



Overview

This design document will provide an overview of technical training to be created for the Learning Lions organization. [Learning Lions](#) is a non-profit organization enabling young adults in impoverished rural areas of Eastern Africa to work, and to live a life full of opportunity while remaining in their home area. They provide information technology and business skills training to underprivileged youth throughout rural Africa. The students are then encouraged to become self-sustaining entrepreneurs, leading to business growth and local community development. They have identified a need for more teachers and training resources in the areas of web and mobile application development. The following design will detail the process of creating web application training resources for the Learning Lions.

Summary Of Analysis

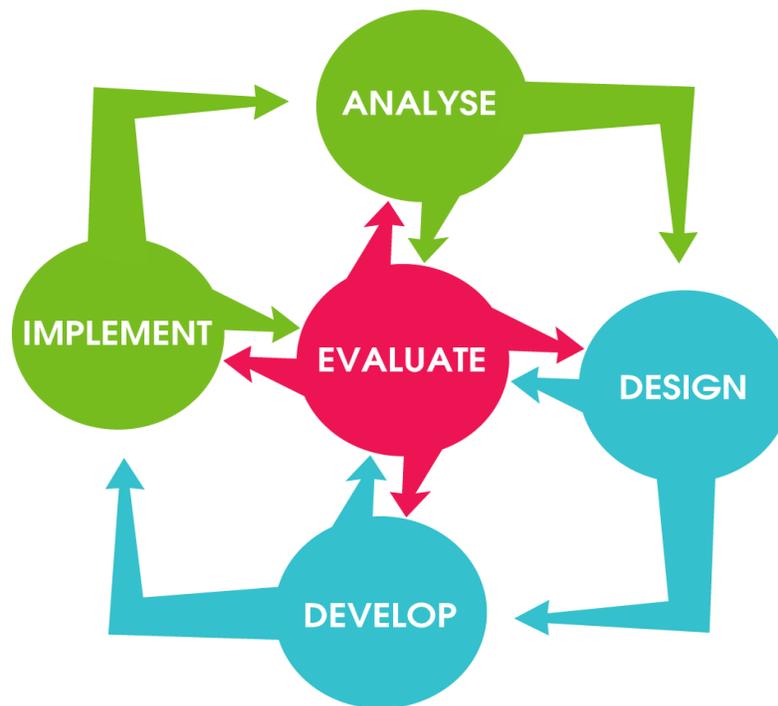
The Learning Lions organization is seeking to build their library of instructor-led, task based learning materials. They are looking for programs that enable opportunities to grow and expand their students' portfolios and gain hard technical skills. The individual members of the Learning Lions organization come from a rough and impoverished region. Example A in the appendix highlights the learner persona of an average member. Specific considerations for this organization and their students:

- Limited computer access
- Limited bandwidth
- Subject to internet outages
- Have not grown up immersed in technology
 - ◆ Limited application experience
 - ◆ Basic technical and computer language can not be assumed
 - ◆ Do not have access to email or phones in most cases

Limited bandwidth and computer access rule out live streams and video conferencing. There is also a very large time delay between Kenya and the US, scheduling such

training can be a logistical nightmare. These restrictions also necessitate the use of smaller files so they can be transmitted easily through download or email. This training will have to be built as a stand-alone artifact that can be transmitted to their learning center for use by their students. Again due to bandwidth and access concerns, videos and technical resources should not be hosted here. The training will also have to be very elementary in nature, taking additional time to explain things we would normally take for granted as a US citizen. This includes things such as browsers, different tools and applications, and terminology. Extra time and pacing will most likely be necessary for success.

Instructional Design Model



The ADDIE model (Analyze, Design, Develop, Implement, Evaluate) has been chosen as the instructional design framework for this training. This model will guide the creation of the web development training throughout all of its phases. This iterative approach will also take an empathetic design focus during the analysis and evaluation steps. As we are many miles apart and lead very different lives, there is a need for extra emphasis on the human perspective. According to Kouprie and Visser “Empathy serves to inform and to inspire designers to create products that fit the user’s needs..... It is

related to a deep understanding of the user’s circumstances and experiences, which involves relating to, more than just knowing about the user.”(Kouprie and Visser 2009). The process will begin with persona analysis and each iteration will end with a human emphasized evaluation of results. This framework allows input when creating the initial materials and checkpoints to ensure the proposed learning objectives are being met. ADDIE affords us the ability to evaluate the training program as a whole. It is also in alignment with the Learning Lions organizational needs.

Proposed Learning Solution

Taking the environmental issues and the goals of Learning Lions into account the following solution will be designed. A series of technical screencasts will be developed that walks the users through creating a web page. This will start by breaking down each technology involved (HTML, CSS, Javascript) and how each is used. Each module will provide the learner with a screencast walking through a given piece of the puzzle. This screencast will show and utilize the examples which will lead into a constructing a web artifact of each technology. The final project section will tie them all together with the end result being a final web page including HTML, CSS, and Javascript. The final project will utilize their own creativity and these skills they have learned along the way. Included in the modules will be a folder including the screencast, examples, and instructions for each exercise. The screencast videos will be kept short and split up into multiple sections if they get long. This is to keep the lessons short while focusing on building and to alleviate bandwidth issues. Each module folder will be able to be zipped up and transferred via quick download or email. View the modules in the chart below for a breakdown of each section.

	0) Setup	1) HTML	2) CSS	3) Javascript	4) Project
A	Tools Involved	Screencast	Screencast	Screencast	Screencast
B	How To Use Examples	Examples	Examples	Examples	Examples
C	Additional Resources	Create HTML	Create CSS	Create HTML	Create Full Web Page with HTML,CSS,Javascript

Figure 1) Module Breakdown

[Journey Map](#)



The advantages of this approach are that it gets around a lot of the technical issues related to the day to day reality of the Learning Lions. These modules can be downloaded and transferred with ease. The screencast format works well for displaying this type of technology and the progression to the final project through the modules fills a lot of Learning Lions goals. The disadvantage is there is no personal connection and limited opportunities for feedback. A large advantage of learning technical skills is having someone there who can get you going again when your programs break. The learners here will not have this advantage. Ideally the modules can be administered with some on site help that knows and understands web pages. Without proper help and support these exercises can turn into frustration very quickly. An unintended consequence of this type of administration can be turning off students to web programming completely and a feeling of being lost.

Learning Goal

The overarching goal of this training solution is to introduce basic web programming skills to the Learning Lions students. It is geared towards learning through doing, with an emphasis on creating portfolio artifacts for students to carry forward with them. Instead of rote instruction the emphasis will be on practicing the skills of creating web pages. This is very much in the spirit of Dirkson; “Learners in all disciplines are frequently in this situation. They get handed the knowledge in a book or a class but don’t get the opportunity to practice and develop skills” (Dirksen, 2016, p. 7).

Instructional Objectives

1. Students can install and setup necessary environmental tools.
2. Students can design and create beginner HTML code.
3. Students can design and beginner CSS code.
4. Students can design and create beginner Javascript code.
5. Students will be measured by creating a portfolio artifact utilizing all three components(HTML, CSS, Javascript) and their own creativity. This will be demonstrated by their ability to create a web page to add to their portfolios.

Solution Storyboard

Action Map

The following map of actions has been created to ensure that all efforts are dedicated to the overarching goal of delivering technical skills to the Learning Lions. This map breaks down the problem into what needs to be accomplished to hit the desired target. The map also breaks down the pivotal information, what needs to be transferred and practiced, and which activities will produce the desired behavior.

Web Page Development Action Map



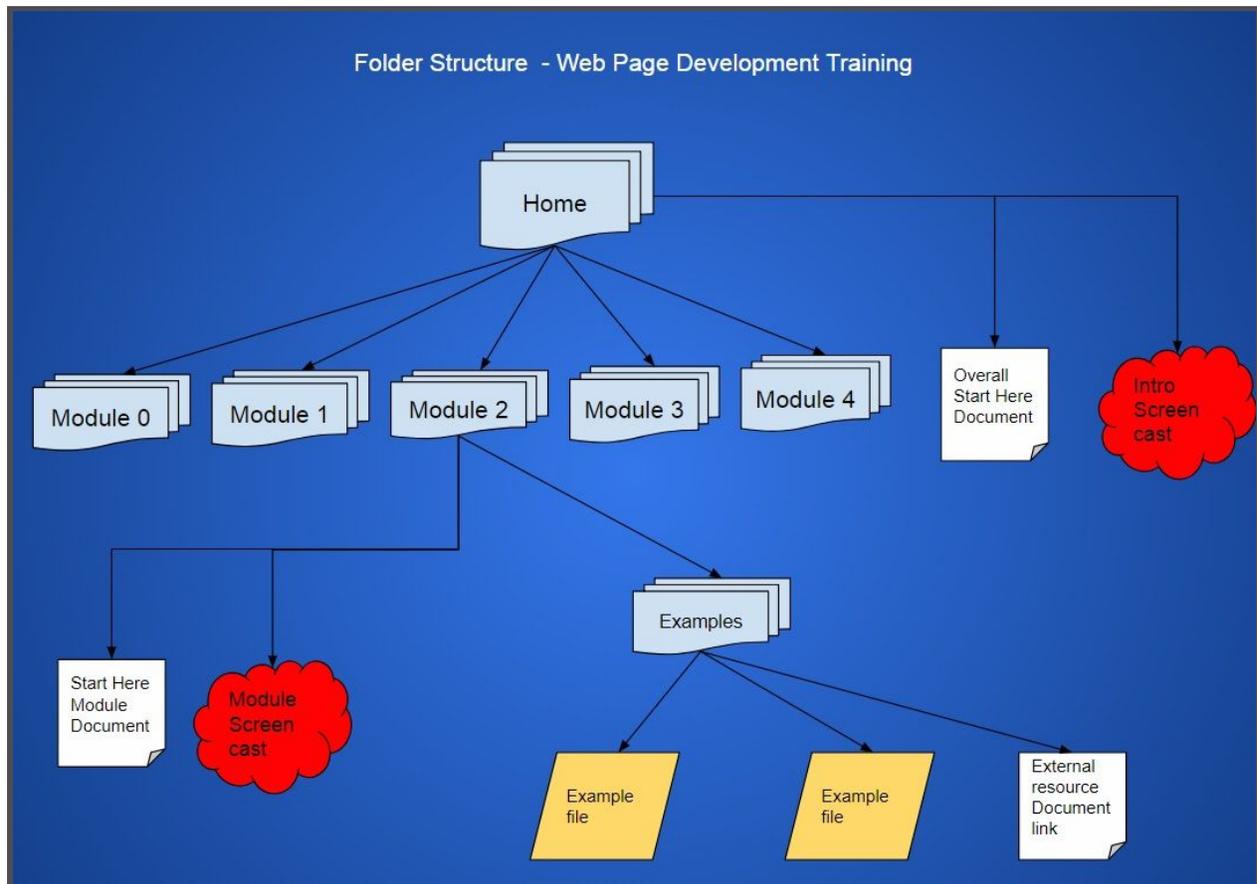
Information Architecture

This training solution is being developed for the Learning Lions which have special considerations for information delivery and organization. As this training will not be delivered via standard internet channels (powerpoint, website, canvas etc...), providing a standardized layout comes with some inherent challenges.

Since no “browsing” platform will be available to navigate between modules or arrange the data, a hierarchy and convention will be provided that allows navigation within the students local machines and file systems. Each module will be located in its own folder

and each folder will be located in the master training folder. Each leaf document in each folder will be numbered as to provide an order and where to begin. This starting point document of each folder will explain that module. The trunk folder will provide an overall hierarchy structure, with each node folder providing a flat module delivery. This layout will look something like this:

[Web Page Training Folder Structure](#)



Example Storyboard

Title: Learning Lions Web Page Training

Target Audience: Learning Lions (remote African youth)

Duration: ~2 hours

Course (Getting Started Objective Path):

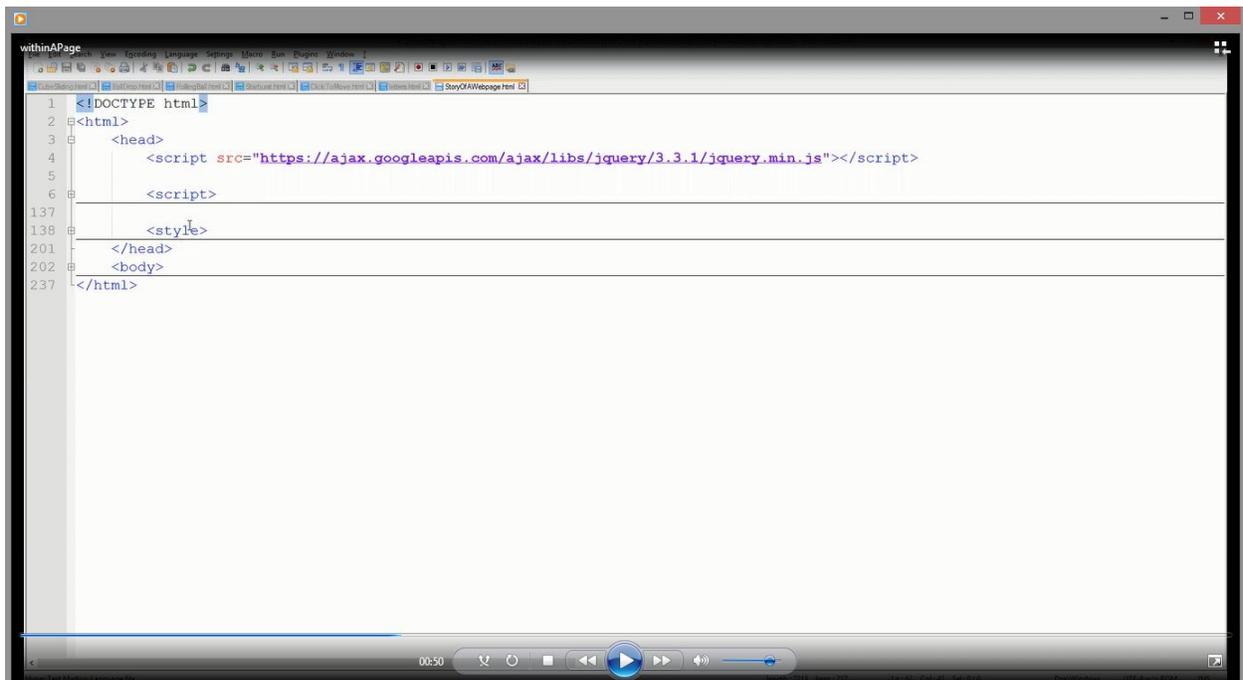
1) User opens main directory folder:

Name	Date modified	Type	Size
Module-0	7/8/2018 12:09 PM	File folder	
Module-1	7/8/2018 12:04 PM	File folder	
Module-2	7/8/2018 12:04 PM	File folder	
Module-3	7/8/2018 12:04 PM	File folder	
Module-4	7/8/2018 12:04 PM	File folder	
1_GettingStarted	7/8/2018 12:05 PM	Text Document	0 KB
2_Screencast	1/25/2018 7:50 AM	MP4 Video	219,121 KB

2) User reads initial "getting started" document which provides overall structure and navigation guidance.

Name	Date modified	Type	Size
Module-0	7/8/2018 12:09 PM	File folder	
Module-1	7/8/2018 12:04 PM	File folder	
Module-2	7/8/2018 12:04 PM	File folder	
Module-3	7/8/2018 12:04 PM	File folder	
Module-4	7/8/2018 12:04 PM	File folder	
1_GettingStarted	7/8/2018 12:05 PM	Text Document	0 KB
2_Screencast	1/25/2018 7:50 AM	MP4 Video	219,121 KB

3) User watches initial prep screencast



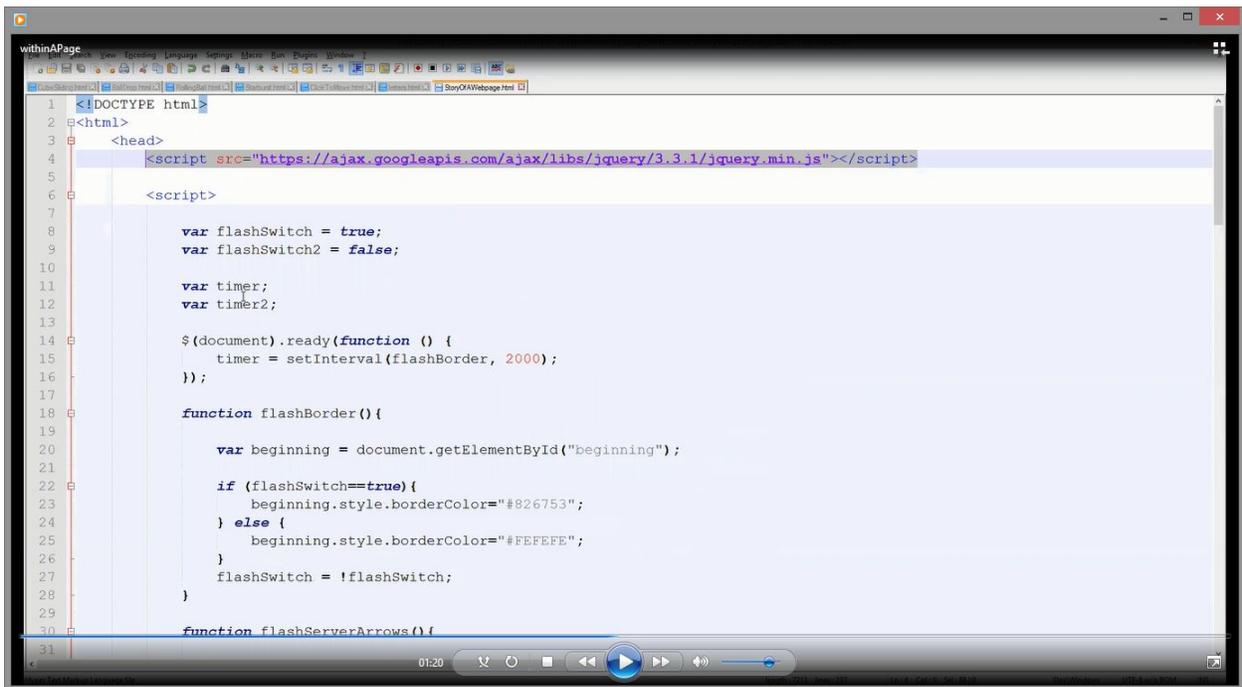
4) User opens module 0 folder:

Name	Date modified	Type	Size
examples	7/8/2018 12:10 PM	File folder	
Module_0_Lesson	7/8/2018 12:05 PM	Text Document	0 KB
Module_0_Screencast	1/25/2018 7:50 AM	MP4 Video	219,121 KB

5) User reads Module 0 lesson document

Name	Date modified	Type	Size
examples	7/8/2018 12:10 PM	File folder	
Module_0_Lesson	7/8/2018 12:05 PM	Text Document	0 KB
Module_0_Screencast	1/25/2018 7:50 AM	MP4 Video	219,121 KB

6) User watches Module 0 screencast:



```

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.3.1/jquery.min.js"></script>
5
6 <script>
7
8     var flashSwitch = true;
9     var flashSwitch2 = false;
10
11     var timer;
12     var timer2;
13
14     $(document).ready(function () {
15         timer = setInterval(flashBorder, 2000);
16     });
17
18     function flashBorder () {
19
20         var beginning = document.getElementById("beginning");
21
22         if (flashSwitch==true){
23             beginning.style.borderColor="#826753";
24         } else {
25             beginning.style.borderColor="#FEFEFE";
26         }
27         flashSwitch = !flashSwitch;
28     }
29
30     function flashServerArrows () {
31

```

7) User examines examples within module 0 folder:

Name	Date modified	Type	Size
External_Resources	7/8/2018 12:10 PM	Text Document	0 KB
HTML_example1	4/9/2017 7:39 PM	Chrome HTML Do...	2 KB
HTML_example2	4/9/2017 7:39 PM	Chrome HTML Do...	2 KB

8) User creates their own artifact based on module lesson for assessment

INTE_5100_Final_Design_ x Web Page Development x Anatomy of a web page x

file:///E:/Teaching/School/UCDenver/INTE5100/WebPageTraining/Module-0/examples/HTML_example1.html

You can add headers

Html is made up of various elements, such as a paragraph.



Or Hyperlinks

Or even fancy buttons

Assessment

Web Page Development Rubric		
Criteria	Ratings	Points
Created HTML code. One point each for inclusion of: <h1> - <h6> Heading <p> Paragraph <i> Italic Bold <a> Anchor & Unordered List & List Item <hr> Horizontal Rule Image <div> 1st Division <div> 2nd Division	0-10	



Created Cascading Style Sheet code(CSS). One point each for the inclusion of: -use at least two different display options(block, inline, inline-block none) -manipulate Width and Height -using floating objects -align an element to the left, center, or right -style each HTML div(x2) created -changing color -changing background/image -changing font/style -change a style on an HTML element for whole page -change the style on any single inline element	0-10	
Created Javascript Code. Two points each for the inclusion of: -manipulation of any DOM elements(HTML, style) using javascript -created own javascript function -used this js function within code at least once -function achieves desired effect without error -import and use at least one JQuery function	0-10	
Combined HTML, CSS, and Javascript into a cohesive stand alone web page. Two points each for each technology used and Four points for no errors appearing within the page or console.	0-10	
Web Page is unique and shows creativity. Page has been developed well and functions. Project is ready for final portfolio.	0-10	

Evaluation Plan

Purpose

This web page development training will be evaluated during and upon completion of the Learning Lions semester. While the training is asynchronous in nature, it will be evaluated during this semester time period to ensure that it is engaging and effective. The purpose of this plan is to determine the depth of technical knowledge and skill the learning lions have gained through taking this course. The evaluation cycle will determine if this training is worth administering again or if any enhancements need to be

made in the future. This feedback loop will be bolstered by the graduating Learning Lions members administering the next round of the training. This iterative approach with the users themselves should help to ensure change is happening as a result of the feedback.

Data Collection and Analysis

1. Users will submit their base HTML files (with CSS and JS included) to the technology administrators upon completion of the training.
2. Web Pages will be analyzed and measured against web page development rubric outlined under assessment.
3. Web Pages determined portfolio worthy or needs more work.
4. Participants will take follow up surveys intended to track the learners experience with the training. Areas of focus will include the screencasts themselves and overall mechanism of delivery.

Levels of Evaluation



The plan will be anchored in Kirkpatrick's four level evaluation model. In this model there are four areas to measure when evaluating training materials. The web page development training will be evaluated against each of these targets.

Level 1 - Reaction	Level 2 - Learning	Level 3 - Behavior	Level 4 - Results
Reactions will be measured through	Both Learning and Behavior will be evaluated through the web page submittal and rubric		This evaluation will rely heavily on the ability for

<p>discourse with administrators throughout the course and with a course survey after completion.</p>	<p>process. This training is hands on, focusing on technical skills and creating opportunities to change development behavior. This tests both the understanding and use of these skills.</p>	<p>students to produce portfolio quality artifacts. The portfolio work will be evaluated by the team and the work rated by the rubric. Included in survey will be questions on basic knowledge learned throughout the course. Will use this help measure results.</p>
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Revision Plan and Schedule

Action	Target Date	Target Level(s)
Obtain initial feedback	July 15, 2018	Level 1 Reaction
REVISION	July 30, 2018	
Administrator videoconferencing session	August 15, 2018	Level 1 Reaction Level 2 Learning
Portfolio review process(web page submittal, rubric review)	November 10, 2018	Level 2 Learning Level 3 Behavior
Analyze portfolios against learning objectives and rubric	November 21, 2018	Level 4 Results
Review survey results. These are intended to gain insight into reaction and learning results from the training.	November 28, 2018	Level 1 Reaction Level 4 Results
Video conferencing meeting to discuss overall efficacy and end of training survey results. Review with administrators.	November 30, 2018	Level 1 Reaction Level 2 Learning Level 3 Behavior Level 4 Results
REVISION	December 30, 2018	

Iterate on this training using knowledge and feedback gained through this administration	Future	<p>Level 1 Reaction</p> <p>Level 2 Learning</p> <p>Level 3 Behavior</p> <p>Level 4 Results</p>
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Communication of Results

The communication of the initial formal evaluation results will take place during the November 30th time period outlined in the schedule above. This will happen during a video conferencing call attended by all stakeholders. Informal metrics and reaction will also be taken throughout this initial rollout phase. The culmination of this training, the associated formal and informal feedback, and all lessons learned will be communicated through this meeting channel and related media distributions. All decisions regarding future iterations of these training materials will happen at this time.

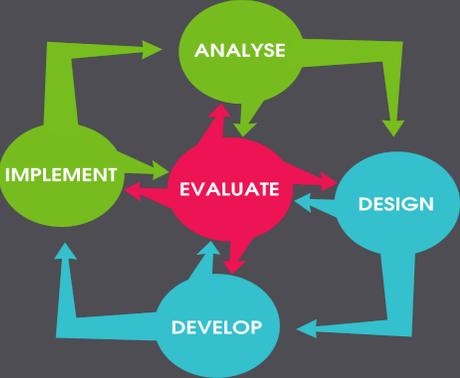
Assumptions

- That Learning Lions students are willing and capable of learning technical skills.
- That Learning Lions has the capability to use video screencasts and web browser technology in their campus facilities.
- That Learning Lions can participate in periodic feedback sessions through video conference.
- Completion of project no later than July 30th, 2018.
- All materials and documents created by the designer are done so free of charge. This donation of time and expertise is done do to help the Learning Lions non profit institution achieve their goals.

Schedule

The development and test life cycle for this training module will follow a structure based on the ADDIE model outlined above. The colors in the table below correspond with the phases of this framework. The month of June will be dedicated to initial analysis and formulating the overall strategy. This is more based on milestones than dates, however the goal is to have the first version complete for the fall courses which start at the end of

August 2018. There is a hard deadline of having a developed training solution in place by no later than July 30th to ensure completion before the fall semester. The Learning Lions semesters are roughly 3 months long and the assessment will be planned there after. After this initial semester with the course materials we will meet to discuss its efficacy.

Date	
June 1, 2018	Begin Analysis phase
June 10, 2018	Research
June 15, 2018	Interview students and faculty
June 20, 2018	Assess needs
June 25, 2018	Formulate strategy
June 30, 2018	Design Initial training solution
July 15, 2018	Seek feedback from stakeholders on initial design
July 30, 2018	Develop solution with feedback included
August 30, 2018	Implement solution
November 15, 2018	Seek feedback from stakeholders on initial implementation
November 30, 2018	Make decision if approach works or not, what can be made better, what is working. Move forward with version 2 or not?

Communication Plan

Communications between designer and stakeholders will take place over the next six months through email as needed. The expectation is for prompt response (~within 24 hours) to ensure key dates are met and course materials delivered. There are several major milestones which will necessitate video conferencing conversations. These include initial interviews and each feedback cycle with a large emphasis on the final session. Feedback will also be gathered through email as necessary.

Summary

The Learning Lions are a proud organization with a very noble goal of providing technology education to impoverished regions of Africa. There are certain restrictions to providing technical training in this environment, but none that can not be overcome with a solid plan. Using the ADDIE model with personal checkpoints will allow us to create top notch web application training materials. Training that takes into consideration both the physical limitations of the environment as well as the people we will be serving. While the Learning Lions may have gaps in technology proficiency and computer skill, they have an aptitude for learning and are well aware of the impact they can have on their surrounding communities through learning these skills. Delivering training materials to this underserved group will come with its own challenges and also great rewards.

References

Dirksen, J. (2016). Design for how people learn (2nd ed.). New Riders.

Kouprie, M., Visser, F. (2009). A framework for empathy in design: stepping into and out of the user's life. Journal of Engineering Design Vol. 20, No. 5, October 2009, 437–448

Appendix

Learner Persona



Name: Barasa Awour

Age: 18

Gender: Male

Occupation: Student

Discovery

Barasa Awour is a young man from Kenya. More specifically he is from Turkana, a region in remote north-western Kenya, bordering Ethiopia, South Sudan and Uganda. Barasa is 18 years old and has three siblings. He has shown aptitude in academics and has been invited to be a student with the Learning Lions. He has had very limited access to computers throughout his life, only using them at the Learning Lions IT Centre. Turkana and the surrounding regions suffer from poor infrastructure which causes bandwidth issues and overall stability with internet connectivity. He is a complete novice when it comes to web development skills. In addition he may not be fluent with basic computer operation tasks such as working with applications and typing as he is still new to working with computers.

Immersion

Turkana and the surrounding regions suffer from poor infrastructure and very few job opportunities. The county's infertile soil does not allow for sustainable agriculture which requires the majority of food supplies have to be transported from cities several hours away. Most of its population still follow traditional living habits in relatively poor conditions. There are some local businesses, however not enough to provide widespread employment opportunities or meaningful wages. The youth are the most directly affected, having little opportunity to find a job and move beyond subsistence

livelihoods in their home region. There is a large homeless population. Two of Barasa's siblings left the home very young and he laments that one of them has turned to sniffing glue in local Lodwar. In spite of these hardships, Barasa is an energetic and bright young man, determined to learn and help his local community. Out of 1000 local students, he has been chosen as one of 50 to be invited into the Learning Lions program. He has been chosen based on his good command of the English language and a high score in a two hour IQ test. This proved he had a high aptitude for learning and understanding technology. He has also undergone a 3 month "basic training" which includes self-paced video tutorials, instructor-led learning and practical training on the basics of programming, graphic design, video and music production. This training emphasises communication, teamwork, time management and presentation skills.

Connection

Barasa has many gaps in skill and knowledge that must be overcome to begin absorbing technical materials. Web application programming can be very difficult to learn when you are proficient in typing, have grown up using applications daily, and have the internet at your fingertips at all times. None of this is the case with Barasa and other residents of the Turkana region. Basic typing and communication skills are a gap that must be overcome to be successful. Internet access is not granted to everyone equitably. Barasa himself does not or has never owned a computer. Even in places like the Learning Lions center the connections are not great and liable to drop completely. While Barasa may have some technical hurdles to overcome, he has an aptitude for technology and sees the potential benefits of learning these skills. Motivation is definitely high and Barasa is eager to learn new skills. Barasa represents another opportunity for Learning Lions to display their ability to teach underrepresented youth in Africa and make an impact.

Detachment

The Learning Lions organization is seeking to build their library of instructor-led, task based learning materials. They are looking for programs that enable opportunities to grow and expand their students portfolios and gain hard technical skills. They are looking to embody the entrepreneurial spirit and showcase the quality work of their students.

Additional considerations with the design of technical training materials for this organization and their students:

- Limited computer access
- Limited bandwidth
- Subject to internet outages
- Have not grown up immersed in technology
 - ◆ Limited application experience
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