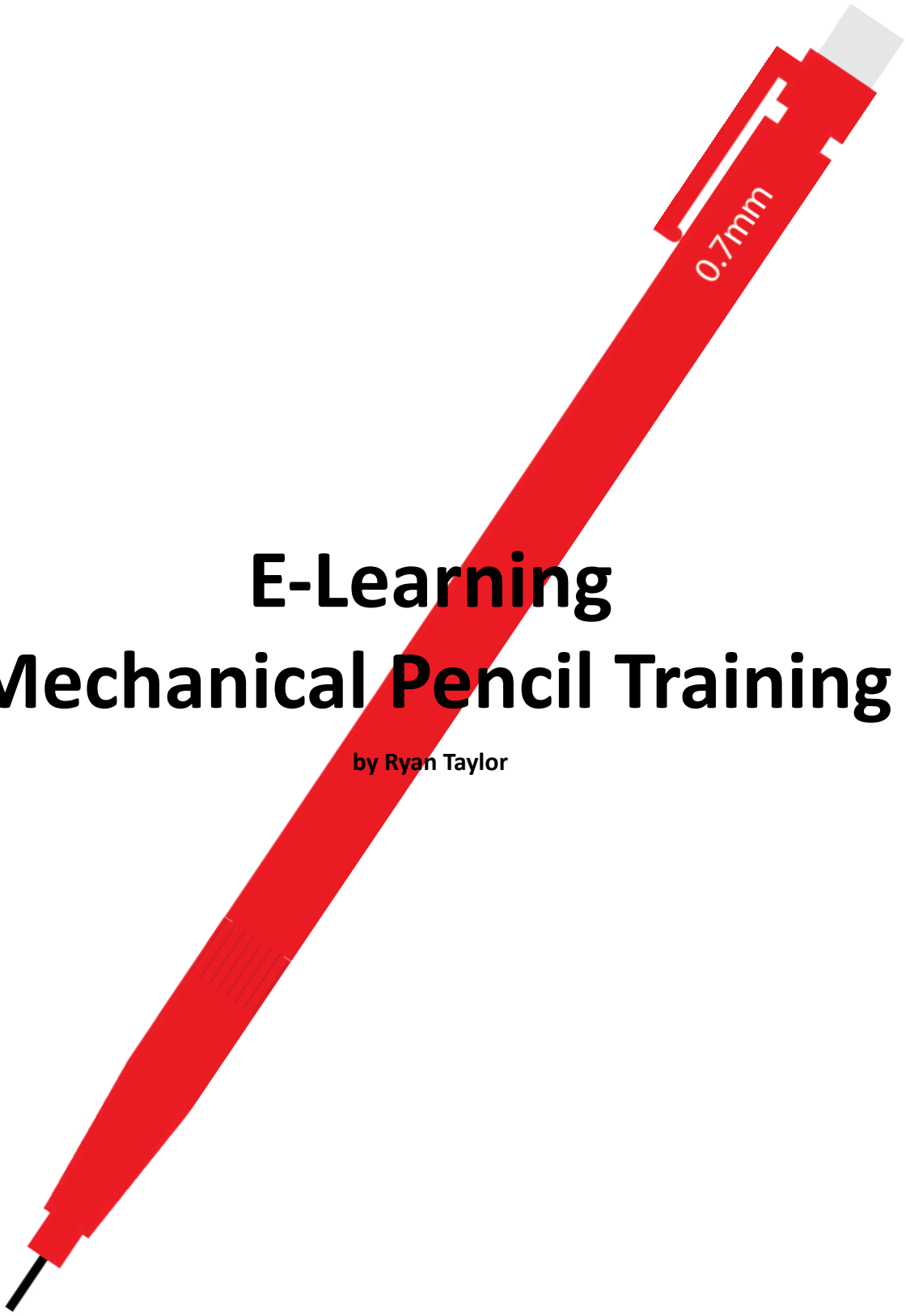


E-Learning
Mechanical Pencil Training

by Ryan Taylor

http://www.4554designtestsite.com/ryan/Mechanical%20Pencil/

E-Learning: Mechanical Pencil Training

The goal of this project was to create a website that taught a user to use a mechanical pencil using three different learning methods. We were tasked to create all of the content for it, have multiple versions of our documentation and to administer at least three rounds of prototype testing of at least one of our learning methods. We were also taked to create a timeline for this project and a Gantt style project plan. At the end of the project we were to compile all of our doumentation along with our sketches, wireframes, prototypes, testing questions, learning objectives and website files, this is that documentation.

Index

Section 1: Timeline
Section 2: Project Plan
Section 3: Learning Objectives & Test Questions
Section 4: Initial Sketches Mobile
Section 5: Initial Sketches Wireframe
Section 6: Paper Prototyping & User Testing
Section 7: Initial Sketches Desktop
Section 8: Initial Wireframe Desktop & Clickable Prototype (Marvel App)
Section 9: Revised Wireframe Desktop & Clickable Prototype (Marvel App)
Section 10: Final Design

Timeline

http://www.4554designtestsite.com/ryan/Mechanical%20Pencil/

Week/Class	Task	Due Date	Completed
Week 1	Project Timeline	W2C1	**X**
	Learning Objectives • What do I want the user to learn? • What methods do I want to use?	W2C2	**X**
	Determine Pencil Mechanics • Identify Parts • Uniform Naming Scheme • Document Pieces • Photographs? • Illustrations?	W2C2	**X**
	Accessories • Lead • Erasers		
Week 2	Pencil Photography	W2C2	**X**
	Determine Learning Methods • Video • Step X Step • Diagram	W2C2	**X**
	Process Documentation • Testing Results • Decision Log • Issues Log • Project Plan • Final Document	On-going	**X**
	Initial Sketches	W3C2	**X**
	Finalize Learning Methods Begin Storyboard • Video • Step X Step •Diagram	W4C2	**X**
	Read pages 173-210 + summary	W2C2	**X**
	Complete ADDIE Assignment	W2C2	**X**
	Read pages 283-305 + summary	W2C2	**X**
	Learning Objectives Assignment	W3C1	**X**
Week 3	Determine Test Questions • How Many? • Multiple Choice? • Fill In Blank? • ~~Matching?~~	W4C2	**X**
	Test The Questions	W4C2	**X**
	Finalize Test Questions	W4C2	**X**

	Wireframes	W3C2	**X**
	Read pages 1-11 + summary	W3C2	**X**
	Complete Mobile Paper	W3C2	**X**
	Read pages 15-31 + summary	W3C2	**X**
	Survey Assignment	W4C1	**X**
Week 4	Paper Prototype • Colored Pens • Post-its	W5C2	**X**
	User Testing • 3-5 Non-peers	W5C2	**X**
	Create User Testing Results Document	W6C1	**X**
	Read pages 41-55 + summary	W4C1	**X**
	Read pages 61-81 + summary	W4C2	**X**
Week 5	Project Plan • Define Roles • Estimate Length of Build Time	W6C1	**X**
	Edit Wireframes • Using Test Results	W5C2	**X**
	Create Learning Methods • Video • Step x Step • Diagram	W6C1	**X**
	Read pages 95-107 + summary	W5C1	**X**
	Read pages 117-129 + summary	W5C2	**X**
Week 6	Final Approval from Matthew	W6C1	**X**
	Start Building Website • Domain/Hosting • Confirm Build Specs • Code • PHP • HTML5 • CSS3 • JavaScript • Quiz Page • Send To Email • Submit • Navigation • Content	On-going	**X**
	Read pages 137-160 + summary	W6C1	**X**
	Read pages 173-210 + summary	W6C2	**X**

Week 7	User Testing • Clickable Prototype - Marvel or Pop? • 3-5 Non-peers	W8C1	**X**
	User Testing Results Document	W8C1	**X**
	Website Build	On-going	**X**
	Read pages 219-234 + summary	W7C1	**X**
	Read pages 251-265 + summary	W7C2	**X**
Week 8	Website Build	On-going	**X**
	User Testing Live Site • 3-5 Non-peers	W9C1	**X**
	Document Test Results	W9C2	**X**
	Edit Website Based on Test Results	W9C2	**X**
	Assemble Final Paper	W10C2	**X**
	Read pages 283-305 + summary	W8C1	**X**
	Read pages 317-327 + summary	W8C2	**X**
Week 9	Finalize Website	W9C2	**X**
	Read pages 343-362 + summary	W9C2	**X**
Week 10	Final Functional Testing Critique	W10C1	**X**
	Final Presentation	W10C2	**X**

Thoughts on timeline

Creating the timeline was the first task we were given and I have to say it was a difficult task to complete. We were given some initial due dates for specific tasks but it was up to us to fill in the blanks and create the rest of them.

The initial tasks were helpful because they gave us a place to start but there were many things, like creating the videos, that I had never done before. I wasn't exactly sure how long this was going to take me. I gave myself a couple weeks to get the storyboards done and to shoot the video, which turned out to be the proper amount of time. Another thing that was interesting was deciding on the test questions and the learning objectives. After writing down the tasks that I thought I was going to have to complete, it became clear that I had to have at least a rough idea of what these were going to be before I could move onto the storyboarding and development of the learning methods.

After I generated my task list, I decided the best course of action was to front load the early parts of this project so I could spend a large chunk of time developing the website towards the end. This strategy made for a few hectic weeks in the beginning but it paid off in the long run. If I was going to work on a project like this in the future, I would probably follow this same project.

Project Plan

http://www.4554designtestsite.com/ryan/Mechanical%20Pencil/

Ryan Taylor
IM4470 E-Learning
Matthew Luken
7 May 2016

Mechanical Pencil Project Plan

By Ryan Taylor

Project Description

The main objective for this project is to create a website that will house three different training methods and a test. The subject of the training is a mechanical pencil. The test will be comprised of multiple questions, mostly multiple choice with one true / false question. Upon submission of the test, the score will be generated and emailed to the user.

Website Content

The website will be custom built using HTML, CSS, JavaScript and PHP. The main content of the site will be designed with HTML, CSS and JavaScript. PHP will be used to generate the test results and send the email to the user that contains those results. The website will contain navigation, header, footer, multiple pages for each learning method, wayfinding and a quiz. The site will also be responsively designed so it can function properly on all delivery methods.

Goals and Learning Objectives

The main goal of the training methods is to teach the user how to operate this mechanical pencil and be able to identify the size of the replacement lead needed. The trainings will focus on daily use of the pen, avoiding more complex items of it because it is a cheap pencil and could easily be thrown away when it breaks.

The learning objectives of the training methods are to show part familiarity, function, maintenance, refilling with replacement supplies, care and use. Each of the training methods will cover these areas, the test will also test to those objectives.

There will also be some disclaimers for the trainings. First, the color of the pencil doesn't matter. Second, if the instruction is not followed, the pencil may not work properly. Third, the instruction is pencil specific and is not guaranteed to work with other types of mechanical pencils. Fourth, if the pencil breaks it is best to discard it and get a new pencil.

Training Methods

For the three training methods required for this project, I have chose a diagram, step-by-step, and video. I have decided on a three-step process for each. Step 1 is pencil mechanics, step 2 is pencil usage and part 3 is replacement parts. The diagram is broken up into three parts. The step-by-step instruction is a series that follows the same format. The video will actually be three separate videos, one for each part.

Prototyping

The overall process of this project will also call for prototyping. I am planning on employing three different prototypes. The first is a paper prototype, which will be of the diagram method on a mobile platform. The second will be a clickable prototype on Marvel, which will also be of the diagram method. The final prototype will be of the actual website after the building has been completed. After each round of prototyping there will be a document created displaying the results. Designs will be changed based on the results of the prototyping.

Test Questions

As mentioned previously there will be several multiple choice questions with one true / false question. Question 1: What piece must be removed to add replacement lead? A. End Cap B. Eraser C. Pocket Clip. Question 2: What size replacement lead does this pencil use? A. 0.9mm B. 0.5mm C. 0.7mm. Question 3: True / False: You must push in on the push button to advance lead? Question 4: What happens to the pencil if you pull out on the push button? A. Pencil breaks B. Lead advances C. End cap comes off. Question 5: What is the little part between the end cap and lead called? A. Pocket clip B. Lead sleeve C. Body

Roles and Responsibilities

Because this is an individual project I am in charge of all parts. I will be supervised and guided by Matthew Luken but all of the contents will be created by me. In a group setting, individual people would be listed out with their roles and responsibilities.

Project Tasks

<u>Prerequisites</u>

- Project Timeline – 6 hours
  - Identify all parts of project
- Goals and Learning Objectives – 6 hours
  - Determine goal – 1 hour
  - Determine Learning Objectives – 1 hour
    - Parts familiarity
    - Function
    - Maintenance
    - Replacement parts
    - Car
    - Usage
- Photography – 2 hours
  - Identify pencil parts – 2 hours
  - Identify names of parts – 1 hour
- Pencil Mechanics – 3 hours

- Parts list
- Part name
- Accessories

Initial Sketches – 2 hours

- Learning methods
- Wireframes

Co-requisites

Website hosting – 1 hour

- Determine host

Learning Methods – 6 hours

- Determine methods
  - Diagram
  - Step-by-step
  - Video

Process Documentation – 8 hours

- Wireframes
  - Choose method to wireframe
    - Diagram
  - Wireframe for mobile platform

Prototyping – 11 hours

- Paper prototyping – 3 hours
  - Determine questions
    - Create Prototype
    - User testing
      - 3-5 peers
      - Wireframe revisions
- Clickable prototype – 4 hours
  - Marvel App
  - Mobile
  - Diagram learning method
  - User testing
    - 3-5 peers
    - Design revisions
- Website testing – 4 hours
  - After initial build
  - Live testing
    - 3-5 peers
    - Design revisions

Test Questions – 4 hours

- Determine questions - 2 hours
  - Test the questions
  - Revise questions

Build learning methods

- Storyboard – 4 hours
  - Diagram
  - Step-by-step
  - Video

Final

Website Build – 60 hours

- Confirm build specs
- Wireframe – 2 hours
- Code
  - PHP for test
  - HTML
  - CSS
  - JavaScript
- Test
  - Send to email
  - Submit
  - Grade
- Content – 14 hours
  - Learning methods
- Navigation

Final Presentation – 1 hour

- Class 2 week 10

Project Documentation – 3 hours

- Compile documentation to one document

E-Learning Project Plan

Phases	Activity	Task Due	Actual Start	Actual Done	% Complete	Responsible Party	W1C1	W1C2	W2C1	W2C2	W3C1	W3C2	W4C1	W4C2	W5C1	W5C2	W6C1	W6C2	W7C1	W7C2	W8C1	W8C2	W9C1	W9C2	W10C1	W10C2
Planning																										
	Project timeline	W2C2	W1C1	W2C1	100%	Project Manager																				
	Pencil phototgraphy	W2C2	W1C1	W2C1	100%	UI / UX																				
	Generate test questions	W4C2	W3C1	W3C2	100%	UI / UX																				
	Adjust test questions	W5C2	W4C1	W5C1	100%	UI / UX																				
	Project Plan	W6C1	W5C2	W6C2	100%	Project Manager																				
	Choose learning methods	W2C2	W1C2	W2C2	100%	Project Manager																				
	Learning Objective	W2C2	W1C1	W2C2	100%	Project Manager																				
	Determine Pencil Mechanics	W2C2	W1C1	W1C2	100%	Project Manager																				
Development																										
	Diagram learning method	W6C1	W4C1	W4C2	100%	Web Developer																				
	Step-by-step learning method	W6C1	W4C2	W5C1	100%	Web Developer																				
	Video learning method	W6C1	W5C1	W5C2	100%	Web Developer																				
	Paper prototype	W5C2	W5C2	W6C1	100%	Web Developer																				
	Clickable prototype	W7C1	W6C2	W7C1	100%	Web Developer																				
	Website Build	W10C2	W6C1	W10C2	100%	Web Developer																				
User Testing																										
	Paper prototype	W5C2	W4C2	W5C1	100%	Web Designer																				
	Adjust wireframes	W6C1	W5C2	W5C2	100%	Web Developer																				
	Clickable prototype	W7C2	W7C2	W8C1	100%	Web Designer																				
	Adjust design	W8C1	W8C1	W8C2	100%	Web Developer																				
	Final test - live site	W9C2	W8C1	W10C2	100%	Web Designer																				
	Adjust design	W10C1	W10C1	W10C2	100%	Web Developer																				
Design																										
	Initial sketches	W3C2	W2C2	W3C2	100%	Web Designer																				
	Storyboard diagram method	W4C2	W3C1	W3C2	100%	Web Designer																				
	Storyboard step-by-step method	W4C2	W3C2	W4C1	100%	Web Designer																				
	Storyboard video method	W4C2	W4C1	W4C2	100%	Web Designer																				
	Paper prototype	W5C1	W4C1	W5C1	100%	Web Designer																				
	Clickable prototype	W7C1	W6C1	W7C1	100%	Web Designer																				
	Website design	W6C2	W5C1	W6C2	100%	Web Designer																				
Final Delivery		W10C2	W10C1	W10C2	100%	Team																				

Completed In Progress Not Started

Thoughts on project plan

My initial project plan was a great place to start but it was the incorrect format for what the project needed. I listed some time estimates and gave a detailed plan for what I was going to do but I needed to change the format to a Gantt style chart.

Converting to this style of chart allowed me to see the project in a different way, it laid out all of the things I needed to do in a very understandable time format. I was able to see what things I would be working on at the same time. Essentially, it broke it down to pre-requisites, co-requisites and final tasks.

As you can see from my chart on the previous page, I was able to complete all of the tasks I set out to do in this project. I will definitely be using this for future projects.

Learning Objectives
&
Test Questions

http://www.4554designtestsite.com/ryan/Mechanical%20Pencil/

Goals

Learner should be able to operate a mechanical pencil and be able to identify the size of replacement lead.

Learning Objectives

- Part Familiarity
- Function / Troubleshooting
- Maintenance
- Refill
- Care
- Ways to use (optional)
- Mechanical vs. Regular (optional)

Disclaimers

- Color doesn't matter
- If instructions not followed, pen may not work
- Pencil specific

Version 1

What piece must be removed to add replacement lead? End cap, eraser, pocket clip

What size replacement lead does this pencil use? .9mm, .5mm, .7mm

To advance lead, do you do you push in on the push button? True or false

What happens to the pencil if you pull out on the push button? Pencil breaks, eraser comes out, lead advances

What is the purpose of the pocket clip? Stop pencil from rolling, clip to pocket, no purpose

Version 2

What piece must be removed to add replacement lead?

a. End cap
b. Eraser
c. pocket clip

What size replacement lead does this pencil use?

a. .9mm
b. .5mm
c. .7mm

TRUE / FALSE To advance lead, you push in on the push button?

What happens to the pencil if you pull out on the push button?

a. Pencil breaks
b. eraser comes out
c. lead advances

What is the little part between the end cap and lead called?

a. Pocket clip
b. Lead Sleeve
c. Body

Thoughts on learning objectives and test questions

The learning objectives were something we flushed out as a class. This gave us all the same goals, since we were all working on the same project, but it allowed us to take a path that was best for what we wanted to do. The disclaimers were also decided on as a class, although we were able to place the disclaimer anywhere we chose to.

The goal of the project was something I created when I was looking at the entire scope of the project.

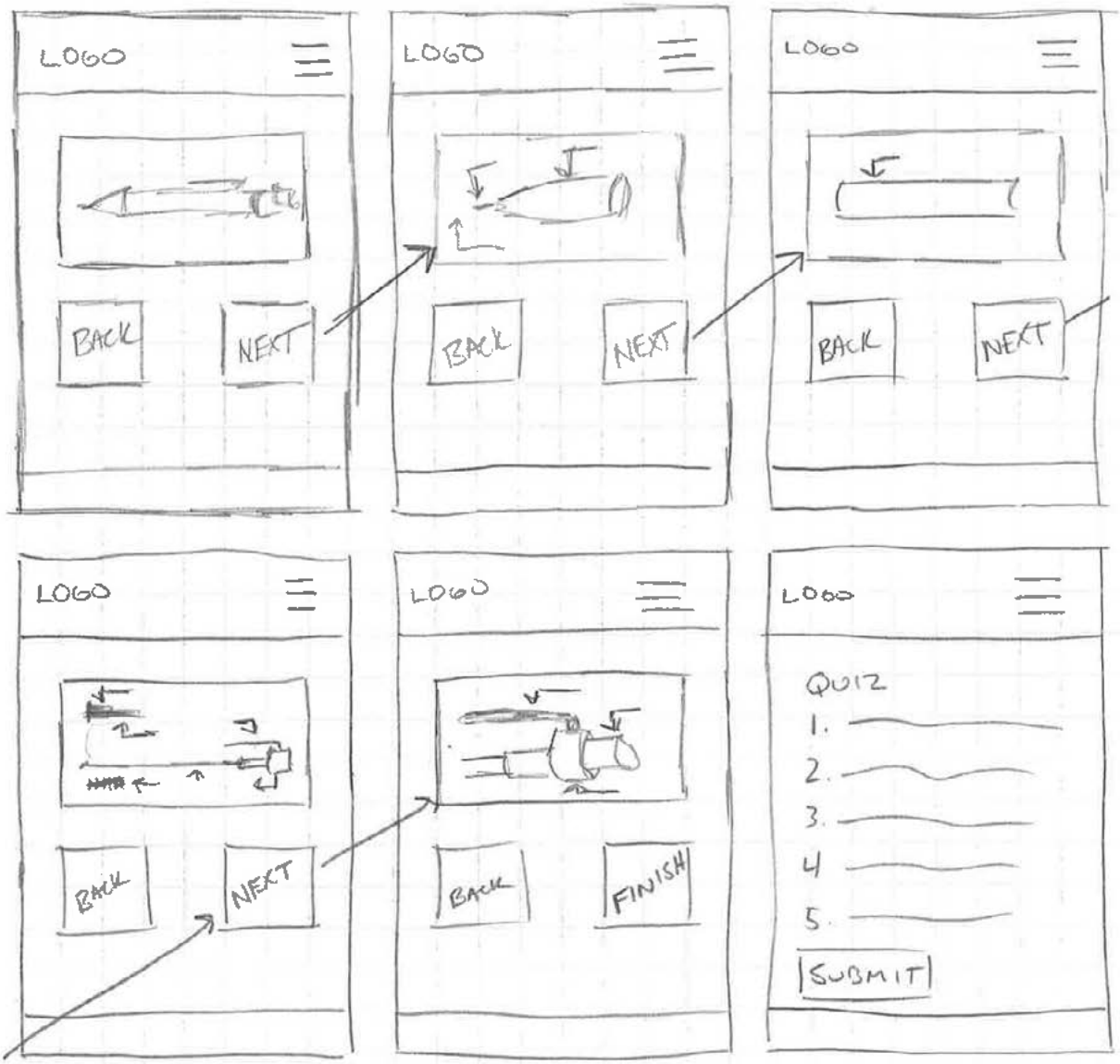
The test questions were tricky to develop. We had to make them specific enough so a person with knowledge of a mechanical pencil would want to take the training but we couldn't make them so difficult that it was hard to give the answer. Another thing we needed to avoid was asking a question that would direct the user to the correct answer. For example, you wouldn't want a question to be "This pencil takes 0.7mm lead, what size lead does it take?" This isn't really a question for a test because it gives them the answer and immediately discredits it.

The final thing we had to make sure we did was to not offer the same type of questions, we couldn't have five multiple choice questions. I offered four multiple choice and one true / false. I did this because these answers provided me an easy way to code them so I could grade the quiz and make sure the grading was accurate. For the most part, there wasn't a large change from version one to version two but I think the questions were just hard enough to make someone want to utilize the training.

Initial Sketches
Mobile

http://www.4554designtestsite.com/ryan/Mechanical%20Pencil/

Initial Sketches - Mobile



PAGES

- HOME
- DIAGRAM
- STEP x STEP
- VIDEO
- QUIZ

GOALS

- RESPONSIVE
- EASY NAV
- QUIZ
-

CODE

- HTML
- CSS
- JAVASCRIPT
- PHP

1 Block = 1/4 "

Thoughts on initial sketches

From the beginning, I knew I wanted my site to be responsive, something that could be used one any device so I started with the mobile design. I drew out a training plan that I thought guided the user through it nicely. Although my initial design would've worked, I kept wondering how I was going to deliver it. If I made something with one image per page, I would end up with a simple website that was 40-50 pages. This wouldn't have been a problem, but I didn't really want my final site to be that large. I wanted a site that was nice, and was as close to single page architecture as possible.

In the next section, you can see what my initial wireframes are and you will see what I am talking about when I am talking about 40-50 pages.

Initial Wireframe
Mobile

http://www.4554designtestsite.com/ryan/Mechanical%20Pencil/

Initial Wireframe - Mobile

1

LEARN TO OPERATE A MECHANICAL PENCIL. CHOOSE TRAINING METHOD BELOW!

DIAGRAM METHOD

STEP BY STEP METHOD

VIDEO METHOD

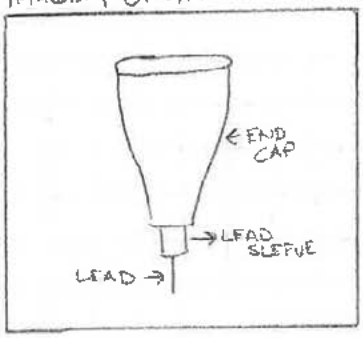
WELCOME TO THE DIAGRAM TRAINING METHOD.

HERE YOU WILL BE SHOWN A SERIES OF DIAGRAMS OF A MECHANICAL PENCIL. THERE ARE 3 PARTS, PENCIL MECHANICS, USAGE, AND REPLACEMENT PARTS. THERE IS A SHORT QUIZ AT THE END.

BEGIN DIAGRAM TRAINING

PART 1: PENCIL MECHANICS

IMAGE 1 OF 4: PENCIL TIP

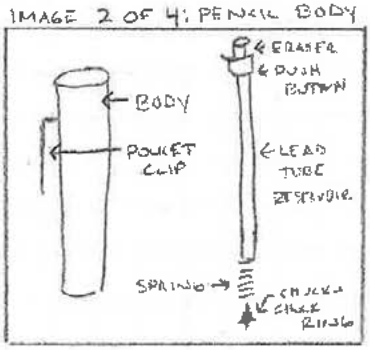


BACK

NEXT PART

PART 1: PENCIL MECHANICS

IMAGE 2 OF 4: PENCIL BODY

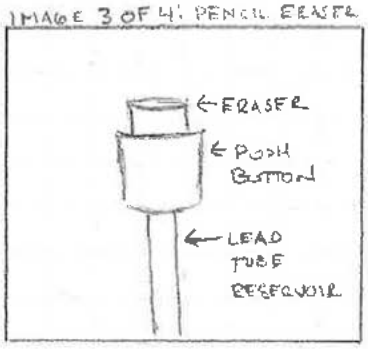


PREVIOUS PART

NEXT PART

PART 1: PENCIL MECHANICS

IMAGE 3 OF 4: PENCIL ERASER

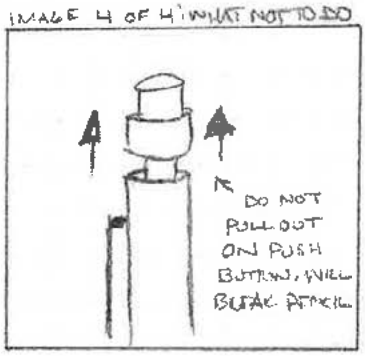


PREVIOUS PART

NEXT PART

PART 1: PENCIL MECHANICS

IMAGE 4 OF 4: WHAT NOT TO DO



PREVIOUS PART

FINISH PART 1

1 Block = 1/4 "

2

CONGRATULATIONS! ON COMPLETING PART 1!

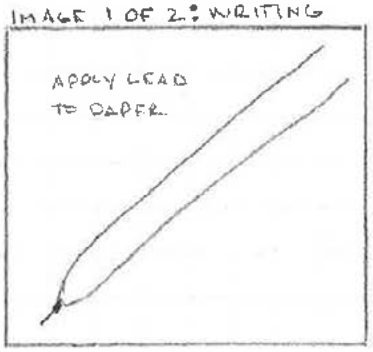
EXIT TRAINING

CONTINUE TO PART 2 PENCIL USAGE

SKIP TO TEST

PART 2: PENCIL USAGE

IMAGE 1 OF 2: WRITING

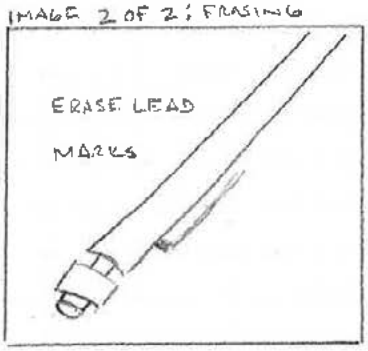


BACK

CONTINUE TO ERASING

PART 2: PENCIL USAGE

IMAGE 2 OF 2: ERASING



BACK TO WRITING

FINISH PART 2

CONGRATULATIONS! ON COMPLETING PART 2!

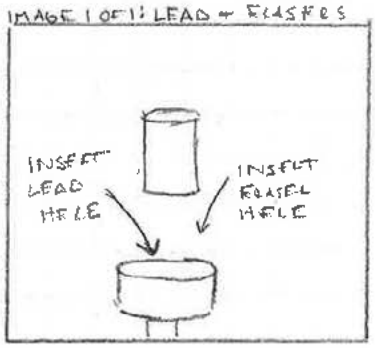
EXIT TRAINING

CONTINUE TO PART 3 REPLACEMENT PARTS

SKIP TO TEST

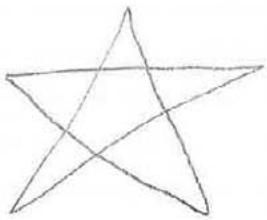
PART 3: REPLACEMENT PARTS

IMAGE 1 OF 1: LEAD + ERASERS



BACK

FINISH PART 3



CONGRATULATIONS ON FINISHING TRAINING

EXIT TRAINING

TAKE TEST

1 Block = 1/4 "

Thoughts on initial wireframe

Like I previously stated, I think this design would've worked well for the project but it would've created a much larger website than I wanted. I had my suspicions that I would make a change but I proceeded on with this for the paper prototype testing, what ended up being the first of three rounds of user testing.

Paper Prototype
&
User Testing

http://www.4554designtestsite.com/ryan/Mechanical%20Pencil/

Paper Prototype - Mobile

LEARN TO OPERATE A MECHANICAL PENCIL.

CHOOSE TRAINING METHOD BELOW

DIAGRAM METHOD

STEP BY STEP METHOD

VIDEO METHOD

1

WELCOME TO THE DIAGRAM TRAINING METHOD.

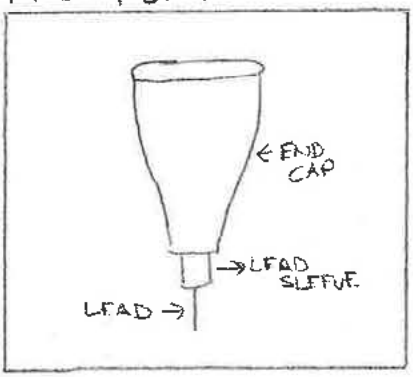
HERE YOU WILL BE SHOWN A SERIES OF DIAGRAMS OF A MECHANICAL PENCIL, THERE ARE 3 PARTS, PENCIL MECHANICS, USAGE, AND REPLACEMENT PARTS, THERE IS A SHORT QUIZ AT THE END.

BEGIN DIAGRAM TRAINING

2

PART 1: PENCIL MECHANICS

IMAGE 1 OF 4: PENCIL TIP



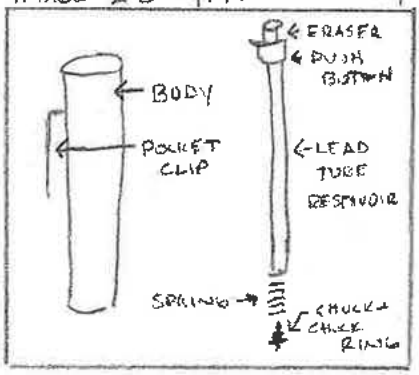
BACK

NEXT PART

3

PART 1: PENCIL MECHANICS

IMAGE 2 OF 4: PENCIL BODY



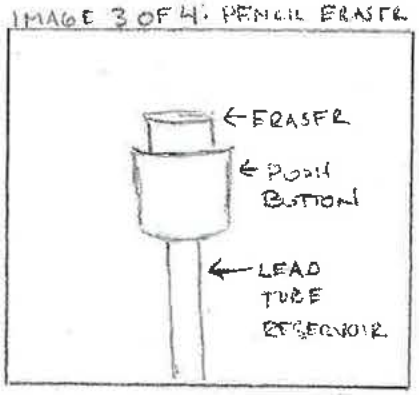
PREVIOUS PART

NEXT PART

4

PART 1: PENCIL MECHANICS

IMAGE 3 OF 4: PENCIL ERASER



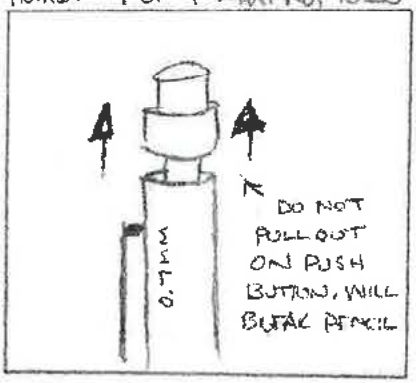
PREVIOUS PART

NEXT PART

5

PART 1: PENCIL MECHANICS

IMAGE 4 OF 4: WHAT NOT TO DO



PREVIOUS PART

FINISH PART 1

6

CONGRATULATIONS!
ON COMPLETING
PART 1 !

EXIT TRAINING

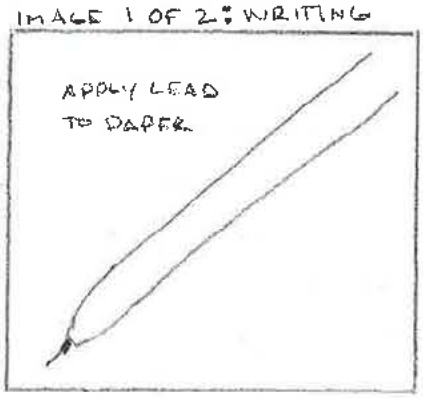
CONTINUE TO PART-2
PENCIL USAGE

SKIP TO TEST

7

PART 2: PENCIL USAGE

IMAGE 1 OF 2: WRITING



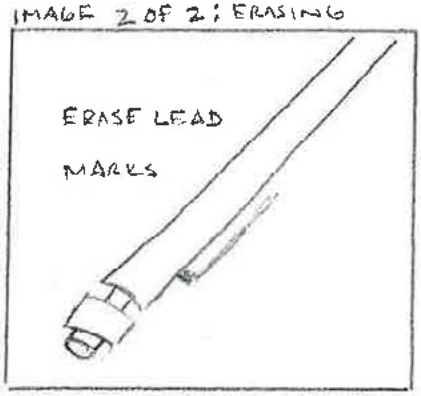
BACK

CONTINUE
TO ERASING

8

PART 2: PENCIL USAGE

IMAGE 2 OF 2: ERASING



BACK TO
WRITING

FINISH
PART 2

9

CONGRATULATIONS
ON COMPLETING
PART 2!

EXIT TRAINING

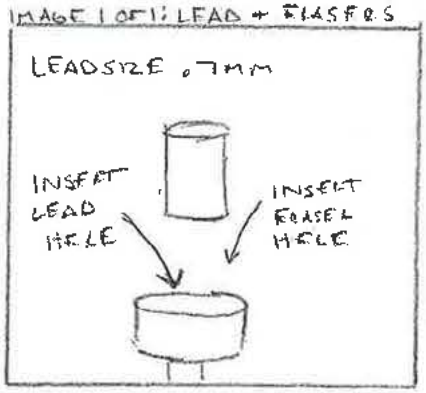
CONTINUE TO PART 3
REPLACEMENT PARTS

SKIP TO TEST

10

PART 3: REPLACEMENT PARTS

IMAGE 1 OF 1: LEAD + ERASERS



BACK

FINISH
PART 3

11

CONGRATULATIONS ON
FINISHING TRAINING

EXIT TRAINING

TAKE TEST

12

Paper Prototype Testing Results - Paper Mobile Phone

Question 1:	Please click on the diagram learning method.
User 1:	User correctly identified Diagram Method
User 2:	User correctly identified Diagram Method
User 3:	User correctly identified Diagram Method
User 4:	User correctly identified Diagram Method
Question 2:	What do you expect to learn during this training?
User 1:	Learn to use the pencil
User 2:	Learn to use the pencil
User 3:	Learn to use the pencil
User 4:	Learn to use the pencil
Question 3:	How many images are in this part of the training?
User 1:	4
User 2:	4
User 3:	4
User 4:	4

Recommended Changes

Images
• Add better wayfinding
• Images don't all look the same, different shades
Content
• Give users options to jump around, guide them.
In training navigation
• Add more color to guide, remove red for back, it's not bad.

Question 4:	Advance to image 4, what are you told NOT to do?
User 1:	Pull out on push button
User 2:	Pull out on push button
User 3:	Pull out on push button
User 4:	Pull out on push button
Question 5:	You finished part 1, please click to begin part 2.
User 1:	User correctly started part 2
User 2:	User correctly started part 2
User 3:	User correctly started part 2
User 4:	User correctly started part 2
Question 6:	Does this slide instruct you how to write?
User 1:	Yes
User 2:	Yes
User 3:	Yes
User 4:	Yes
Question 7:	What size is the replacement lead?
User 1:	0.7mm
User 2:	0.7mm
User 3:	0.7mm
User 4:	0.7mm
Question 8:	You've finished the training, click on test.
User 1:	Yes
User 2:	Yes
User 3:	Yes
User 4:	Yes

Thoughts on paper prototyping and user testing

Although my user testing was successful in the fact that the users largely got everyting correct, I could tell the overall format wasn't pleasing to them. There was a lot of "clicking" to move through the training and there was a lot of areas where someone could go wrong. For example, I broke the training down into three sections and I offered an out after each section. Initially I thought this was the way to go but I found out there were too many steps to get through it. The user would have to click approximately 12 times to get through a simple diagram training. It worked but it needed to be streamlined.

My paper prototype was designed to look like the screen of a cellular telephone. The screen size was that of the HTC M-1 8, the phone I currently have. I chose this phone becuase it is similar in size to the iPhone 6, a phone that the majority of the people I know have. As you saw from the images of it, I used colors on the buttons to guide people through, green for go and red for back. Two of the users mentioned the use of the color red feeling negative, going backward in the training isn't wrong, they just wanted more information about that part. This lead me to start questioning the use of the buttons to guide through the training.

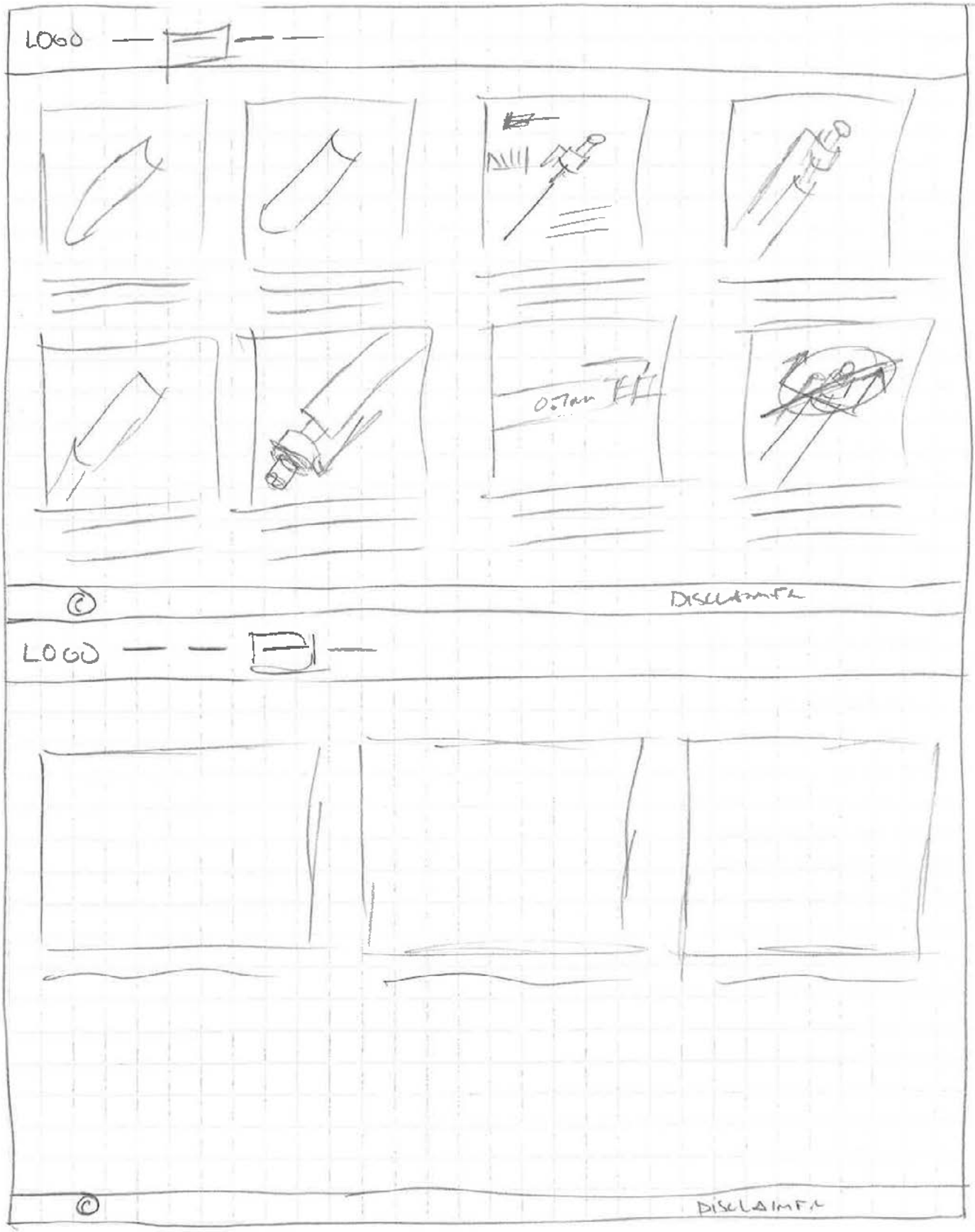
Another issue I found was with the images themselves. There was too much variation from image to image, it took away from the professionalism of the training. Again, all of the users were able to successfully go through the training but I wanted this to be a good training that was both visually and functionally excellent. The next rounds of user testing were done as a desktop but I kept the issue of the images and the other responses in the back of my mind.

Initial Sketches
Desktop

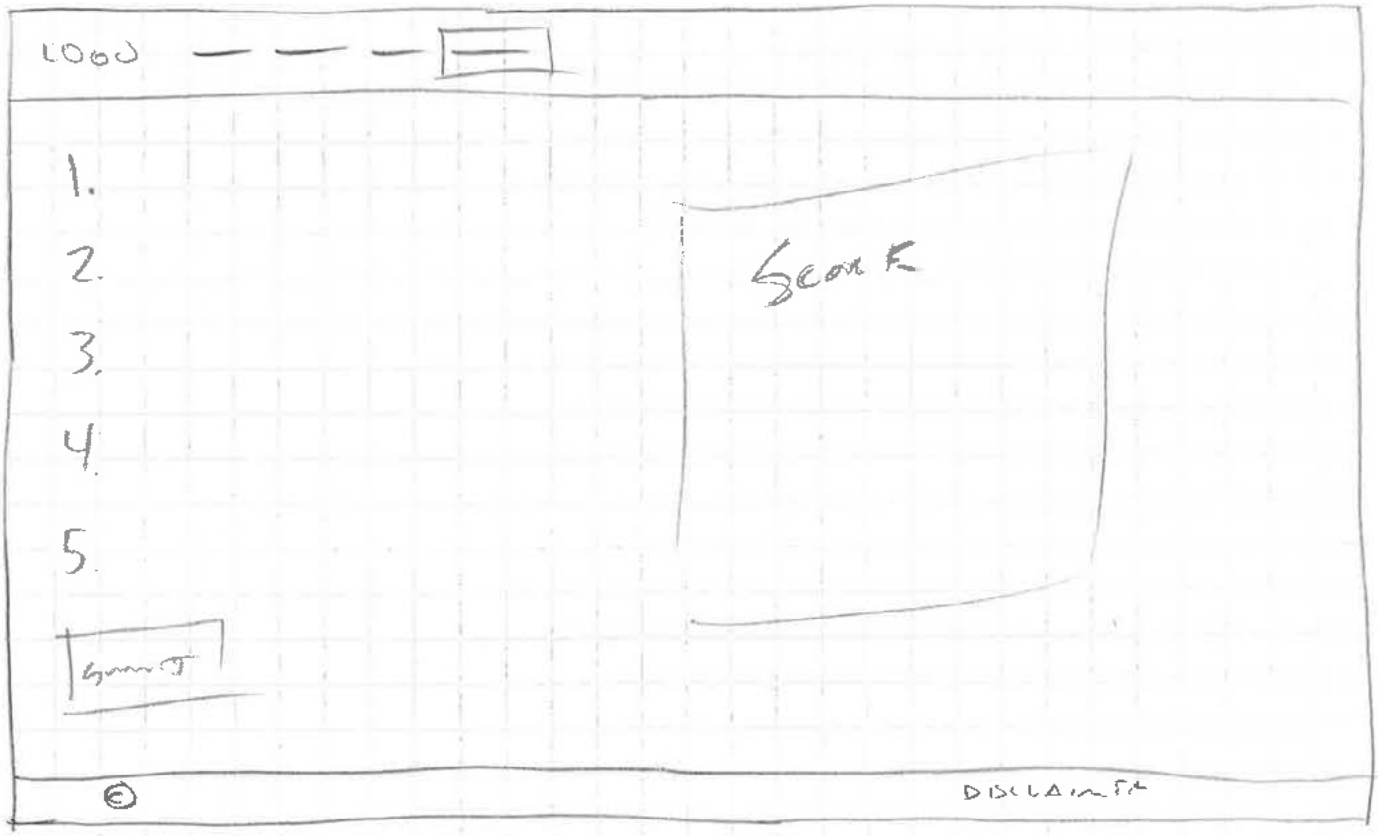
http://www.4554designtestsite.com/ryan/Mechanical%20Pencil/

Initial Sketches - Desktop

1 Block = 1/4 "



1 Block = 1/4 "



PAGES

- HOME
- DIAGRAM
- STEP X STEP
- VIDEO
- QUIZ

CODE

- GRADE QUIZ
- PHP
- HTML

1 Block = 1/4 "

Thoughts on initial desktop sketches

Taking what I had learned from my paper prototyping on a mobile format, I started to look at the desktop format for change. I didn't want the site to be the 40-50 pages, as mentioned before so I went with a three column layout where I could lay the images next to each other and I labeled them with image one of seven and so on.

Utilizing this approach would allow me to format the mobile platform in a similar manner as before but it would remove the use of buttons to navigate. I took this approach into the next round of user testing.

Initial Wireframe
Desktop
&
Clickable Prototype
(Marvel App)

http://www.4554designtestsite.com/ryan/Mechanical%20Pencil/

Initial Wireframe & Clickable Prototype - Desktop

Mechanical Pencil Training | Diagram | Step-By-Step | Video | Quiz

Welcome to the mechanical pencil training website

Training Goals

This website is designed to teach you to use a mechanical pencil and then test your knowledge.

We will be covering the parts of the pencil, usage and replacement parts.

How to use

It's very simple, choose the method you want to use to learn, from belos, go through the training and take the quiz. When you submit the quiz your results will be emailed to you. If you think you are ready, you can skip the training and go directly to the quiz.

Now, get started by choosing your learning method below

Learning Methods

There are three different learning methods:

- Diagram Method
  You will be shown a series of images with information on them about the pencil.
- Step-By-Step Method
  You will be shown a series of images along with step-by-step instructions on how to use the pencil
- Video Method
  You will be shown three different videos about the pencil usage

Diagram Method | Step-By-Step Method | Video Method | Take Quiz

Copyright © Mechanical Pencil Training 2016

Disclaimer

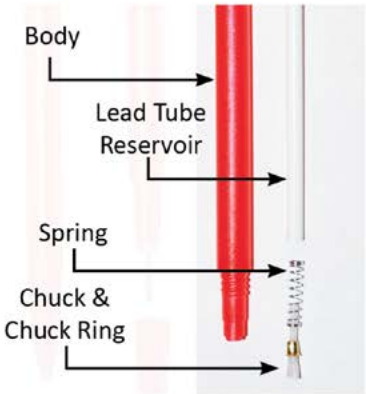
* This training is specific to this pencil. The color of the pencil does not matter. If instruction is not followed, pencil may not work.

Mechanical Pencil Training | Diagram | Step-By-Step | Video | Quiz

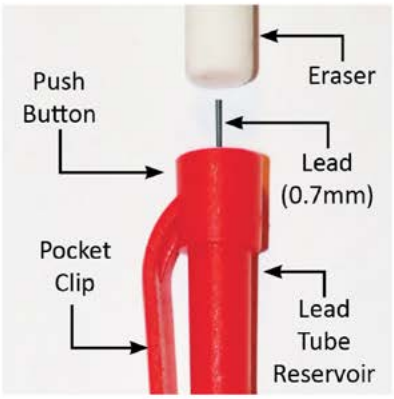
Diagram Method

Pencil Tip - 1 of 7

Inside Parts - 2 of 7



Eraser End - 3 of 7

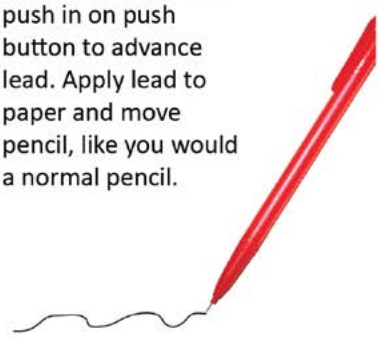


Warning - 4 of 7

WARNING:
DO NOT PULL OUT ON THE PUSH BUTTON. Doing so will cause the pencil to break!

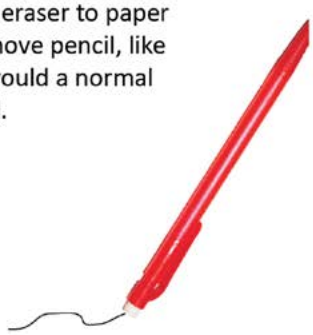
How to Write - 5 of 7

To write with pencil, push in on push button to advance lead. Apply lead to paper and move pencil, like you would a normal pencil.



How to Erase - 6 of 7

To erase with pencil, apply eraser to paper and move pencil, like you would a normal pencil.



Quiz

Question 1:

What piece must be removed to add replacement lead?

- [ ] End Cap
- [ ] Eraser
- [ ] Pocket Clip

Question 2:

True / False: To advance lead, you pull out on the push button?

- [ ] True
- [ ] False

Question 3:

What size replacement lead does this pencil use?

- [ ] 0.9mm
- [ ] 0.5mm
- [ ] 0.7mm

Question 4:

What happens to the pencil if you pull out on the push button?

- [ ] Break Pencil
- [ ] Removes Eraser
- [ ] Lead Advances

Question 5:

What is the little part between the end cap and lead called?

- [ ] Pocket Clip
- [ ] Lead Sleeve
- [ ] Body

Grade Quiz

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Disclaimer

* This training is specific to this pencil. The color of the pencil does not matter. If instruction is not followed, pencil may not work.

Clickable Prototype Testing Results - Marvel App

Question 1:	What is this website designed to do?
User 1:	Teach to use the pencil
User 2:	Teach to use the pencil
User 3:	Teach to use the pencil
User 4:	Teach to use the pencil
Question 2:	Where do you click to skip the training and go to the quiz?
User 1:	Bottom button
User 2:	Bottom button
User 3:	Navigation
User 4:	Bottom button
Question 3:	Whast page are you currently on?
User 1:	Diagram Method
User 2:	Diagram Method
User 3:	Diagram Method
User 4:	Diagram Method

Question 4:	Can you point to the chuck ring?
User 1:	User identified chuck ring
User 2:	User identified chuck ring
User 3:	User identified chuck ring
User 4:	User identified chuck ring
Question 5:	Please click on quiz link?
User 1:	User correctly clicked on nav link
User 2:	User correctly clicked on nav link
User 3:	User correctly clicked on nav link
User 4:	User correctly clicked on bottom link

Recommended Changes

Navigation
• Change title to be different than links
• Have a hover and active states
Content
• Change images to reveal on hover, hide them somehow
Footer
• Disclaimer could be bigger

Thoughts on initial desktop wireframe and user testing

Just like the paper prototype user testing, this round of testing was successful, having the test subjects correctly identify the answers I wanted them to with one difference, I was given specific feedback on specific improvements.

I found out the navigation was a challenge to the user because the logo and the links were the same color. The font size was different but the users hesitated to find where to click. This caused me to change the color of the logo and to add a hover effect on it so it would become larger. I also added hover effects to the links so the user would know when they were on a link.

Through testing, I found out that the images were effective but a little confusing. The images were place side-by-side so there was a lot of imagery shown in a fairly small space. Three of the four users commented that it was distracting. This caused me to change the display of them and to add an overlay to them, revelaing the image on hover, while keeping the other ones muted.

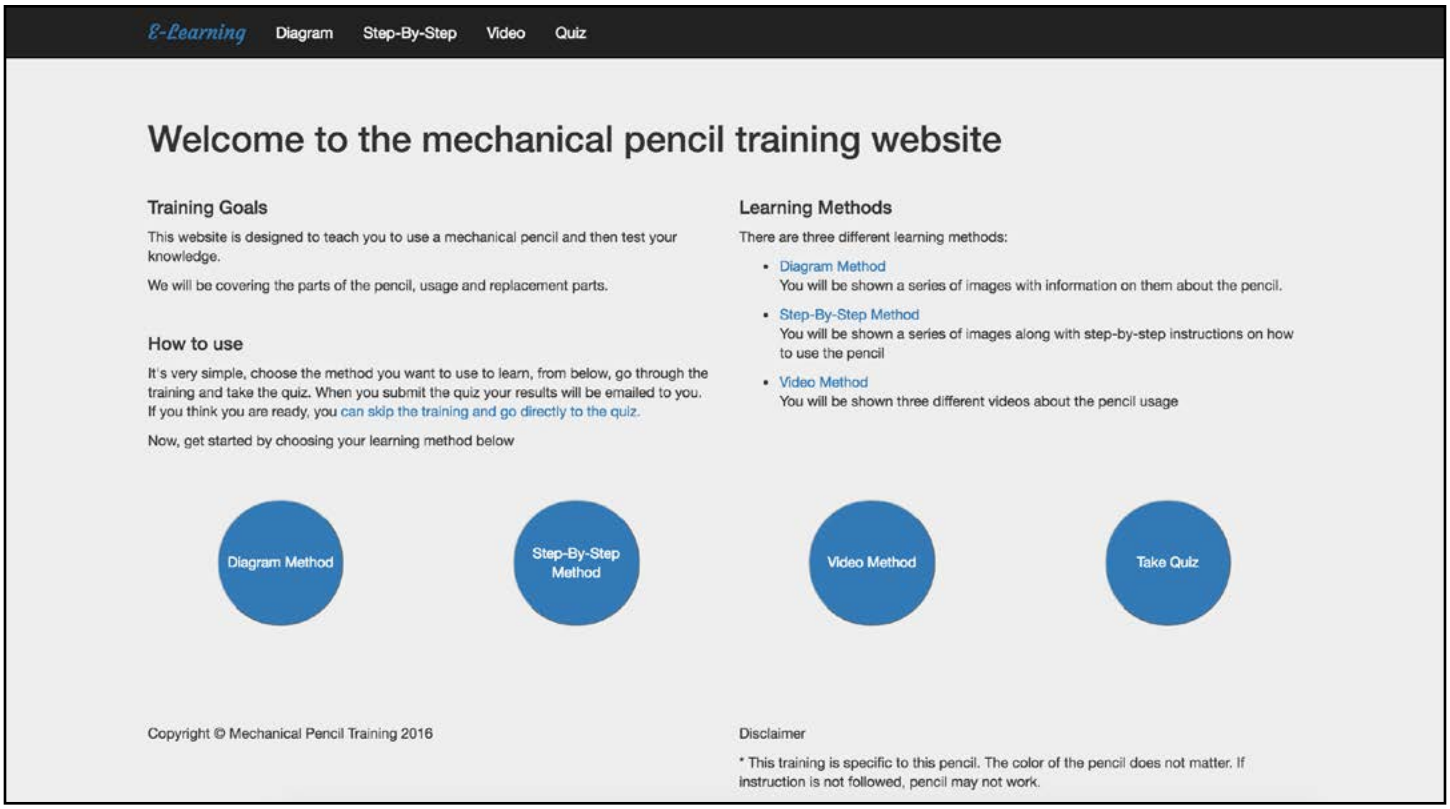
The final critique of the testing was with the disclaimer, I was told that it could be a little bigger. I had it nested in the footer, which is where I kept it but I changed the size of the word “disclaimer” so it would draw more attention.

All of the changes that were made were tested in round three. You will see those changes next.

Revsied Wireframes
&
Clickable Prototype
(Marvel App)

http://www.4554designtestsite.com/ryan/Mechanical%20Pencil/

Desktop Revisions

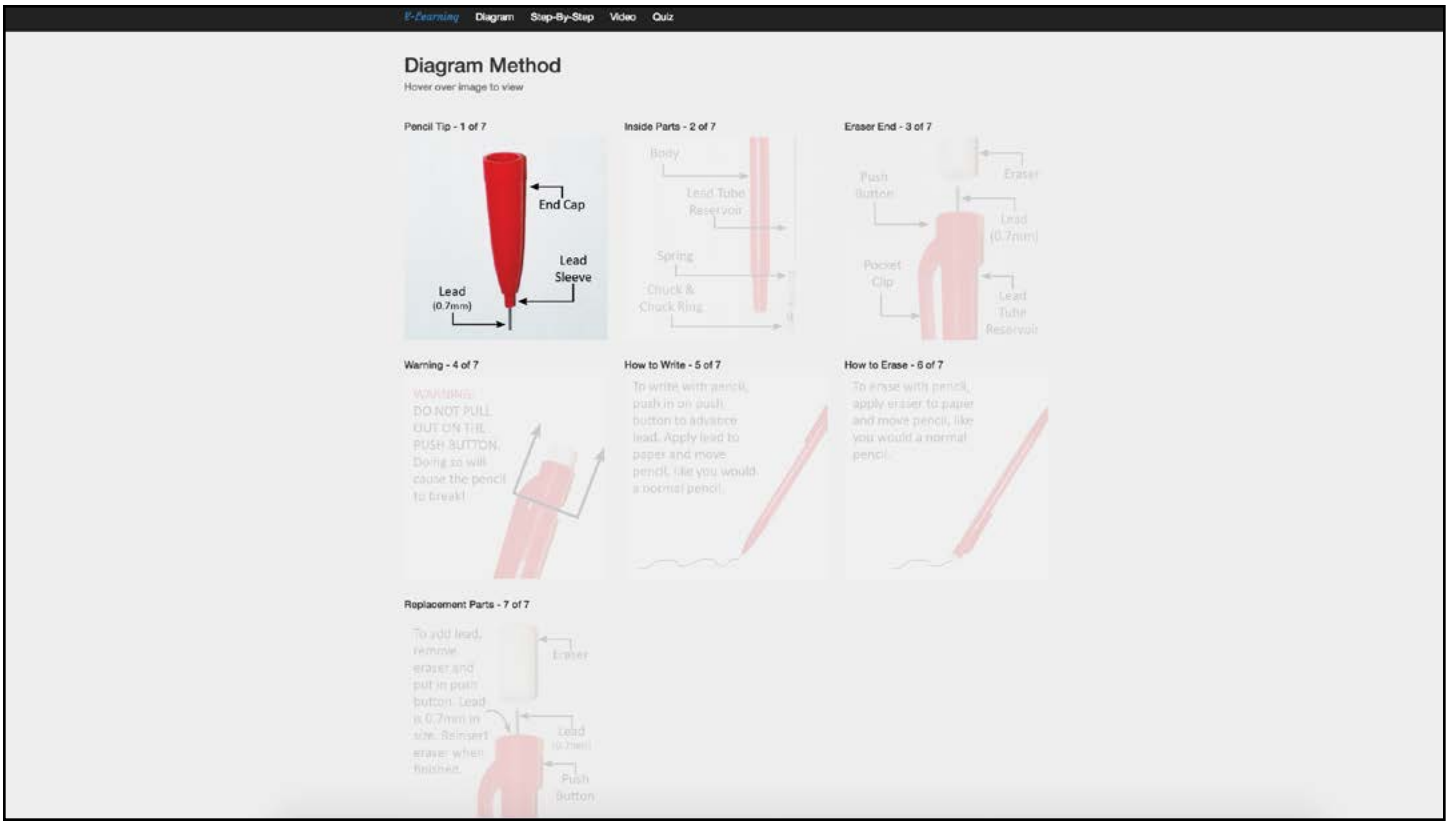


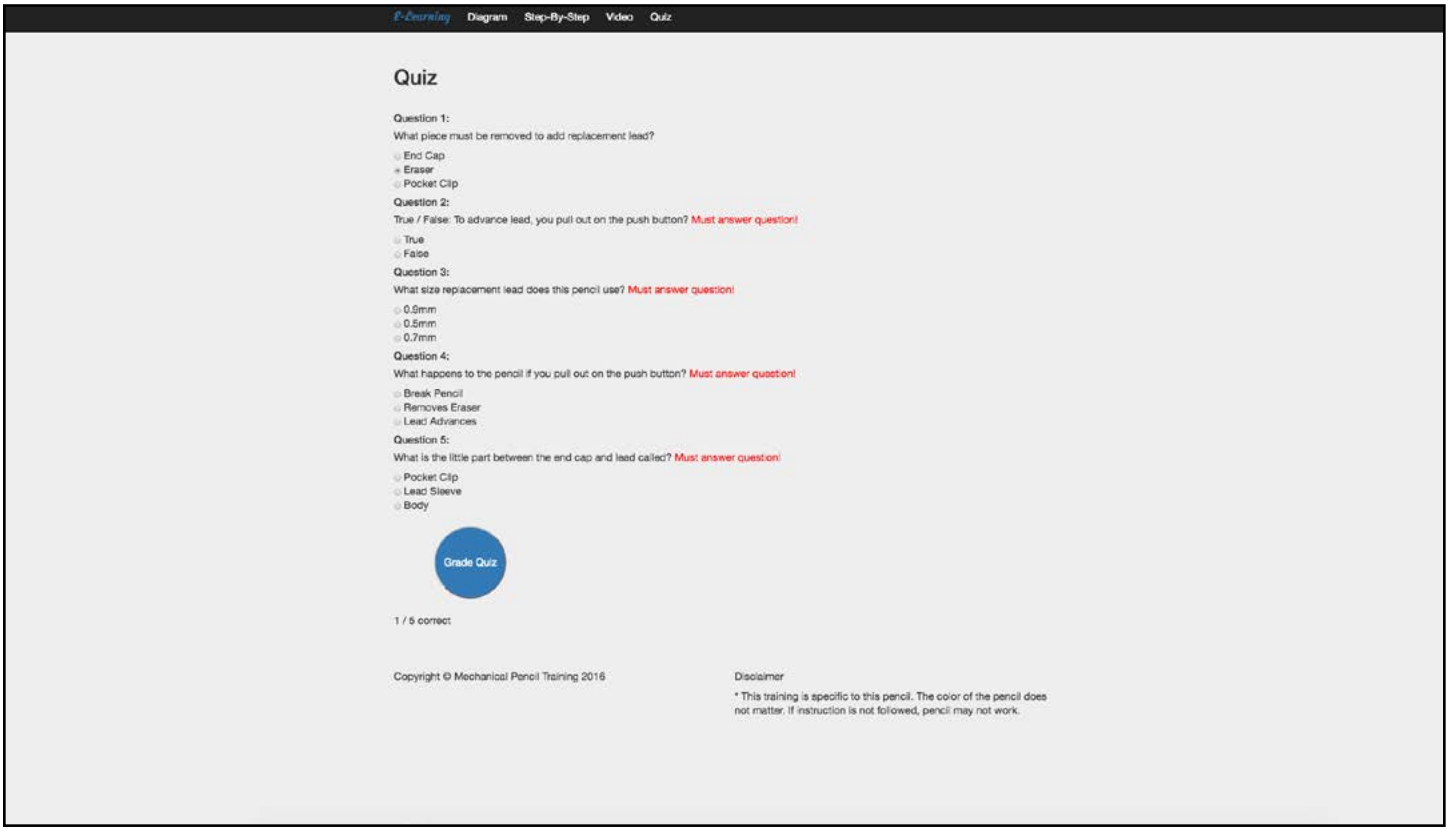
Revisions:

1. Change background color, change navigation to better define pages

Revisions:

1. Mute images that aren't active, more focus on active image





Revisions:

1. Add an error state telling user that questions are required.
2. Change answer options to radio buttons so user can only select one.

Revision Goals:

1. Change background color from white to light gray to make the colors stand out more.
2. User had confusion with all images, mute inactive images so user can focus on one image at a time.
3. Add error state to quiz to let user know the answers are required.
4. Make answer options radio buttons so user can select one option only.

Clickable Prototype Testing Revised Site - Marvel App

Question 1:	Do you find the diagram images easy to follow?
User 1:	A little difficult
User 2:	Better than before but still not great
User 3:	Sort of, would like the oters to be hidden
User 4:	Yes, they are easy to understand.
Question 2:	Are the quiz questions required?
User 1:	Yes
User 2:	Yes
User 3:	Yes
User 4:	Yes
Question 3:	What tells you they are required?
User 1:	Error
User 2:	Error
User 3:	Error
User 4:	Error

Question 4:	What are your overall impressions of the site?
User 1:	Boring, very basic
User 2:	Basic, not flashy
User 3:	Functional but boring
User 4:	Basic
Question 5:	Can you tell me what is the logo and what is the navigation?
User 1:	User correctly identified each
User 2:	User correctly identified each
User 3:	User correctly identified each
User 4:	User correctly identified each

Recommended Changes

Content
• Images are still difficult to focus on
• Background color doesn't matter
Overall Website
• Website is boring, very basic

Thoughts on third design

The changes that were made to the disclaimer and the navigation on this round of testing were a success, users no longer had the hesitation when navigating through the site and the disclaimer was more prominent. There were still issues with the images I used in the training, users still found them to be distracting.

In addition to the images still being a problem, I was given some other feedback. Overall, users thought the site was very basic. It was functional but it was not attractive but they didn't like the site. I was actually glad to receive this feedback because I didn't like it either.

I started exploring options for the images, the options I discovered were not the options I wanted to go with. I could completely cover the photos, then use buttons to reveal them but then I was back to the buttons. If I just covered them and didn't use buttons, how would the user know where to hover? I had found out that my training methods were good, the packaging of them wasn't.

I now knew that I needed a new site and I still wasn't necessarily happy with the images I was using so I went back to the drawing board and redesigned the entire site and created illustrations for the diagram and step-by-step learning methods. Using illustrations would give me a consistent look that I could easily duplicate, if I created the pencil in different layers. I could target what I wanted and remove any parts I didn't. You will see these changes in the next section.

Final Design

http://www.4554designtestsite.com/ryan/Mechanical%20Pencil/

Redesign of website - Final

E-Learning

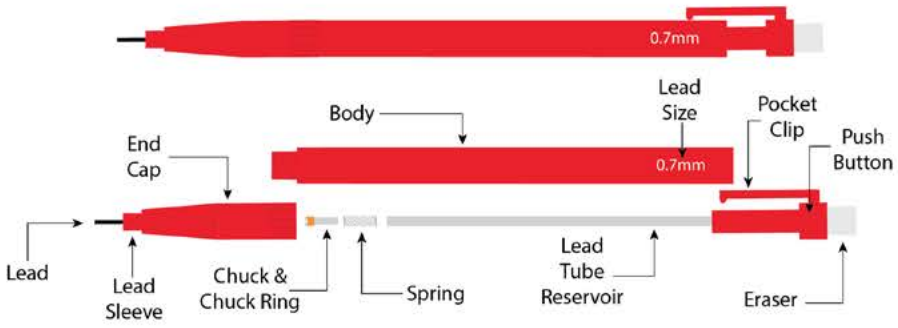
DIAGRAM STEP-BY-STEP VIDEO QUIZ

MECHANICAL PENCIL TRAINING

IT'S VERY SIMPLE, CHOOSE THE METHOD YOU WANT TO USE TO LEARN,
GO THROUGH THE TRAINING AND TAKE THE QUIZ, YOUR QUIZ WILL BE GRADED ON SUBMISSION.
IF YOU THINK YOU ARE READY, GO AHEAD AND SKIP TO THE QUIZ, WE DARE YOU!

DIAGRAM TRAINING

A bare-bones training on the mechanical pencil, this training only shows you the parts and a brief description on use. This method is ideal for the advanced user.



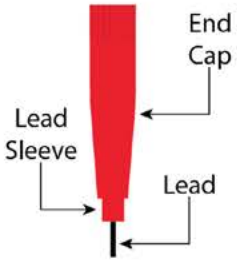
Mechanical Pencil Diagram

Click on image to expand

Redesign of website - Final (Continued)

STEP-BY-STEP TRAINING

More comprehensive than the Diagram Training Method, this shows you the images and gives you instructions. This is ideal for the intermediate user.



Step One:

This image is the endcap, which consists of the endcap itself, the lead sleeve (where the lead comes out) and the lead.

Step-by-step Diagram
Click on image to expand

VIDEO TRAINING

A series of three videos that explain how to use the mechanical pencil. This is the most comprehensive training available and is best suited for the beginning user.

Pencil Mechanics

Pencil Usage

Replacement Parts

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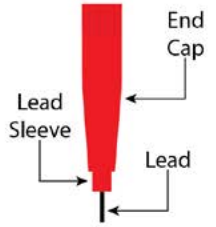
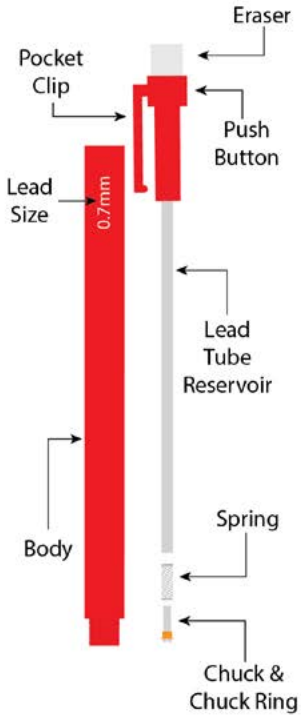
DISCLAIMER: This training is pencil specific and may not apply to other mechanical pencils. If the training is not followed, the pencil may not work. The color of the pencil does not matter.

Diagram Modal Window

DIAGRAM TRAINING METHOD





Warning:
Do not pull out on the push button or you may break the pencil. If you pull hard enough it will come apart.

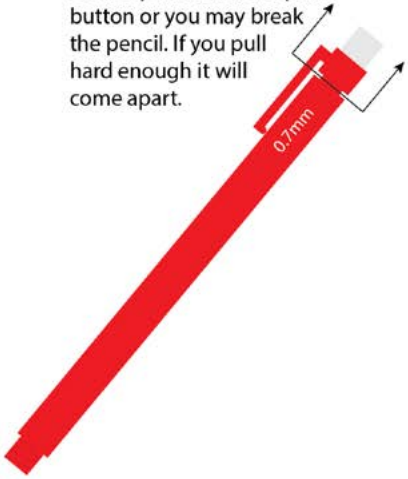
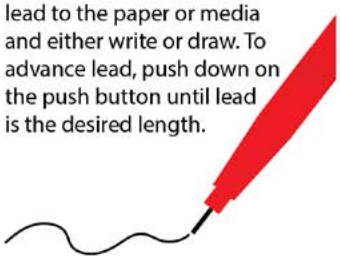


Diagram Modal Window (Continued)

To write with pencil, apply the lead to the paper or media and either write or draw. To advance lead, push down on the push button until lead is the desired length.



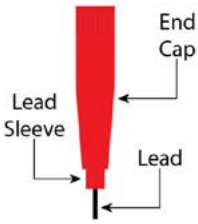
To erase, turn the pencil over and apply the eraser to the markings you made with the lead. You can erase as much or as little as desired.

To add replacement lead, remove eraser and insert 0.7mm lead into the hole in the end cap, then replace eraser. Push in on push button to advance lead until it is the desired length.

× CLOSE WINDOW

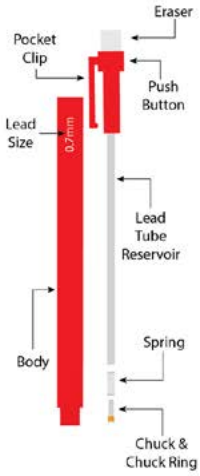
Step-By-Step Modal Window

STEP-BY-STEP TRAINING METHOD



Step One:

This image is the endcap, which consists of the endcap itself, the lead sleeve (where the lead comes out) and the lead.



Step Two:

This bulk of the mechanical pencil, here you are shown the body of the pencil, the lead size, the chuck & chuck ring, spring, lead tube reservoir and the push button, which is comprised of the push button, the eraser and the pocket clip.

The lead tube reservoir is where the extra lead is stored and the spring, the chuck & chuck ring are all involved in the advancement of the lead. When you push down on the push button, the spring compresses and forces the lead to move through the chuck & chuck ring until it passes through the lead sleeve and out the endcap.

Step Three:

WARNING: Do not pull out on the push button, doing so will cause the pencil to come apart, spilling the spring, chuch & chuck ring to the table, renedering the pencil useless, unless you want to take the time to put it back together. If you do happen to do this, I suggest just removing the rest of the lead and discarding the pencil.

Step Four:

To write with this mechanical pencil, you should push the push button as many times as it takes to get the lead to the desired length and then apply the lead to the paper. Once the lead and paper are in contact, you can either write or draw but if you are doing it properly, there should be some markings on the paper.

Do not advance the lead too far out, doing so will cause the lead to break when pressure is applied. If this does happen, advance the lead and try again.

Step-By-Step Modal Window (Continued)

Step Five:

To erase with this mechanical pencil, apply the eraser to the paper and move it across the markings you want to remove. The motion you use to erase does not matter, you should see the markings disappear as you erase.

Step Six:

To add new lead to the pencil, simply remove the eraser and feed the new lead through the opening in the end of the push button. Removing the eraser will give you access to the lead tube reservoir, the place where the lead is stored. Once you have installed new lead, replace the eraser, advance lead and continue.

As a reminder, this pencil takes 0.7mm lead, which is fairly common and can be found at a large number of retailers.

× CLOSE PROJECT

Quiz

DIAGRAM STEP-BY-STEP VIDEO QUIZ

QUIZ

TAKE THE QUIZ, TEST YOUR KNOWLEDGE!

QUESTION 1:

What piece must be removed to add replacement lead?

- End Cap
- Eraser
- Pocket Clip

QUESTION 2:

True / False: To advance lead, you pull out on the push button?

- True
- False

QUESTION 3:

What size replacement lead does this pencil use?

- 0.9mm
- 0.5mm
- 0.7mm

QUESTION 4:

What happens to the pencil if you pull out on the push button?

- Break Pencil
- Removes Eraser
- Lead Advances

QUESTION 5:

What is the little part between the end cap and lead called?

- Pocket Clip
- Lead Sleeve
- Body

GRADE QUIZ

YOUR SCORE:
0 / 5 CORRECT

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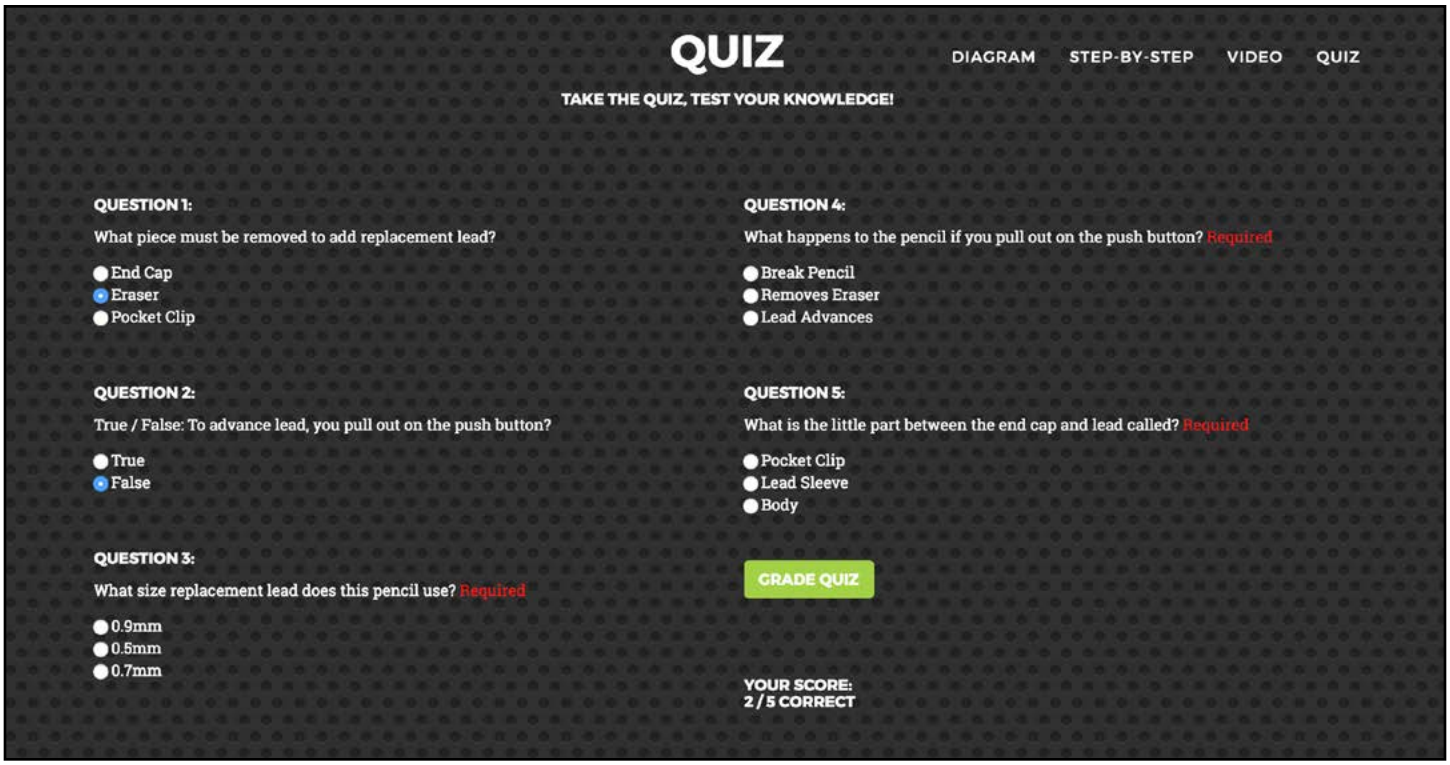
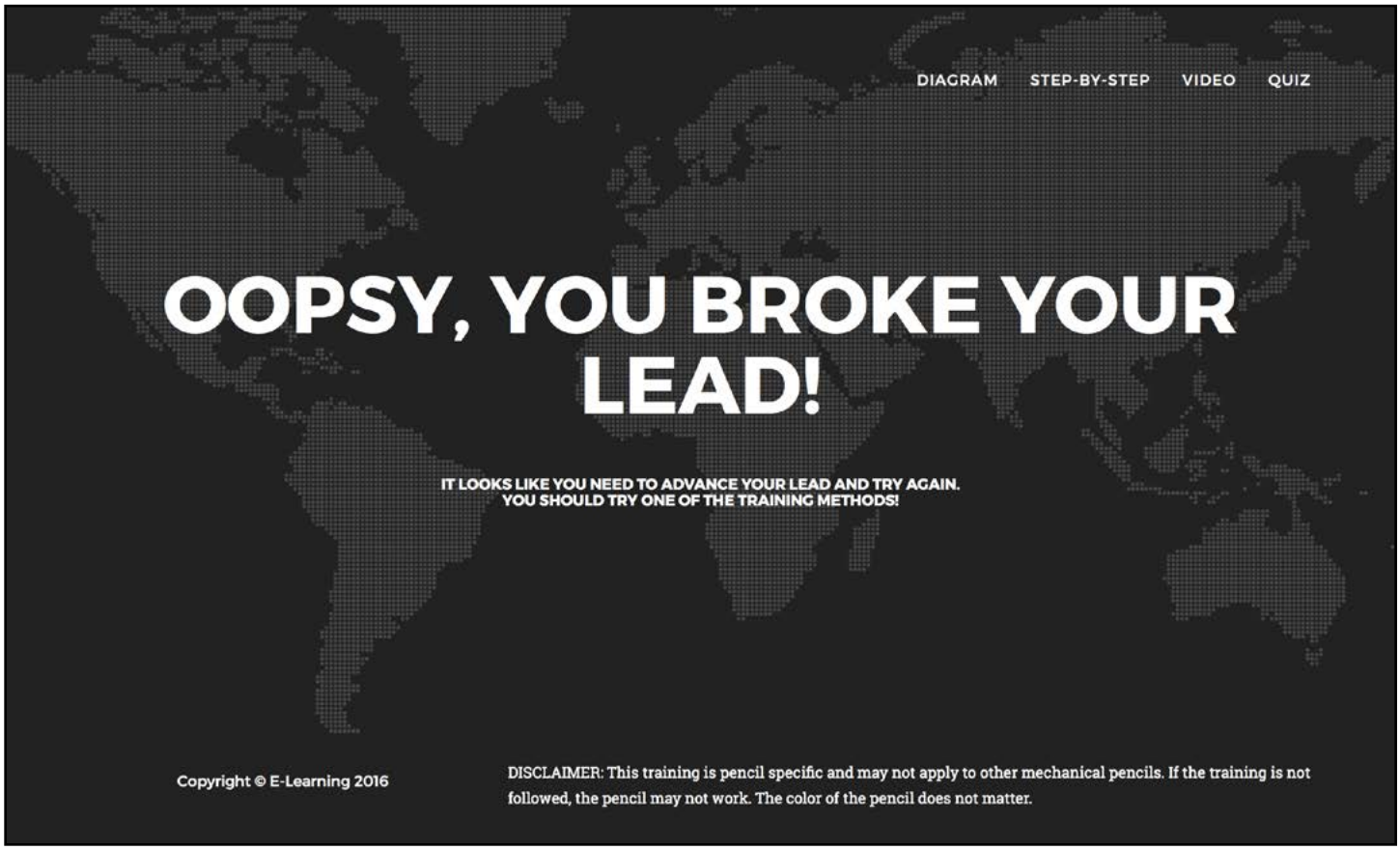
DISCLAIMER: This training is pencil specific and may not apply to other mechanical pencils. If the training is not followed, the pencil may not work. The color of the pencil does not matter.

Quiz with Error States



404 Page



Thoughts on final design

As you can see from the images of the final design, I completely left behind the old site and moved to something much more modern. The new site used a single page architecture, with the exception of the quiz, and it used modal windows to hide all of the images that the user found distracting.

For the diagram portion, the user was presented the full diagram and were given the option of clicking the image to expand it and see it broken down into parts. I used the same method for the step-by-step training but I removed the instructions from the images and placed them on the right. The images are also large enough that you only see one at a time, but the scroll bar lets you know there are more to see.

I added a large hero image of a globe as a welcome. To me, the image of a globe is something I always equate to learning because the library I went to when I was a child had several of them.

The quiz is opens to a new window to give the user the option of reviewing the learning methods if they get tripped up. I also included links back to the trainings on the page if they wanted to use that instead. I also have a very simple 404 page that directs the user back to the website if they find themselves somewhere they shouldn't be.

Personally, I am much happier with this design. I feel that it gives the user a visually stimulating wrapper that adds to the credibility of the training.

There is one thing I would change though and that is the videos, I would shoot them in landscape format instead of portrait, the black edges are driving me nuts.