation: simplifying the navigation bar links, adding a written link for the homepage, and reordering links in the navigation bar so that the most in-depth sections are the farthest to the right and less likely to be clicked upfront.

Two suggestions in terms of content were to add titles to each page— I did—and to create the animated content in HTML5 instead of Flash. While I understood the benefit of using HTML5, I do not yet know how to create HTML5 animations, so the Flash ones will have to do for now.

One reviewer suggested that I speed up slide show transitions on the home page and questioned whether the expanding and collapsing divs on the siphon page served a purpose. Accordingly, I doubled the speed of transitions and added more content to the siphon page so that collapsing feature became worthwhile. Another reviewer suggested that I upgrade the simple Flash calculator on the fish page to include more advanced features. While I agreed with the reviewer's comments, I was unsure how to code the suggested changes in Flash, so I left the calculator as is for now. If I have the opportunity to recreate this calculator using Javascript/HTML5, I will make the suggested changes.

The website draft received a 4.8 for site design, navigation, and content, and a 5 for javascript and site credibility, earning a 5 out of 5 overall.

II. Usability Testing (Only required for Graduate students, but highly recommended for all students)

Summary of Users and Usability Tests

	Participant 1	Participant 2	Participant 3
Age / Gender	mid-50s/male	22/female	20/male

Internet Experience	average	average	average
Profession	Food Services	Accountant	Sex Worker
Email	unknown	lkwww4@mail.missouri.edu	unknown
Test Context	Usability Test Method	in person observation	in person observation
	Date of Test	11/27/2012	11/28/2012
	Platform / Browser	Windows/Firefox	Windows/Chrome
			Mac/Firefox

Summary of Observation

	Task 1	Task 2	Task 3
Description of the task	You've never heard of aquaponics before, and you want a general picture of what it is before you invest a lot of time reading about it. Use a diagram to identify the three major parts that make up an aquaponics system.	You've always loved gardening, but you're not sure about gardening without soil. You are currently growing tomatoes, herbs, and a few blueberry bushes. Discover which of these species would do well in an aquaponics system!	You're thinking about building your first aquaponics system, but you're not sure how to make the plumbing work. Find a list of what you would need to buy.
Time spent to complete the task	3 min, 1 min, <1 min	1 min, 1 min, <1 min	1 min, <1 min, 1 min
Errors or problems identified by a user	Didn't realize "how to" animation would last longer than the other three, moved on before watching the system drain Arrow points to siphon, but mouse must hover over the question mark to make the siphon work.	What do they clay balls look like? Where do you get them? Would glass marbles work instead? What size should the grow bed be as compared to the aquarium?	Two users checked "About" page for this information first. When they didn't find it there, one also looked on the overview page before the siphon page.
Overall user comments	Match the lengths of all animated parts, or add text explaining that the how-to is longer Arrow should point	Add picture of grow media and link to where users can purchase it Task was no trouble to complete, but page	Add a link to the siphon page from the "Design your own system" section of the "About page" Diagram on siphon

	away from the siphon	could use more thorough information	page was extremely useful
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Major Findings and Recommendations

Major Findings or Issues	By Whom	Decision for the Findings or Issues? <ul style="list-style-type: none"> ▪ Option 1: Modify? → Identify Solution ▪ Option 2: Keep It As It Is? → Provide Rationale
“How to” animation was not obvious, it’s length unclear	Participants 1 and 2	Modify → Add a sentence to the instructions, such as: “Hover over the pipe in the top right corner to watch a longer animation of the siphon’s effect: the grow bed flooding and then draining completely before flooding again.
Arrow in “Overview” animation points away from the object that should be moused over	Participant 3	Modify → Reverse the arrow
Plants section raises more questions than it answers	Participant 1	Modify → Add textual content about grow media and size of grow bed, an additional picture, and a link
“Design Your Own System” in the “About” section feels like a dead end, doesn’t provide direction for where to look next	Participants 2 and 3	Modify→Add a link in this section of the about page to the relevant section of the siphon page

Reflection on Your Experience in Completing the Usability Test

While none of the users had difficulty navigating the site, observation of each provided useful information on where users will look first for information and how much time they are likely to spend doing so.

As expected, the oldest participant in the usability testing (mid-fifties) took the most time to explore the site and provided the most comments during the process. The two participants in their 20s took almost no time to explore the site on their own and completed each of the tasks in a minute or less. They skimmed information and watched only the first few seconds of animations. The older participant also moved quickly through the animation, though he spent more time with text and raised many more questions. The experience served to assure me that the extremely short time that users, and younger users especially, allot to perusing a site should be a primary consideration in its design.

Participant 1, the older aquaponics enthusiast who read all of the site content word for word, pointed out two significant gaps in the information I have included. First, on the “Plants” page, where I focus on plant species without mentioning important logistic factors such as the size of the grow bed and where to obtain grow media, and second, on the “Fish” page, where I focus on size but neglect to list any species of fish or the time in which they can be expected to reach adulthood.

In addition to providing extensive comments regarding the three tasks, Participant 1 took the time to read all content included in the website and test out the fish calculator, which the other two

participants noted as “cool” and one of the most interesting parts of the site but did not actually try. All three participants listed the inclusion of real photos as one of the best features of the site, and two of them said that the diagram included on the “Siphon” page was the most useful part. The younger two users complimented the site’s design, while Participant 1 stated that it was “Informative enough to get me started.”