

Web Literacy in Adults:

An Educational Approach Using Game Mechanics in Curriculum to Teach Web Literacy in Adults

By: Laura Hilliger

A Master Thesis Presented to the Zentrum für Qualitätssicherung in Studium und Weiterbildung of the University of Rostock

In partial fulfillment of the requirements for the degree of Master of Arts in Media and Education

Advisor: Benjamin Jörissen

Institute: ZQS

Department: Master of Arts in Media and Education

Date: Dresden, July 2012

Abstract

Cyberspace is a transcultural space. With the plethora of subcultures, our society is transforming from “culture for everyone” to “culture through everyone” (Marotzki & Jörissen, 2005). The technical structure of cyberspace is open and decentralized. Therefore, multiple perspectives can interact with each other, making the Web a multicultural transformation space. Through this external networking of cultures, we can work on a global scale to address problems common to all. However, to address key problems, everyone needs to have web literacies that allow them to participate in the global exchange of information. Because technology is changing at an exponential rate, it is often difficult for formal learning institutions to stay current with the curriculum they use for media and technology coursework. Other types of institutions, non-profits and companies are filling the gap in technological education by creating their own educational programming. A pragmatic review of existing definitions of information, media and web literacies as well as of educational theories provides a foundation of web literate skills (or competencies) that are best transferred to Generation X. It is Generation X that most likely lead the formal and informal learning sessions, furthering the spread of these skills within their own learners. This thesis creates a framework for organizations working in the media education space to create pedagogically sound blended-learning programs that use gamification in their curricula.

Declaration

This thesis is the sole and original work of Laura Hilliger.

Copyleft

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-sa/3.0/> or send a letter to Creative Commons, 444 Castro Street, Suite 900, Mountain View, California, 94041, USA.

Dedication & Acknowledgements

In Dedication To:

My mom who helped me review my thesis and challenged me on ideas. She taught me that I can be anything I want and do anything I set my mind to, I just have to love to learn. Thank you.

My sincere thanks to:

My husband for listening to me babble on endlessly about web literacies and educational ideas over the last few years.

My friends who pushed me to think from several very different perspectives.

My colleagues at the Mozilla Foundation who inspire me daily with their love for the Open Web and their unwavering idealism.

My advisor who showed actual interest in my topic and told me not to worry so much.

Table of Contents

Abstract.....	2
Declaration	3
Copyleft.....	3
Dedication & Acknowledgements.....	4
In Dedication To:.....	4
My sincere thanks to:.....	4
Table of Contents.....	5
List of Figures.....	6
1 Introduction.....	7
1.1 Background and Significance of the Problem.....	7
1.2 Target Audience.....	8
1.3 Interest Groups.....	10
1.4 Research Methodology.....	11
1.5 Literature Review.....	13
1.6 Definitions.....	15
1.6.1 Defining Web Literacies: The Semantic Argument.....	15
1.6.2 Other Definitions.....	18
2 Educational Concept.....	20
2.1 Introduction.....	20
2.2 Methodologies.....	20
2.2.1 Learning through Making.....	20
2.2.2 Gamification.....	23
2.2.3 Blended Learning.....	26
2.2.4 Combining Methodologies.....	29
2.3 Concept.....	31
2.3.1 Overview.....	31
2.3.2 Blended Learning at Every Level.....	32
2.3.3 Learning Events.....	36
2.3.4 Learning Objectives.....	37
2.3.5 Sample Curriculum.....	37
2.3.5.1 Skills Expected of the Facilitator.....	37
2.3.5.2 Skills Expected of the Learner	38
2.3.5.3 Technology.....	38
2.3.5.4 Supervision.....	39
2.3.5.5 Content Structure.....	39
2.4 Evaluation Methodology.....	42
2.4.1 Introduction.....	42
2.4.2 Quantitative Metrics and Approaches.....	43
2.4.3 Qualitative Metrics and Approaches.....	45
3 Conclusion.....	47
3.1 Conclusion.....	47
3.2 Appendix.....	49
3.2.1 Granularized Learning Objectives for Introduction to Web Native Filmmaking.....	49
3.2.2. Survey for the Learners.....	54
3.2.3. Survey for Facilitators.....	55
3.4 Bibliography.....	56

List of Figures

Figure 1: Google Insight: Search Interest "Digital Literacy" + "Teacher Prep"	9
Figure 2: Google Insight: Search Interest "Digital Literacy" + "OER"	10
Figure 3: Webmaker programs for specific interest groups.....	10
Figure 4: Categorizations of digital literacy and computational thinking characteristics from Belshaw, Scratch, Common Sense Media, and Wing into five overarching categories originally established by Levesque.	17
Figure 5: Connected Learning Model by Connected Learning.....	22
Figure 6: This figure illustrates the specific nuances of the Webmaker initiative on each of the four levels where blended-learning can occur.....	27
Figure 7: Budral Khan's Octagonal Framework.....	28

1 Introduction

1.1 Background and Significance of the Problem

As we move further into the Information Age, the populous is being segmented into varying degrees of digital competencies. As technology shifts and changes at an exponential rate, those lacking web literacies are being left further and further behind. A solid understanding of how the web works, how to use it, and the idiosyncrasies of web culture is necessary in today's world. Furthermore, the ability to participate in governmental, societal and economic affairs is beginning to be directly connected to these understandings.

Consider, for example, the fact that the majority of job postings are only available online, or that the majority of businesses have transitioned to paperless online billing. These examples show the necessity of navigating the online space, but web literacies are about much more than simple navigation. Because our society is steadily becoming a digitally based knowledge network, it is necessary to be web literate to participate in key problem solving. Wolfgang Klafki's concept for general education and his theory's three central aspects play a new role in the Information Age¹. More people have access to the global knowledge structures through the Internet and because the Web offers every topic from a multitude of perspectives, understanding and contributing ideas and solutions to and for key problems has become easier than ever before provided, of course, that one is educated. The third attribute of Klafki's general education concept proposes that a person is only educated when that person can think critically about problems that affect everyone (Klafki, 1993). Thinking critically about these problems in the Information Age requires accessing information through the Web, as the Web is most likely the only place where the multitude of perspectives on a particular problem.

Critical thinking in combination with creative thinking leads to innovation, something that is only possible through usage of and contribution to the ecosystem of human knowledge and the collective distilling of that knowledge. In short, without a critical mass of contribution to the human knowledge network, we will be unable to distill the truth from the irrelevant and unable to solve key problems that plague the human race. All issues of the human experience are

¹ Wolfgang Klafki's concept described general education as being for every one, covering a wide variety of topics and skills and helping with the solution to key problems (e.g. understanding complicated issues). Klafki said that the three central aspects (skills) of education are self-determination (envelops the unique and personal relationships as well as distinctions between people and variations in the handling of vocational, ethical and religious situations), co-determination (the ability to participate and understand in society and politics) and solidarity (the accumulation of the other two skills is only true when a person tries to stand up for the rights of everyone).

directly related to our ability to communicate and share ideas with one another. The World Wide Web has made both of these processes extremely easy.

Mozilla, a non-profit organization best known as the makers of the Firefox browser, has committed itself to tackling the problem of web literacies, literacies that involve the ability to contribute knowledge to the global ecosystem.

“The goal: help millions of people move from using the web to making the web. As part of Mozilla's non-profit mission, we want to help the world increase their understanding of the web, take greater control of their online lives, and create a more web literate planet. (“About Webmaker,” 2012)

The organization is currently in the process of conceptualizing programs for a variety of target audiences. As a Mozilla community activist and open ethos cheerleader, I² have taken on this research to support Mozilla in their Webmaker Initiative. This thesis will be provided to help Mozilla reach their goal of creating ten million webmakers by outlining a scalable model and sample content structure for training adults in web literacies and how to teach them.

1.2 Target Audience

More and more educational institutions and organizations are beginning to pay attention to the issue of web literacies, but there remain a number of Generation Xers (those born between 1960 and 1982) who lack necessary web literacy skills. This limits their ability to compete in the marketplace and participate in society.

Many educational institutions are focusing on developing digital literacies in younger learners, a necessary focal point. However, because adults are responsible for the education of any younger generation, it is important that they transition into the Information Age and become adept the new literacies alongside the old (e.g. Reading, Writing and Arithmetic).

The target audience this learning opportunity seeks to engage is adults that have basic digital literacy skills (i.e. can navigate a computer, open a browser, click, double click, etc.), but are not creating on the web. The target group likely uses the Web for everyday activities such as looking up information, social networking or online banking, but they are not actively webmaking. The learning opportunity seeks to help members of this group, likely in the beginning or middle of their careers, gain skills and knowledge applicable both in the workplace and as a creative outlet. Ideally, the target audience has a good general education and is eager to learn and participate in

² For the assertion of my own ideas and reflections, I found it necessary to use the personal pronoun in this document. I made this choice consciously as in describing my concept and perspective, I feel that using the first person will lead to more clarity for the reader.

the advancement of their own skills.

This educational concept aims to help Generation Xers that do not have experience in webmaking not only gain web literacy skills, but the competence and desire to share those skills with others. The main focus is formal and informal educators looking to teach web literacies or integrate digital practices into their organizations, and those who express interest in training others to be web literate. It should be noted that the research concerning the specific internet activities of this specific audience is minimal at best.

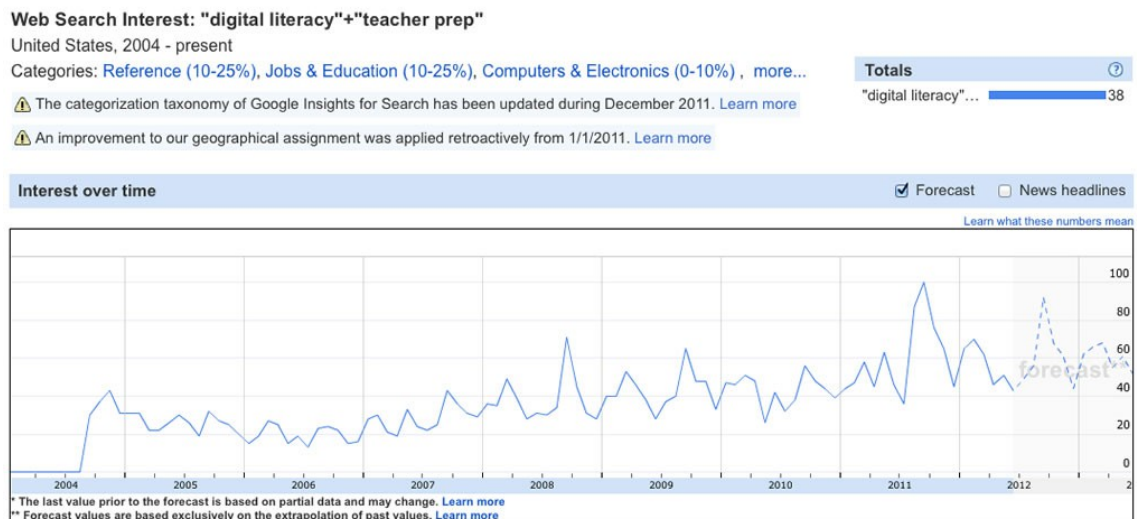


Figure 1: Google Insight: Search Interest "Digital Literacy" + "Teacher Prep"

North America has the highest Internet penetration in the world. According to the Pew Internet Research Center's April 2012 survey ("Who's Online: Internet User Demographics," 2012), 91% of Americans in the target group (adults aged 30 to 50) use the Internet everyday. However, of that 91%, only about 29% have *ever* contributed knowledge³ to the information ecosystem that is the World Wide Web. The majority of usage is to consume, rather than build or otherwise participate in a meaningful way.

One of the problems is that although there are many resources for teaching different digital

3 "Contributing knowledge" in this context includes using a social network, uploading photos, single-click ratings, tagging content, commenting on products, blogs or newsgroups, sharing original creations online, discussing key issues online, creating or working on webpages, remixing content, using twitter or creating unique webpages (Pew Internet Research, February 2012 Survey). It is important to note that the 2012 survey only covered two of these markers, the rest were compiled for the 2012 survey from other surveys Pew Internet Research has performed in the last five years. Because the usage of the Internet is changing rapidly, these percentages are likely completely outdated. That said, if one looks at the contribution of knowledge markers for 2012 separated from earlier data sets, one would see the percentage of people who have *ever* contributed knowledge rise to 40%. However, the two markers pulled in February 2012 are defined as "using a social network" and "using twitter". Because these two markers are so broad, it's impossible to determine whether the usage of social networks or twitter correlates with what academics would call "knowledge contribution".

literacy skills, instructors are often not themselves digitally competent enough to use the provided resources.

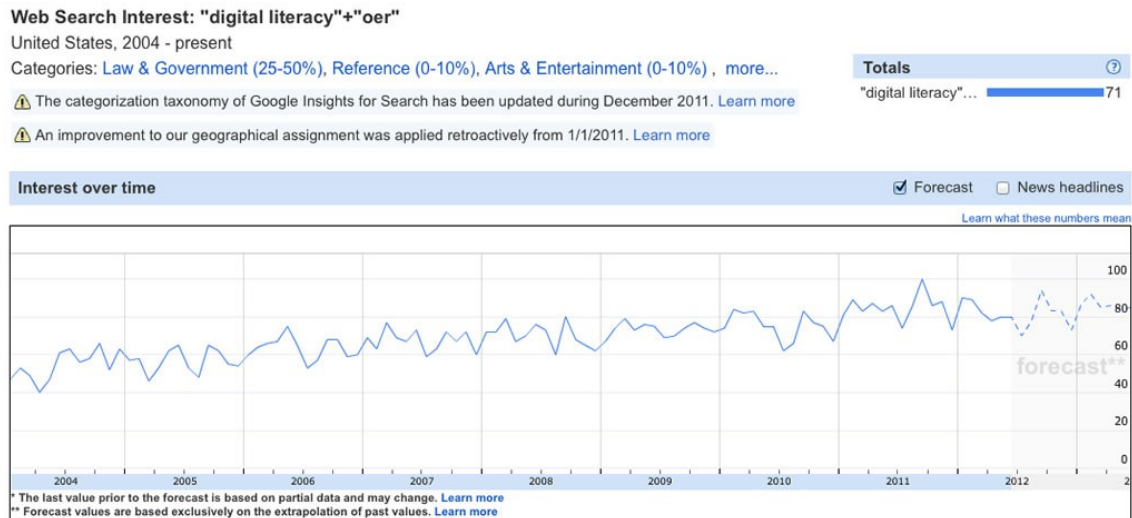


Figure 2: Google Insight: Search Interest "Digital Literacy" + "OER"

Unfortunately, US Census data is too general to use occupational data and age data to make a judgement on the potential number of people that fit in this specific Generation X target audience in the United States. However, Google searches that use the terms “digital literacy” in conjunction with “teacher prep” reveals that despite, or perhaps because of, the advancements of the applications and resources on the World Wide Web over the last eight years, US educators are increasingly looking for ways to level-up their own skills in this field (see Figure 1). Additionally, insights into search trends show that Americans searching for open educational resources (OER) on the topic of digital literacy has been increasing as well (see Figure 2) (Google Insights, 2012).

1.3 Interest Groups



Figure 3: Webmaker programs for specific interest groups

The educational concept outlined aims to engage the target audience in four distinct interest groups. Each interest group is provided with educational content through four Webmaker programs (see Figure 3).

The first interest group is comprised of educators working in filmmaking or media production.

This subsection of the target audience is engaged through a program called Mozilla Popcorn⁴. Mozilla Popcorn aims to help developers and content creators create interactive, web native videos that can pull in dynamic data from the Web.

The second interest group includes educators working in journalism. This group will participate in the Knight-Mozilla Open News⁵ program. The Knight-Mozilla Open News program aims to help technologists and journalists work together to create innovative new ways to solve real world problems related to journalism and the news.

Community organizers working in an educational context (i.e. organizers who work with technology and education organizations) will level-up their web literacy skills through the third program, the Hive program⁶. The Hive was founded to form a network of learning organizations that collaborate to create digital media and technology learning opportunities for youth.

Finally, youth educators will work through the fourth program called Mozilla Hackasaurus⁷. Hackasaurus aims to spread skills and attitudes surrounding web literacies to youth. Part of the Hackasaurus approach is to provide training and curriculum to educators to help them understand the ethics and practical skills required to participate in the 21st century.

Each of the four programs works under an “open ethos” and is part of the Mozilla Webmaker Initiative. A great deal of cross collaboration between programs allows for the sharing resources and systematic improvement on specific tools and content. The open ethos is a philosophical idea that working in a decentralized, innovative, remixable and transparent way leads to more innovation. On the World Wide Web, these ideas are grounded in the Open Source Movement, which served as a catalyst for the more general “Open Movement”. The Open Movement is a collaborative form of work that takes into consideration each contributor's opinion and knowledge to develop solid programs and content that are revised after each evaluation.

1.4 Research Methodology

This thesis uses a pragmatic approach. The goal of this paper is to contribute new ideas to media education through the scholarly review of education theory as applied to web literacies and curriculum design. Or to put it very simply, the goal of this paper is to link theory and practice. The use of the pragmatic approach allowed me to formulate a concept that makes that link obvious without losing sight of the problem that I am trying to solve.

4 “Mozilla Popcorn | Making Video Work Like the Web”, n.d. <http://mozillapopcorn.org/>.

5 “Knight-Mozilla OpenNews -- Building an Ecosystem for Open Web Development in Journalism | Knight-Mozilla OpenNews”, n.d. <http://www.mozillaopennews.org/>.

6 “About Hive Learning Network NYC |”, n.d. <http://explorecrateshare.org/about/>.

7 “Hackasaurus”, n.d. <http://hackasaurus.org/en-US/>.

My domain knowledge in teaching and learning “web stuff,” provided an opportunity to process the available information with an open mind and a desire for creation. I am lucky to have an extensive body of prior knowledge in this field. I immersed myself completely and revised the organization of this thesis many times, as the more I read, the more I realized that my initial project sketch barely scratched the surface of what is necessary in the realm of web literacy educational concepts.

Using a pragmatic approach allowed me to find support for commonalities and differences in several specific web literacy and digital literacy definitions as well as for understanding and defining various frameworks and theories that influenced the development of the concept. Through a natural intellectual inquiry into the nuances of teaching and learning digital literacies, the resources reviewed create a comprehensive consolidation of various theories and frameworks into a single educational concept.

Implementing a pragmatic, and somewhat systematic, approach to review available research enabled me to find a concise definition of web literacies and show practical applicability of educational theories through the creation of a new framework for designing blended, gamified web literacy learning opportunities. It also allowed me to find valuable data on the proliferation of web literacy skills in the workforce by giving me the freedom to use my own deductive powers and triangulate in on valuable knowledge, information and theories.

Google Scholar is the primary database used for finding available educational research that references gamification strategies, web literacy, Generation X and their use of the internet, and these concepts are further explored later in this document. Conversations with colleagues and thinkers working in the educational space allowed me to further zero-in on useful bodies of research and concepts that serve as the foundation for this thesis.

It was the use of the pragmatic approach that allowed me to stumble, quite accidentally, onto the connection between the manifestos of modern educational think tanks and educational theories from the German Reform Pedagogical and the Progressive Education Movements. This realization has been extremely beneficial in increasing my understanding of the debates surrounding modern education in the United States.

Pragmatism gives a researcher the ability to create knowledge without getting hung up on rigid processes, which may lead to the exclusion of valuable data.

As the prolific Mark Twain is quoted as saying in his biography,

“There is no such thing as a new idea. It is impossible. We simply take a lot of old ideas and put them into a sort of mental kaleidoscope. We give them a turn and they make new

and curious combinations. We keep on turning and making new combinations indefinitely; but they are the same old pieces of colored glass that have been in use through all the ages.” (Paine, 1912)

These “new and curious combinations” are a form of creative output, an output that is only possible when a researcher has the leeway to be creative. Using the pragmatic approach gave me that creativity. Because the pragmatic approach is a method of research that allows a researcher to use a variety of methodologies, I do not have any critique on the approach itself.

It seems diligent, particularly in the context of a thesis on something as technical and social as web literacies, to quote the late Steve Jobs, who during a 1996 interview with Wire Magazine said,

“Creativity is just connecting things. When you ask creative people how they did something, they feel a little guilty because they didn't really do it, they just saw something. It seemed obvious to them after a while.” (Wolf & Wired Magazine, 1996)

1.5 Literature Review

This thesis reviews and draws from a variety of research and articles from media and education specialists and cooperatives. Dr. Doug Belshaw's Eight Essential Elements (Belshaw, 2011), Common Sense Media's digital literacy and citizenship strands (Grayson, 2011), Scratch's Computational Thinking connections (Brennan, Chung, & Hawson, 2011), Michelle Levesque's Web Literacy work (Levesque, 2012) and Jeanette Wing's Computational Thinking characteristics (Wing, 2006) serve as the basis for the definition of web literacies in this thesis. The review of similarities and differences in these works allows for the development of overarching academic definitions of various categories and degrees of “Web Literacies” and categorization of specific skills, which fall into those literacies.

Marotzki and Jörissen write about the transformation of perceived identity. With the splitting of identity into four distinct identities since the advent of the World Wide Web, humans are becoming more polymorphic. Two independent identities exist in the online world. Two independent identities exist in the offline world. From a theoretical perspective, the difference between the online and offline is blurred, at best. The dynamic of new media has led to the understanding of the relativity of information as a common skill. Internet users are critical of the information they receive, leading to a more flexible usage of information (Marotzki & Jörissen, 2005). This theoretical splitting of identities was key in identifying and explaining the multifaceted educational approach this thesis proposes.

Educational theories from the eighteenth century Reform Pedagogic and Progressive Education movements and Connected Learning Principles (Ito and Gutiérrez, 2012) serve as support for the use of “Learning by Making”, an educational theory explained later in this document. The ideas of Georg Kerschensteiner and John Dewey and the ways in which the Connected Learning Principles compare to these nineteenth century ideas provide a solid base for “Learning by Making” as a practically applicable theory in education.

Curtiss Murphy examined effective training games in the context of a study for the United States Navy and subsequently wrote “Why Games Work and the Science of Learning” (Murphy, 2011). In this article, Murphy explored Edward Thorndike's basic laws of learning. The work summarizes and supports the usage and effects of game mechanics used in learning. In combination with information from one the most popular gamification wikis (Gamification.org, 2011), this literature helps support the use of game mechanics in learning programs and curriculum.

The Department of Education and Pew Internet Research published important quantitative data used to support blended learning in this thesis. More than a thousand empirical studies of online learning, reviewed and presented in a meta-analysis from the Department of Education, provide a broad base of data for the viability of the blended learning approach. The study took into account a variety of age groups, including the Generation X target group of the educational concept described herein. The meta-analysis looked at 176 experimental or quasi-experimental studies published between 1996 and 2004. 99 of those studies compared online and face-to-face conditions at least once. Only 9 of those 99 studies involved K – 12 learners providing statistical support for the selection of the Generation X target group. (Means, Toyama, Murphy, Bakia, & Jones, 2010)

Graham and Bonk's Handbook of Blended Learning outlined and highlighted different approaches to blended learning (Graham & Bonk, 2006). It also identified, through a series of case studies and reviews, levels at which blended learning can occur. These levels are explored in correlation with Badrul Khan's Framework for E-Learning, a widely accepted framework that encompasses eight dimensions (Khan, n.d.). This framework, developed in 1997, has also been called Badrul Khan's Octagonal Framework and is used here to help create a fluid blended learning model.

This thesis defines a framework for creating an interest-based, blended learning program within a multifaceted institution. It further proposes that adding game mechanics into the actual curriculum will lead to more motivation from the learner. Applications of this framework will result in a blended learning provider.

1.6 Definitions

1.6.1 Defining Web Literacies: The Semantic Argument

There have been numerous studies which examine the nuances between differing definitions of so-called new literacies (Pinto, Cordon, & Gomez Diaz, 2010). Since the first use of the term “information literacy” in 1974⁸ (Pinto et al., 2010), varying terminology has been used to define the ability to find, analyze and use information in a changing knowledge landscape (Pinto et al., 2010). In recent years, many academics have added a social and cultural layer to the definition of these literacies.

Terminology used for these literacies include “information literacy”, “digital literacy”, “technological literacy”, “computer literacy”, “media literacy”, “communication literacy”, “internet literacy” and other ambiguous terms. As Doug Belshaw points out in his doctoral thesis (2011), these terms “do not have the necessary explanatory power, or they become stuck in a potentially-endless cycle of umbrella terms and micro literacies,” (p. 200). Belshaw makes an impressive case for ditching the semantic argument and focusing on the improvement of educational practice. He also suggests that the term “literacy” is too binary and that in the context of any digital or web skills the plural “literacies” should be used to show that in these realms there is no literate or illiterate, but rather degrees of literacy (Belshaw, 2011).

Through a pragmatic comparison of various definitions of these terms, Belshaw identified eight essential elements of digital literacies. Those elements are, as Belshaw defined them:

1. *Cultural* - the ability “to understand the various digital contexts an individual may experience [...] acquired through immersion in various digital landscapes” (p. 207).
2. *Cognitive* - a “‘mind-expansion’ through the co-creation and contextualization of digital literacies,[...] [acquired through] focusing upon a variety of mental models and lenses” (p. 208).
3. *Constructive* - the ability to create “something new, including using and remixing content from other sources to create something original [...], understanding how and for what purposes content can be appropriated, reused and remixed.” (p. 208-209).
4. *Communicative* - “understanding how communications media work” (p. 209), being part of that network is necessary to understand this element.
5. *Confident* - “a confidence based on the understanding that the digital environment can be

⁸ Coined by Zurkowski in the paper “The Information Service Environment: Relationships and Priorities (Report ED 100391). Washington DC: National Commission on Libraries and Information Science.

more forgiving in regards to experimentation” (p. 211), the understanding of how releasing often is beneficial to your own work.

6. *Creative* - “doing new things in new ways” (p. 212), acquired through working/learning with/from those who have a different mindset than that which educators have traditionally been encouraged to demonstrate.
7. *Critical* - “involves the reflection upon literacy practices in various semiotic domains” (p. 213).
8. *Civic* - “element is about participation, social justice and civic responsibility” (p. 212).

Based on the work of Howard Gardner and the GoodPlay Project, Common Sense Media developed Digital Literacy and Citizenship curriculum containing nine strands that adheres to common core standards (Grayson, 2011). The curriculum is offered as an open educational resource⁹ (Grayson, 2011). The strands are:

1. *Safety* - how to be safe online in regards to behavior
2. *Security* - how to be safe online in regards to technical functions such as password creation or spam filtering
3. *Digital Life* - the internet is a community of people, how to live in a community
4. *Privacy and Digital Footprints* - the effect of information online in your everyday life
5. *Self Expression and Identity* - the difference between the real in virtual and the virtual real
6. *Connected Culture* - the ethics of online communities
7. *Respecting Creative Work* - attribution, fair use and ethics surrounding these things
8. *Searching* - how to search online
9. *Research and Evaluation* - how to determine what information is “true” online, how to verify resources

Interestingly, Dr. Belshaw’s eight essential elements are skills that do not necessarily have to relate to the World Wide Web, whereas Common Sense Media’s strands, with an exception of “Respecting Creative Work”, are exclusively in relation to the online space. Looking at the two sets of computational thinking characteristics from Jeanette Wing (2006) and Scratch (2011) reveals a similar pattern. Scratch uses specific computational concepts and practices, augmenting with three slightly more meta-level perspectives as their characteristics, while Wing defines computational thinking at a more meta-thinking level.

⁹ “Curriculumoverview_O.pdf”, n.d.

http://www.commonsensemedia.org/sites/default/files/curriculumoverview_O.pdf.

Web literacies are specific to the world wide web. The technical components as well as inherent social and cultural components of it, combine essential elements into a “digital literacy”. The definition of web literacies used in this thesis collapses Belshaw's eight essential elements, Common Sense Media's digital literacy and citizenship strands, Scratch's computational thinking connections (Brennan et al., 2011) and Jeanette Wing's computational thinking characteristics (Wing, 2006) into five overarching categories (see Figure 4). The five categories were initially created by Michelle Levesque of the Mozilla Foundation and are being defined at the macro-level in this thesis.

Web literacies are fundamental to every human being and involve critical thinking at every level. They are for everyone, everywhere. As Jeanette Wing (2006) put it,

“Computers are dull and boring; humans are clever and imaginative. We humans make computers exciting. Equipped with computing devices, we use our cleverness to tackle problems we would not dare take on before the age of computing and build systems with functionality limited only by our imaginations” (p. 35)



Figure 4: Categorizations of digital literacy and computational thinking characteristics from Belshaw, Scratch, Common Sense Media, and Wing into five overarching categories originally established by Levesque.

The five categories and the overarching definition for each level are:

1. *Exploring* - The cognitive and affective abilities needed to navigate and understand the

community, culture and digital life. The World Wide Web offers and provides opportunity to use various digital spaces to learn about, question and evaluate human perceptions and actions.

2. *Authoring* - Being expressive, creative and constructive on the World Wide Web while articulating individual thoughts in the global, digital exchange of methods and resources and respecting the creative work of others.
3. *Connecting* – Communicating about and networking in digital life while participating in a respectful manner. Recognizing and adhering to the ethics of online communities.
4. *Building* - Confidently and creatively attempting to solve technical and social problems through incremental and iterative approaches. Using the ability to think on multiple levels of abstraction and modularization to develop material.
5. *Protecting* - Safely and securely participating in self-expression and civic duties in the Information Age. Understanding that the protection of the World Wide Web as a free and open public resource is a civic responsibility and the affective ability to claim solidarity for protective actions.

These elements have been considered in the definition of a webmaker, a term designating a degree of web literacy.

1.6.2 Other Definitions

Webmaker

A webmaker is an individual who has the cognitive capacity to understand the cultural landscape and technical mechanics of the internet. She actively participates in the contribution to knowledge networks on the World Wide Web. She possesses the social and technical skills to creatively and confidently submit new and unique perspectives into the ecosystem.

A webmaker has the ability and desire to explore the World Wide Web, author content, connect with various communities, build using code and protect the open infrastructure of the World Wide Web. She can search for and find the information she is looking for, and she can be critical about the information she accesses.

Hack/Hacking

Although the word "hack" has negative connotations, the Open Web community uses it in a positive context. To "hack" something is simply to take something that already exists and change it to make something new. A person can hack physical things – like board games – or a person can hack the web. Hacking has always been a key element in the creative process. It is a

constructive collaborative activity, not a destructive one (Hacker Ethic, n.d.).

Remix

A remix is a derivative art form. In the web context, this term is used to imply that a new work is built off an already established base. The “base” work might refer to a code base, a curriculum base, an image base, a text base, etc.

Instructor/Teacher/Facilitator/Educator/Mentor

In another attempt to avoid a semantic argument, it is necessary to explain that in this thesis there are various terms used to designate informal and formal teachers, the target audience for the educational concept proposed within. These terms are interchangeable and should be considered synonyms.

Badges

The assessment approach used in this educational concept aims to give recognition for granular skills and overarching concepts in the form of badges.

“A 'badge' is a symbol or indicator of an accomplishment, skill, quality or interest. From the Boy and Girl Scouts, to PADI diving instruction, to the more recently popular geo-location game, Foursquare, badges have been successfully used to set goals, motivate behaviors, represent achievements and communicate success in many contexts.” (Knight, 2011)

2 Educational Concept

2.1 Introduction

This educational concept proposes interactive, social, gamified, E-Learning modules for self guided study in combination with real world, collaborative workshops. Embedded assessments are used to show achievements, and the concept uses a succinct and modern definition of web literacies (See Chapter 1.6.1). Synchronous workshops and interactive, asynchronous self-study with social gaming aspects are conceptualized. Both aspects of learning play a vital role in the success of the program. Open technologies (esp. HTML/CSS/JS and Open Source Web apps) are suggested to create a multimedia experience.

Marotzki and Jörisen (2005) describe splitting identities that require varying concepts for varying identities (e.g. for online identities and real world identities). This educational concept defines a blended-learning framework that uses constructivist ideas to inspire learning and is flexible enough to address the need for varying concepts.

The curricular modules are based around the idea that media can serve as cognitive tools allowing for the construction of knowledge. Other theoretical approaches such as situational and social constructivism also play a part, particularly in the „real world“ workshops. Methods like Drill and Practice, Anchored Instruction and Simulation as well as varying types of game mechanics are used in the activities to inspire learning.

A one to one relationship between didactic principles and educational concepts is not always realistic. The methods used to transfer learning objectives are not easily categorized into one or another theoretical approach to education. Theoretical approaches serve only as a jumping off point because in practical situations, a learner as well as the educator must adapt to the external influences and perspectives of the classroom and other learners thoughts and ideas. This concept takes into account a variety of educational theories, but bases itself primarily on reform pedagogical ideas as the basic concept throughout is that one will “learn through making”.

2.2 Methodologies

2.2.1 Learning through Making

Learning through making is quintessentially a project-based approach to education. The approach values practical learning with work aimed at forming a strong connection between the head and the hand. This immersive approach uses intellectual stimulation and physical action to

transfer both technical and social skills. Georg Kerschensteiner, one of the leaders of the German Reform Pedagogical Movement, defined “work” in the context of learning as both activity based and goal oriented (Scheibe, 1999).

His definition further separates manual work and intellectual work.

"Properly undertaken, manual work will develop a faculty for logical thought that is applicable to any other kind of activity and can be deepened at a later stage." (qtd. in Röhrs, 1993)

A project-based methodology embodies both the mental and physical work Kerschensteiner proposed as pedagogically relevant in that learning projects seeks to transfer not a product itself, but rather the process of getting to the result. Although Kerschensteiner did not phrase this methodology as “learning by making”, he did define educational functions of what he termed “work”. Kerschensteiner defined seven relevant functions in this context (Scheibe, 1999):

1. *Independence* - the motivation to learn on one's own accord, self-motivated acquisition of knowledge
2. *Know-How* - knowledge acquired through experience. Both Kerschensteiner and his contemporary, John Dewey, made a distinction between knowledge acquired through experience and knowledge acquired through “learning” (Scheibe, 1999).
3. *Social and Technical skills* - technical skills can be used in other contexts, separate from the learning situation. The social skills gained through learning by making (or as Kerschensteiner called it “work school”), reflect Kerschensteiner's four competencies that he believed show strength of character (willpower, the ability to reason, tact and fervor).
4. *Overcoming resistance* - when learning through making, the project has to suit the learners prior knowledge. A task cannot be too easy, as true learning requires a learner to be dedicated to the task, endeavor to succeed, apply necessary tactics and strategies and have a very real motivation for completing the task at hand.
5. *Relevance* - the work must be relevant to the learner. If it is not, the learner will not assess herself and thus never improve.
6. *Group Work* - an element of socialization because group work involves advice, help and support
7. *Scaffolding* - Kerschensteiner formulated a scaffolding for educational endeavors after winning valuable insight from John Dewey, the so-called “father of project-based

learning” (Jank & Meyer, 2005, p. 309).

Both Kerschensteiner and John Dewey defined steps that comprise logical thinking. Although their steps vary slightly (Kerschensteiner collapsed Dewey's five steps into four), their theoretical outlook on effective inquiry is a relevant aspect to learning by making. The learner must first have a problem, and then she must identify what the problem actually is. The learner considers her problem, which leads to the identification of a possible solution. The hypothesis is elaborated upon to include possible consequences of solving the problem in that form or fashion, and finally, the learner must test the hypothesis (Garrison, 1999). Scaffolding learning material guides a person through the steps of this process at each granular theme or learning objective.

Cultural anthropologists and researchers funded by the MacArthur Foundation's Digital Media and Learning Initiative released a new learning model called “Connected Learning” in the first quarter of 2012 (“Researchers Introduce New Model of Learning, Connected Learning,” 2012). This model (see Figure 5) is based on a large body of research and includes Connected Learning principles and core values that compare to Kerschensteiner's seven relevant functions.

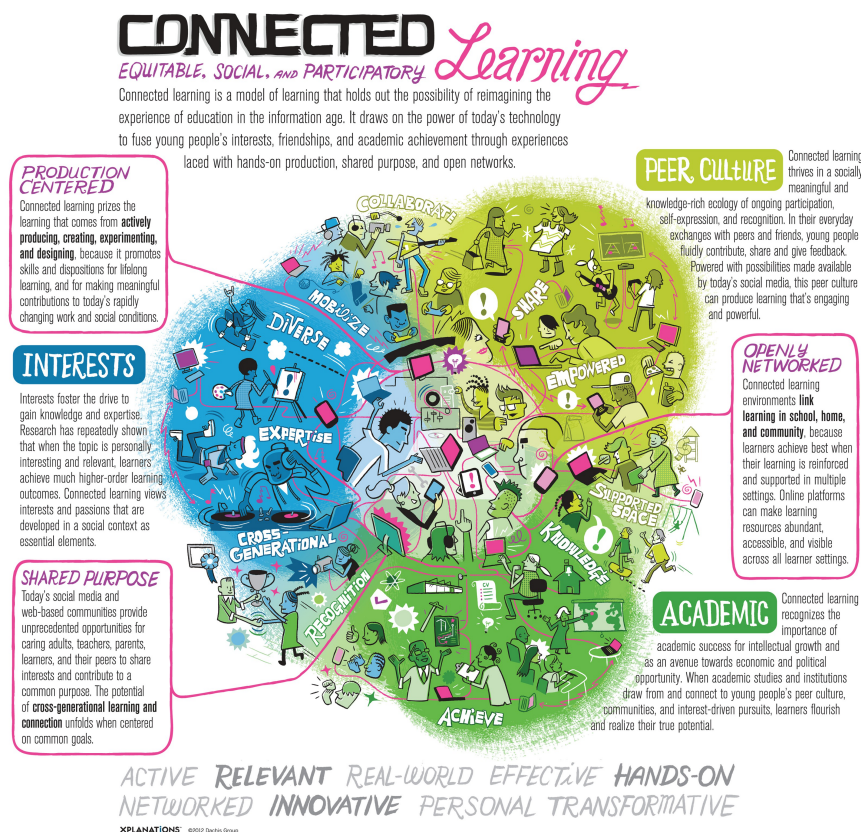


Figure 5: Connected Learning Model by Connected Learning

These principles state that education in the modern world needs to be:

1. *Interest-powered* - the researchers state that “learners who are interested in what they

are learning, achieve higher order learning outcomes.” (“Connected Learning Principles,” n.d.) This requirement is on par with Kerschensteiner's function “Relevance”.

2. *Peer-supported* - This principle is a modern extension of Kerschensteiner's function “Group Work” as it too has an element of socialization as a required function in learning.

3. *Academically oriented* - The third principle proposed by the Connected Learning Model aligns closely with Kerschensteiner's overarching definition of the Work School. Kerschensteiner states that this method is applicable at all levels from simple crafts to academic subjects (Röhrs, 1993).

The Connected Learning model further describes values and design principles for modern education that mirror philosophical ideas and information presented during the Reform Pedagogy and Progressive Education movements.

A connection between the theories circulating at the end of the 19th century and those educational theorists are calling for as a solution to problems existing in the modern educational landscape are not very different from one another. The revival of an interest project-based approach to all educational endeavors is at the heart of the “Learning by making” approach.

2.2.2 Gamification

In his paper “Why Games Work and the Science of Learning,” Murphy (2011) explores the correlation between the tenets of learning and those of game play. Through the exploration of Edward Thorndike's basic laws of learning (and their extension by other psychologists and pedagogues), Murphy found that the reason games work in learning is because gaming applies the same laws that improve learning. Murphy concludes that the actions in gaming and the laws that Thorndike defined as the basic laws of learning are “almost exactly the reasons why games work” (Murphy, 2011).

In his conclusion, Murphy (2011) goes on to say,

“Game design and instructional design are fundamentally just two ways of looking at the same problem.”

Considerations such as motivation, practice and intensity are important in the development of both learning materials and game play, therefore it makes sense to inject game mechanics into learning material to increase not only retention of taught information, but the desire to learn in the first place.

It is important to understand that implementing game mechanics in learning materials does not necessarily mean creating a full fledged game. It means using certain game-like qualities to change the way that people interact with a particular piece of content, thereby increasing motivation. Using game mechanics in learning can increase motivation to learn, support the need and desire for feedback, increase the learners practice habits, give positive emotional support, create immersive and intense learning experiences and give the learner agency over his or her own educational endeavors. Additionally, from the institutional point of view, implementing certain game mechanics allows for a systemic approach to evaluation of content and programs.

In essence, learning materials and their didactic structures in this educational concept are designed to have what game designers call “Flow”. This term was coined by Mihaly Csikszentmihalyi (1990) and refers to

“the state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it.”(Csikszentmihalyi)

There are many different game mechanics, which fall into three overarching mechanic types. The first, “behavioral game mechanics,” focus on the human psyche. These mechanics use cognitive and emotional motivations to win external motivations (such as points, levels, etc). The second type, “feedback game mechanics,” are those games that complete feedback loops (in which the player does something, something happens, player receives feedback, with the learned information the player does something else). Progression game mechanics are those that create a structure for gradually displaying progress. (Gamification.org, 2011)

The most valuable game mechanics to work into open web or open source projects and learning materials are:

1. *Cards/Tokens/Points* – “points” doesn't necessarily mean “points,” it is more a tally of what a user has done. Anything that a user can collect can be considered “points”. This educational concept uses badges, which can also be considered a kind of point system.
2. *Levels* – the more “points” a player receives, the more “levels” the player advances. This is implemented by making certain actions impossible until a user has a certain number of points. It means that the “level up” leads to the unlocking of content. Levels will make a user curious, and curiosity is enough motivation to keep a person involved. In an educational concept, “levels” is analogous to the scaffolding of a particular program.
3. *Status* – is the ability to show other people what the player has accomplished and

receive positive feedback for those accomplishments. This functions most succinctly by giving people a title based on how many levels they've achieved. This is quite common on the World Wide Web. On many forums, wikis and blogs trusted contributors are called “gurus”, or a similar term denoting influence, and new contributors are called “newbies”, to denote a certain lack of experience.

4. *Rewards/Prizes* – Extrinsic motivation is a big factor in participation whether it be in gameplay or learning or politics. Being able to offer something increases participation. Figuring out what one has to offer, beyond learning and self-improvement, is the tricky part. Completion of a learning module may lead to notoriety, publicity or material goods, while participating at a learning event leads to a stronger professional network or free food.

Of these four mechanics, the assessment mechanism used in this concept, badges, falls into each mechanic. As “points,” it's clear how badges can be construed as a game mechanic. Badges are also levels given that a learner cannot earn an advanced badge before meeting the basic badge requirements. As an indicator of status, and as soon as badges are able to be used as real world proof of accomplishment, the reward aspect will be obvious as the badge as proof of skill accomplishment can be used to augment resumés, thereby helping a learner display applicable skills useful for employment.

Human beings are naturally competitive, so the challenge is to create learning opportunities that embed competitions, contests or tasks that aren't just about winning, but also “playing the game” (e.g., learning). The best way to have mass participation and therefore an onslaught of learning, is to allow multiple “winners”.

Tiered winning is a great way to get repeat participation. An excellent example of this was run last year as part of the Open News project. Round One was an open call for entries, 60 “prizes” were available to win. This round had open feedback from the community at large, and participants were rewarded with feedback. The prize for Round One was a spot in a summer learning lab that boasted excellent technology and journalism keynote speakers, collaborative creation and access to an extremely intelligent group of people. Round Two was a prize AND a competition. Round Three was a learning by making event in Berlin, this was the prize for Round Two winners, and it too was attached to a competition. The winners of Round Two received a free trip to Berlin and were pitted against each other for the grand prize of winning a yearlong fellowship within a news organization.

The genius behind this structure lies within game mechanics. Through their participation, people are offered real world experiences and contacts, creating a bubble of trust and clear motivations,

and inspiring further participation. In those real world experiences, the participants gained a variety of skills (i.e., they *learned*). Those who did not advance were rewarded anyway (in Round One with feedback and exposure, in Round Two with knowledge gained through the learning lab curriculum, in Round Three with a free trip to Berlin). Because they were rewarded, they are more likely to participate in other competitions of this kind.

Which game mechanics to implement and how to implement them is something to be thought about. There are a lot of different types of games, and therefore, a lot of game mechanics. There are different game personality types (“Personality Types and Importance in Gamification”, 2011), so the implementable game mechanics depend on the target audience. Because this educational concept is aimed at a wide target audience, the game mechanics used vary.

The refocusing various efforts to work together rather than in an autonomous matter combine the elements that make for a great gaming experience. Turning educational initiatives into a series of interconnected “games” encourages more participation, which means more people increase their web literacy level.

2.2.3 Blended Learning

The US Department of Education (DOE) has published extensive research on the effectiveness of blended learning as compared to purely face-to-face instruction or purely distance based (i.e. Online) instruction. Through a systematic search of empirical evidence on the effectiveness of E-Learning and a meta-analysis of this evidence, the DOE (Means et al., 2010) determined that:

“In recent experimental and quasi-experimental studies contrasting blends of online and face-to-face instruction with conventional face-to-face classes, blended instruction has been more effective, providing a rationale for the effort required to design and implement blended approaches. When used by itself, online learning appears to be as effective as conventional classroom instruction, but not more so.” (p. xviii)

Thus, it can be said that a blended learning approach to educating adults in the target group on web literacies would be a more effective approach than a purely offline or purely online concept.

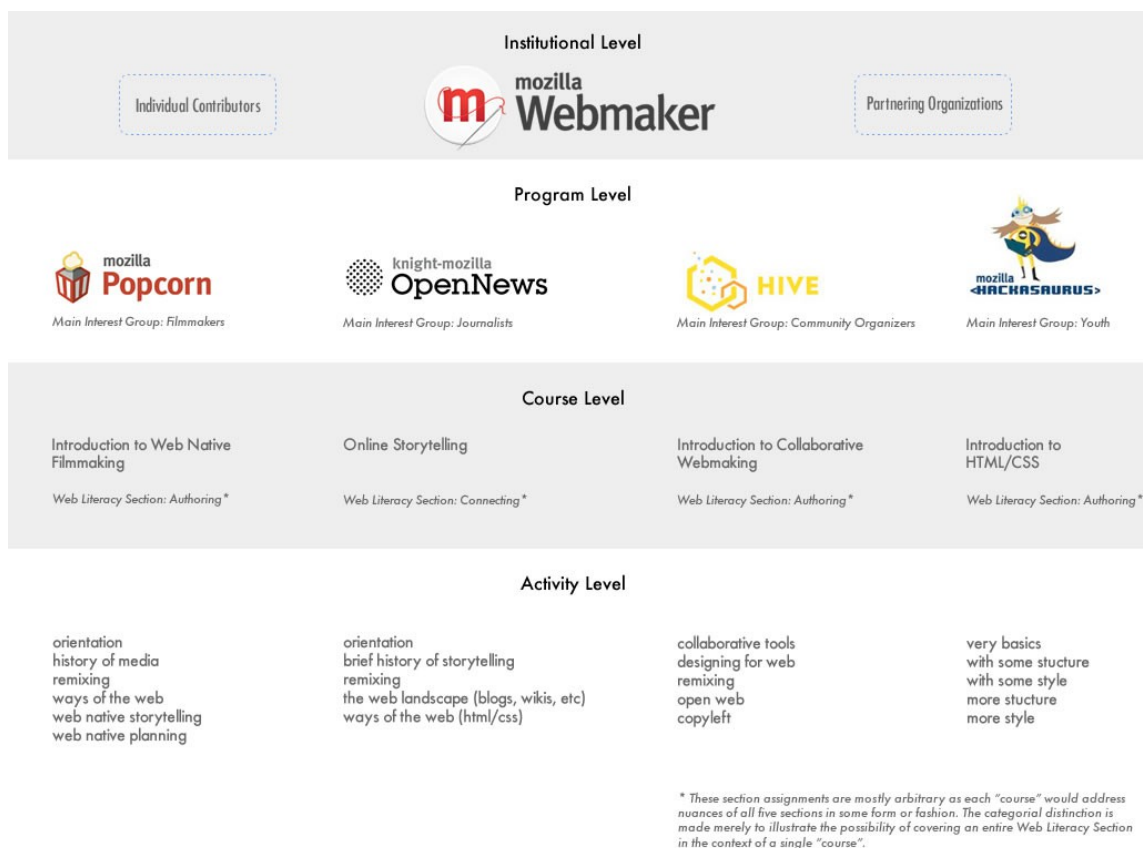


Figure 6: This figure illustrates the specific nuances of the Webmaker initiative on each of the four levels where blended-learning can occur.

Blended learning has been defined many times, but most definitions are simply variations on three common themes. Blended learning combines a variety of delivery methods and a variety of media, and it combines face-to-face instruction with online instruction. Since all learning situations involving web literacies combine multiple instructional methods and multiple types of media, blended learning is simply the combination of online and offline educational engagement (Graham & Bonk, C.J., 2006). "Educational engagement" in this context is defined not only through the learning situation itself, but through the production of the educational programming and materials. This is the definition of "blended learning" used for the purposes of this thesis.

Four levels are described by Graham and Bonk (2006) at which blends can occur (see Figure 6). They identified blends occurring at the activity level, course level, program level and institutional level. For the purposes of this educational concept, the levels are defined as:

1. *The Activity Level* - Encompasses the learning activities for skills relating to the didactical micro-model. The learning activities involve a granular outline of skills relating to each of the five sections outlined in Defining Web Literacies (Chapter 1.6.1) and further defined through the Course level.

2. *The Course Level* - Encompasses at least one of the five sections outlined and further defined through the program level.
3. *The Program Level* - Encompasses the interest based program outlined in Chapter 1.3. This level will determine other valuable skills relating to the individual interest.
4. *The Institutional Level* - Encompasses the organization responsible for both the creation and implementation of the learning program. This level will almost certainly always be blended, as the educational concept proposes that using an open ethos leads to better curriculum through the collaboration of a variety of stakeholders.

Creating a concept that varies in blending aspects on all four levels will create a fluid model that is effective for each and every learner, regardless of uncontrollable variables such as socio-economic situation or profession. Additionally, such a model is extremely efficient at the institutional level, as blending at this level implies cross organizational cooperation.

Several attempts at a cohesive framework for a blended learning approach have been made, and, as with the definition of “blended learning,” these attempts reflect similar concepts. This thesis applies Badrul Khan's Octagonal Framework (Khan, n.d.), a widely used and accepted conceptual framework, for creating a meaningful E-learning environment with eight dimensions

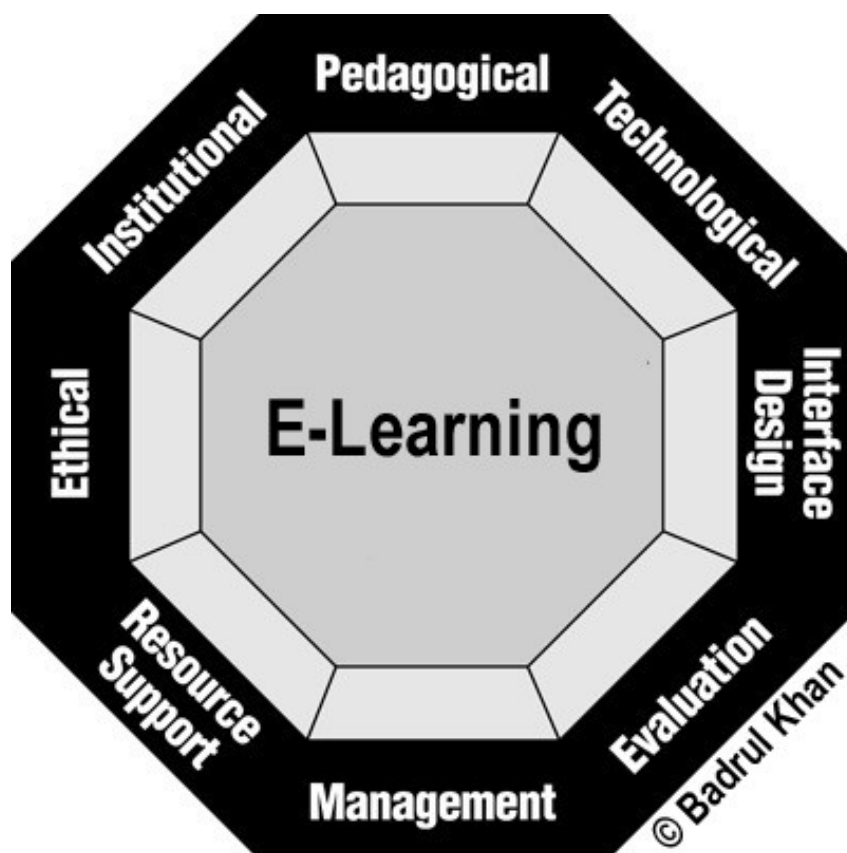


Figure 7: Badrul Khan's Octagonal Framework

(see Figure 7). When each of these eight dimensions is considered in a concept, the learning program creates a meaningful learning experience (Singh, 2003).

1. *Institutional* - This dimension references the organizations ability to adequately address issues concerning learners.
2. *Pedagogical* - The combination of content, target audience and learning objectives into an appropriate strategy for delivery.
3. *Technological* - Addresses the need for suitable tools and systems to deliver a blend of content and resources. This dimension is also concerned with the technical requirements of those tools.
4. *Interface Design* - The interface needs to be designed in a way that supports usability for a learner. This means creating a space where the learner can switch back and forth between content types as well as delivery methods.
5. *Evaluation* - No program is complete without the ability to measure and judge effectiveness of the program.
6. *Management* - This dimension takes into account the issues of managing a blended learning program. Because such a program is more complicated than a linear program, the management dimension addresses the delivery of multiple content types and the logistical issues that may arise.
7. *Resource Support* - Aside from the learning content, learners need a variety of online and offline resources organized for their use. This dimension also deals with the need for actual support from a counselor or tutor.
8. *Ethical* - Developing a blended learning program takes accessibility into consideration. The ethical dimension deals with issues like cultural diversity and localization. (Singh, 2003)

2.2.4 Combining Methodologies

To combine learning through making with gamification in a blended learning environment, it is important to consider the eight dimensions of Khan's Octagonal Framework on each of the four levels on which blending occurs. Then consider the relevant functions of project based work as Kerschensteiner described and as the Connect Learning Model further underlines. Adding game mechanics in the curriculum supports these functions. The result is a functional blended learning program that uses gamification in the curriculum.

In essence, the blended learning curricula created for each interest group outlined in Chapter 1.3

are forms of baseline curriculum that allow for Mass Customization as outlined by Schickentanz (2005). In this concept, the baseline curriculum is used to train the target group to run a modified version of the same curriculum in their own classrooms or organizations. This allows the content creators (Mozilla and its partners) to iterate on the materials based on feedback from the pilot audience (i.e. the formal and informal instructors). In this way, the concept is product-oriented because the management focuses on improving the product in tandem with the customer (Jank & Meyer, 2005). Data collection is completed through both informal methods as well as a formal survey (see Chapter 2.4). The instructors become co-designers of the materials, and those materials are modularized. Instructors can change the order of the lessons and the activities and develop courses or lessons that are suitable for their own target audiences. In addition, because the pilot audience has direct communication with the content creators and direct influence on the content itself, the learning materials can be both customized and personalized to suit the expertise of the individual instructors. This process leads to a stable, yet flexible relationship between the content creators and the educators that use the materials (Tseng & Piller, 2003).

The first sessions of a course are run for informal and formal educators. Once these educators have completed the project(s) and activities, they have the necessary web literacy skills to turn around and teach the course to their own learners.

The Mozilla Popcorn program intends to provide a course entitled “Introduction to Web Native Filmmaking”. This course is the first in a series of film and media related courses run through the Popcorn program and is used as an example for the implementation of the concept covered in this thesis. The goal of the “Introduction to Web Native Filmmaking” is to help learners plan and develop a collaborative web native film project and think critically about the subjects and topics they choose to approach. Learners will learn how to work together to solve problems in both digital and real-world environments. Web literacy skills are presented and developed and learners will develop a base understanding of terms and processes used in Webmaking. At the end of the course, learners should know a variety of collaborative tools that they can use to express themselves on any topic, academic or other.

Although this concept outlines the example course as a six week course, the face to face sessions of the course can also be provided in a single day over a seven or eight hour period.

2.3 Concept

2.3.1 Overview

A summary of how this course broadly fits within Kerschensteiner's seven relevant functions (Scheibe, 1999) of project-based learning follows.

The target audience of this program have discovered the “Introduction to Web Native Filmmaking” course organically through independent, informal learning institutions, word-of-mouth, or through the marketing efforts of Mozilla. Adults have their own motivations for trying out the course, likely the desire to integrate digital practices into their own classrooms or organizations (as addressed in Chapter 1.2), and they complete the learning pathway that suits them. The course is run independently from Mozilla. Course organizers are given the curriculum and support to run the course, and they are invited to hack the course as they see fit.

This course does not have any required attendance or required coursework, thus Kerschensteiner's first relevant function, independence, is achieved. Adding game mechanics to this first function is achieved through badges. Learners are given a participation badge for completion, and they have the opportunity to earn other skill badges throughout the course.

Know-how and social and technical skill development, the second and third functions, are inherent within the course. The project based curriculum requires a learner to go through logical thinking steps to complete the activities. As each activity is completed social and technical skill development is achieved. A variety of game mechanics are used in individual activities to make the learning both fun and quantifiable. Again, badges are used to mark achievements.

The fourth function, overcoming resistance, is supported through augmented information on activities and badges awarded for exploring resources in-depth. Projects are real-world pieces of content that a learner can share across the web. The projects implement gamification by giving status to learners that have completed projects. The better a project turns out, the more social status a learner receives. This increases learner dedication and inspires them to use trial and error to complete coursework.

Because the "Introduction to Web Native Filmmaking" is aimed at filmmakers and is about a new form of filmmaking, the materials show a relevance to those topics. It is assumed that since the learner has begun this course on their own accord, the work is likely to be relevant to the learner.

The activities used in this course allow for social sharing, and the materials instruct the learner to garner feedback before submitting finished projects. Other forms of group work are suggested

and executed in the real world workshops. For example, learners work together to create a web presence for their chosen topics. Learners use peer assessment to help each other and to provide the course organizers with qualitative data about the course and curriculum (see Chapter 2.4.3).

Because coming to a decision or answering a complex question can take longer when digital communication replaces face-to-face communication, and because every organization has different abilities to commit time and personnel to this project, this course is scaffolded into six phases that span a total of six weeks. The six phases are meant to run in a sequential order, but this pathway is only suggested, not required for an optimal learning experience. The course uses a networked model, which means that a learner can jump into whichever week he or she chooses (Swertz, 2010). Each week has different learning objectives, and the content is prepared in a way that provides plenty of time for the successful development of a full fledged project. Furthermore, the timing is such that the priorities and wishes of the learner can be facilitated.

2.3.2 Blended Learning at Every Level

It is important to remember that the definition of “blended” used in this concept places equal importance on blended learning and the effective blending of organizational process and production of the learning materials. What follows is a breakdown of how each dimension from Khan's Octagonal Framework has been considered on each level of this program.

Institutional Level

At the Institutional Level, blending is prevalent in the way the different organizations involved communicate with each other and their constituents. Meetings and work sessions are done both in face to face settings as well as online. This is beneficial to the learning because content creation can be streamlined, and blended learning aspects can be tested in various contexts before the learners access the content. Additionally, learners have the ability to interact on the institutional level by giving feedback and submitting evaluations to the institutions web literacies initiatives as a whole.

1. *Institutional* - At the institutional level Mozilla collaborates with a variety of other organizations that are interested in expanding web literacies and digital skills. The Mozilla Webmaker initiative seeks to help people move from using the web to making the web. The initiative works with a global community of creators to increase understanding of web principles and help people take greater control of their digital lives.

2. *Pedagogical* - Collaboration and partnerships underline the pedagogical aspects at the institutional level, as this initiative works with organizations that specialize in education

as well as in technology, filmmaking, journalism, and other interest-based initiatives.

3. *Technological* – Mozilla is a global leader in technology. Working within the Open Source Community, Mozilla aims to promote openness, innovation and opportunity on the Internet. The blended approach to learning is a focus of Mozilla programming.

4. *Interface Design* – Mozilla and the organizations that Mozilla partners and collaborates with have web presences. The websites are created by professional designers and developers, and new sites/pages are created for each new program these collaborations champion.

5. *Evaluation* – Mozilla and partner organizations complete regular evaluations of their programs and projects. Through the analysis of quantitative as well as qualitative data, these organizations strive to improve their content and programs (see Chapter 2.4).

6. *Management* – “Mozilla is an open source project governed as a meritocracy. The community is structured as a virtual organization where authority is distributed to both volunteer and employed community members as they show their abilities through contributions to the project.” (“Governance”, Mozilla, n.d.)

7. *Resource Support* – Mozilla and the organizations with which Mozilla collaborates create a variety of both online and offline resources that cover general as well as program specific topics and themes.

8. *Ethical* – Mozilla works with organizations across the globe. The foundation strives to make all materials and programs accessible and relevant to every regional and local community worldwide.

Program Level

As with the Institutional Level, at the Program Level, blending is prevalent in the way the different organizations involved communicate with each other and their constituents. In addition, the Program Level blending occurs with general program workshops and information sessions along with online presences designed specifically for the learner.

1. *Institutional* – Mozilla and Zero Divide¹⁰ collaborate with the Bay Area Video Coalition¹¹ for the implementation of the “Introduction to Web Native Filmmaking” course. Three organizations work together to support the course at various other organizations. They blend online, in-person and independent project collaboration to provide a comprehensive development of media functional skill sets.

¹⁰ “Zerodivide”, n.d. <http://www.zerodivide.org/>.

¹¹ “Home | Bay Area Video Coalition (BAVC)”, n.d. <http://bavc.org/>.

2. *Pedagogical* - The content for this course has been written by people working in the fields of media, education, filmmaking and technology. These experts have been pulled from a variety of organizations blending each of their skill sets into a collaborative and comprehensive educational process.
3. *Technological* - Mozilla and the open source community created a piece of free and open software called Popcorn. This web application is accessible with any modern web browser and code has been contributed to the project from a variety of organizations. The focus of the Popcorn program is to provide a blended learning environment that promotes the use of remixing, technology and face-to-face learning to augment the experience.
4. *Interface Design* - Each organization has their own web presence. Content appears in and is restructured for wikis, static pages and dynamic pages on multiple servers for accessibility, once again blending various forms of media applications for use in the development of web literacy skills..
5. *Evaluation* - Each organization has a sub-program (e.g. Mozilla's Popcorn program, BAVC's Next Gen program, Zero Divide's Youth Media Partnership) that complete evaluations independently from the institutional level.
6. *Management* - The organizations collaborating on this program collaborate on the management of it as well.
7. *Resource Support* - Each organization dedicates man hours and server space to creating and hosting online resources. Each organization also runs face to face sessions which include offline resources for learners.
8. *Ethical* - Plans to make accessible, culturally relevant and localized content is at the forefront of the programs activities.

Course Level

Blended learning is at the center of the Course Level. Learners will attend six online Webinars and six face to face sessions over a six week period.

1. *Institutional* - All three organizations have committed financial and personnel resources to the course assuring the ability to support learners, both online and offline. The pilot course will be run at twenty-eight different institutions.
2. *Pedagogical* - A coalition of experts have created a six chapter, networked model. Each chapter includes orientation, instructional and practical exercises.

3. *Technological* - An online presence with a unique URL has been created specifically for the course. An online community headquarters where learners can post and access information from other learners in the course has also been implemented.
4. *Interface Design* - The Popcorn tool opens in a new window allowing learners to switch back and forth between the curricular content and the projects hosted within the tool. Usability tests have been completed to ensure maximal suitability.
5. *Evaluation* - Anecdotal feedback is collected, learner creations are catalogued, and the course will have a qualitative survey for participants to be completed after the week six session.
6. *Management* - Several managers from each organization are working together to ensure that the learners as well as facilitators are supported, that logistical issues may be dealt with appropriately and that content is delivered in a variety of ways.
7. *Resource Support* - Step by step online resources to help learners learn the software and underlying educational concepts of the activities have been created. Concepts are introduced via Webinar and cognitive connections are deepened with face to face sessions.
8. *Ethical* - There are no restrictions on who can participate in the course.

The Activity Level

Offline curriculum and exercises have been created for the face to face sessions and the Webinars are augmented with online activities that underpin the learning objectives.

1. *Institutional* - Activities are run both online and offline depending on where the learner is. If the learner is participating at one of the twenty-eight institutions running the pilot program, he/she will have both online and offline coursework. If the learner is not participating at one of the institutions, he or she can still attend face-to-face events during the year.
2. *Pedagogical* - Certain learning objectives are delivered via online media, while others use face-to-face interactions as transfer methods.
3. *Technological* - Learning specific templates have been created for the Popcorn software. These templates highlight singular learning objectives. Online sharing and publishing is also possible through Popcorn.
4. *Interface Design* - The learning templates are pre-filled with content that the user can explore and change as he/she sees fit. The learner also receives instruction and training

on using other open technologies to explore his/her ideas.

5. *Evaluation* - Peer assessments are completed with each making activity. The publish feature allows a learner to share his/her work and gather feedback from others. This feedback can then be used to iterate the work.

6. *Management* - At the activity level, individual facilitators from each organization are managing the progress of their learners. They have access to the program designers through both online and offline methods.

7. *Resource Support* - Facilitators support learners in their sessions and online and offline resources are available for the learners use.

8. *Ethical* - The activities have been created to adhere to accessibility guidelines.

2.3.3 Learning Events

Learning events take place weekly throughout the six weeks in those organizations running the course. In-person workshops on individual learning objectives and methods are offered by Mozilla sporadically throughout the year. It is important to note that these workshops are run by Mozilla employees or by volunteers. Guidelines on how to run such a workshop and content offered for use is planned for public use. In essence, anyone that has something to teach or wants to learn something that falls within the realm of web literacies has guidance on how to run an event.

There are three main event formats – kitchen-table event, hackjam, popup – that are offered to the target group. These formats have been defined and tested by the Mozilla Foundation. All events are centered on making something, thereby learning by making.

From a didactic standpoint, there are several types of knowledge that are addressed in the three event types. A kitchen table event is categorized as mostly an “orientation knowledge” event because participants are learning about the connection between the chosen topic and their own lives. These events are also introductory sessions into chosen learning objectives. With “instructional knowledge” participants receive targeted lessons with specific learning objectives. A hackjam serves to transfer mostly “practical knowledge” as a participant will use pre-acquired knowledge to solve problems. A popup is a large scale version of a kitchen table event in that a popup centers both on orientation knowledge and instructional knowledge. The difference between a kitchen table event and a popup is that a popup event addresses these two knowledge types, orientation and instructional, through a series of individual stations. One such station might be the “Popcorn” station where learners are introduced to learning objectives from the

“Introduction to Web Native Filmmaking” course.

None of this is to say that one event type could not or will not transfer other types of knowledge, it is simply a way to distinguish the learning goals of each event type. Understanding the overarching knowledge types is useful in creating curriculum and games that fit into each event type. This allows for more efficiency in content creation, which means more content is able to be produced.

Events are used in certain contexts as “crash courses” for educators to develop their own web literacy skills prior to attempting the transfer of those skills to others. A variety of theoretical educational practices such as drill and practice or anchored instruction are used in the curriculum created for each event type.

2.3.4 Learning Objectives

Once the structure of the blended learning program has been considered and created, the appropriate learning objectives for the course can be granulized. The learning objectives specific to the Mozilla Popcorn course “Introduction to Web Native Filmmaking” are web literacy skills at the Exploring, Authoring and Connecting levels (see Chapter 1.6.1). For a complete outline of these skills, see Appendix I.

Other high-level learning objectives include:

An understanding of what makes web native filmmaking different from traditional filmmaking, nuances about the history of media, how to use Popcorn and other online tools, how to work with story, vision and technology, how to plan web native projects and how to do peer assessment.

2.3.5 Sample Curriculum

2.3.5.1 Skills Expected of the Facilitator

This curriculum assumes that the facilitator has a fundamental understanding of basic media production techniques. Often our conversation about using video in a web-native manner assumes the video is already filmed, edited and exported in a compressed web-friendly format. This course will not walk learners through the steps necessary to get to this stage. However, if the facilitator feels he or she needs to brush up on his or her media production experience before tackling web-native storytelling, simple and accessible online resources are provided.

It is not expected that the facilitator has any computer programming experience before running this course. Part of what has made web native filmmaking such an exciting development in the

past few years is the great strides that HTML, the foundational language of the internet, has made in becoming more accessible and easy to use.

2.3.5.2 Skills Expected of the Learner

Prerequisite skills for successful completion of this curriculum include previous audio/video production experience and *baseline* computer skills (they should be able to open a browser, click, double click, etc). The learner should be comfortable learning new software and graphic design skills help the learner translate his or her ideas for the viewer. These skills are, however, not required and should be addressed in the face to face sessions with provided resources.

It is highly recommended that learners have a blog, website, or some sort of online presence (other than Facebook) that can be used to participate and contribute to the collaborative experience.

The first step in opening the door to Web Native Film and Webmaking is understanding that webmaking is a collaborative practice. This curriculum helps learners develop an interest in technical and communicative skills as their desire to participate in the landscape of the web grows. Since this curriculum proposes a great deal of self-organized collaborative work, the learners need to organize their time effectively. They have to navigate the flexibility of their own project time line in combination with any class project deadlines. Time management, group cohesion and cooperation are other lessons this curriculum aims to transfer.

2.3.5.3 Technology

The most important thing to remember in terms of technology is that everything created in this course is for the web. Not only does the course publish projects on the web, but many of the tools used, such as Mozilla Popcorn, exist as web applications rather than installed programs on our computer. Because of this, it is critical that facilitators run this program on up-to-date web browsers. The tools used are designed to support the latest versions of either Mozilla Firefox or Google Chrome.

Video conferences, Chat and Email are recommended media for connecting learners. Chances are, learners will want to work on their projects outside of the allotted time an organization dedicates to face to face sessions. In today's web landscape there are hundreds of solutions for communication tools, and everyone has his or her favorite. All of these tools have pros and cons. One of the learning goals is the ability to effectively collaborate, so groups are allowed to choose the tools that help them develop that ability.

This project uses a preview version of Mozilla Popcorn – a free tool for making web-native video. This tool was developed side-by-side with the Bay Area Video Coalition (BAVC) during

the production of their projects. BAVC participants gave Mozilla feedback on the Alpha version of the software. That feedback was taken into consideration for the development of the Beta version used in this course. The weapons-grade software will be released in November 2012 after another iteration based on feedback from those who run or participate in the course.

2.3.5.4 Supervision

In classical forward facing classes, the learners have a passive role and the instructor has an active role. This dynamic is the absolute opposite in this course. Facilitators act more as a project manager and allow learners to explore their project theme and the communication tools on their own.

Both the organizations involved in the creation of this course and those running the course provide learners with motivation and support to see what kinds of amazing ideas they have.

2.3.5.5 Content Structure

Week One: Introduction

In the first week, the course is introduced to the learners either in person or as a synchronous, virtual video conference. Facilitators choose a specific theme or topic that they want learners to explore. The first chapter of a six chapter curricular video is viewed to give a brief introduction to the six phases this curriculum details. The appropriate segment is viewed again at the beginning of each week to help learners make cognitive connections between the overarching theme of each phase and the work they are doing in assignments.

Learners are separated into groups. The groups of five people or less per group is designed to ensure maximal participation (Hinze, 2004). An attempt is made to put learners together that have similar interests, but varying competencies in digital media. Learners are given some tips on how to work together, respecting each others opinions, division of labor, Netiquette, turn-taking and other topics.

Next the overarching project, to create a web native film and supporting website, is introduced and questions about requirements answered.

Facilitators then give some quick crash courses on the setup and basic usage of the collaborative tools. It is also suggested that facilitators describe the intensity of this project. Groups will likely need time outside of the classroom to complete the project. However, creating a Web Native Film and supporting website can be very easy or very dedicated, as the facilitator desires.

Finally, each week learners make a project, designed to be completed in as little as ten minutes, specific for that week's topic. The first week has a project illustrating the idea of procedural

storytelling.

Week Two: The History of Media

Week Two is intended to have students reflect on the relatively short history of the web as compared to other communications media. The activities are meant to spark critical thought surrounding the history of media and how specific medias have altered the cultural landscape, why this happened, why it was/is important. Facilitators lead a discussion on this topic, and learners work these lessons into their overarching projects. The second week's specific project is creating a short video that recontextualizes an archival film.

Week Three: Remix

The Remix chapter is intended to have learners consider how the creative process depends on influence - and how the structures of the web depend on the ability to build on the work of others. This week also involves activities required for the planning and design of the overarching projects. The third week's projects are remixing audio and video and remixing a news site.

Week Four: Ways of the Web

This week focuses on the open working methodologies of the web – the goal of this week is to introduce learners to the basics of making web sites using HTML, CSS and JavaScript. This week's project is to code a single webpage using another Mozilla tool called Thimble. Thimble is a side by side editor with learning content layered on top.

Week Five: Web Native Storytelling

Week 5 is a detailed examination of the web as a unique storytelling medium. The curriculum video is full of examples and resources that provide students with inspiration as they get closer to beginning production on their own work. The students produce their own personal News Cast, inspired from the weeks guest speaker.

Week Six: Web Native Film Planning

It might seem strange that this pathway has the last chapter of the „Introduction to Web Native Film" video and is about planning a web native film. While it is true that the planning always comes first, this curriculum is meant to serve as an introduction to web native filmmaking. The influence of developing each component of the technical and communicative skills to create a large scale collaborative project, changes the planning process, as the learners have experienced the process. This last chapter of the curriculum film is watched with the learners and a discussion about how their ideas have changed based on the last few weeks of experiential learning is led. From this discussion, shared lessons are used to promote a better experience for the learners that follow.

Reviewing the Sample

This sample has laid the groundwork for a curriculum used in a blended learning course in which learners are learning by making. The principles of Kerschensteiner are revived through the course's project-based methodology and the curriculum's adherence to his seven relevant functions (Scheibe, 1999). Blending occurs at each of the four levels described by Graham and Bonk (2006), and Khan's Octagonal Framework (1997) is used to further pinpoint specific blends occurring in this concept. Gamification, though its precise usage is not defined in the sample curriculum contained in this thesis, is used in learning events to transfer specific concepts, in individual activities and projects both offline as well as online, and through the use of badges as the assessment mechanism.

2.4 Evaluation Methodology

2.4.1 Introduction

As mentioned in Chapter 2.2.4, content creators (Mozilla) and pilot audiences (formal and informal educators) work together to create interest-based curriculum while the target audience improves their own web literacy skills. Because the curriculum and activities are modularized and co-designed, the evaluation of the content used in learning situations is ongoing. The various evaluations are run internally (Schütt, 2010) as the need for external evaluators is not yet present.

Peer-based evaluations are used within the course to evaluate the general web literacy competencies of the target audience. These evaluations take place regularly, each week or after each module a new peer-based evaluation is completed. The evaluations pose a series of standardized qualitative questions (see Chapter 2.4.3) that are designed to gather valuable data that can be used both to show the progression of web literacies and to evaluate individual activities in the course.

Formative evaluations are used to determine problem areas and harvest good ideas for the improvement of the content and programming. The content creators play the role of participant observer because adjustments to the overarching program and course material are made based on feedback from participants. Facilitators of the course will informally observe the educators while in face to face sessions, and those educators will serve as focus groups for the curriculum, projects and activities when the course is finished. Data are collected through the interviews, focus groups, and observations on how participants use the materials. Surveys are used to collect responses to targeted questions. Since the target group is made up of mentors who want to share web literacy skills with their own constituents, they have an expected level of new insight, thus the participants serve as a non-random sampling (Flick, 2009).

Summative evaluation is used to study and judge the success of each of the programs, projects, and the overall initiative. Qualitative survey questions used in formative evaluations are mixed with quantitative evaluation methods. The quantitative data are pulled to give an eagle-eye view of the Webmaker initiative's success as a whole, as well that of its individual programs and processes. Other quantitative data are pulled from metrics outlined in the next chapter. Because the quantitative data described in the next chapter are raw metrics, interpretation is the thing that makes those numbers paint the picture of whether or not the concept is successful. Reflections on how this data can be interpreted are also contained in the next chapter.

A number of different metrics are used to collect data about the viability of the educational concept, its application in various context and the ever important fun factor of the material.

To zero in on problems with the concept itself, it makes sense to run evaluations on each of the four levels at which blending can occur. Each level of the blended learning educational concept is looked at independently and those results are catalogued to evaluate the concept as a whole.

2.4.2 Quantitative Metrics and Approaches

The following data is collected to determine understanding about and awareness of the Open Web and Mozilla learning initiatives.

- Basic demographics
- Number of total page views by language and country
- Referrer stats
- Click Stream

At the institutional level, collecting demographics allows Mozilla to see where there are spikes in activity. This information helps Mozilla develop strategic partnerships to further their mission. Both demographics and number of page views organized by locale also helps the foundation target specific localization practices and communities. Referrer stats are important for partnership development and evaluation, and, on the institutional level, the clickstream is important for responsible monetary expenditures.

At the program level, collecting the demographics of users allows Mozilla to further focus their programs to specific interest groups. Total number of page views by language and country furthers this definition. This allows Mozilla to spend its resources designing programs that many different types of people are interested in. Thereby influencing statistics in participation depth that show progress towards the ten million Webmakers marker. Knowing which referrers are the most valuable helps to streamline resources and eliminate erroneous spending on marketing and/or partnerships at the program level. Following the clickstream helps Mozilla understand what interest groups are looking for when accessing a problem, thereby influencing the UI (user interface) or UX (user experience) of individual components of the site.

At the course level, demographics will help Mozilla determine what target groups are most interested in which courses. This is different from the program level in that at this level, age group and cultural expectations are considered, rather than just the interest group. The total number of page views per language and country will further support this evaluation. This is helpful to tailoring course work and instructional methods by further defining the target

audience that is most interested in accessing this material. Mozilla then has the opportunity to try out new courses targeted at other groups. Referrer stats and clickstream at this level lead to the development of content that inspires understanding, which will further Mozilla's ability to create content that pushes people to becoming webmakers.

Much like the course level, these metrics on the activity level are valuable in understanding the groups accessing the materials. Collecting these four metrics at the activity level will further help with targeting audiences, finding applicable partners, eliminating erroneous spending, and reviewing content.

Participation depth metrics determine the reach of Mozilla programs and the extent to which learners are delving into the content. Other metrics that are important to collect include:

- IP
- Session Duration and Clicks per Session
- Think time
- Conversion rate
- Share of users who never publish work

Although IP logging is a raw metric, with thousands of users it is valuable to see how deep into the Mozilla programming users are going. By cross comparing IP logs between levels as well as between programs, Mozilla is able to quantify influence and participation depth across the board. Collecting session durations and clicks per session and seeing an increase in these two metrics over time further underlines this viewpoint. Think time can be used to filter out users who simply browse, as opposed to learn. Decreasing negative conversion rates is important to show strength of programming.

Skill improvement can be determined by using this concept's embedded assessment mechanism, badges, and submitted work. Two further metrics are added to the quantitative data collected:

- Number of Badges issued over time (organized by badge type)
- Number of Links to participants work (gathering external links will allow us to see what/if people are making)

The more badges that are issued and the more quality links that are submitted to Mozilla sites, the clearer the influence of Mozilla on skill improvement. These skill improvements are reviewed at the activity and the course level.

All of the aforementioned data can be collected by implementing logging across the board.

The last quantitative metric is also the most important metric because it shows the reach of the overarching ethos of the open web community. This metric, called “Contribution” is the number of people who actively contribute to the Mozilla open source community. In order to prove contribution, counts will be made with the following metrics:

- Number of Code Contributions
- Number of Curriculum Contributions
- Number of Individual Contributors
- Number of Events Run without Mozilla Influence (i.e. Events run using Mozilla materials, but not funded by or otherwise supported by Mozilla)

These four metrics will be collected on each blended level. This data will be pulled by program heads and submitted to the organization to review.

2.4.3 Qualitative Metrics and Approaches

At the institution level, qualitative data shows community support for marketing and partnership strategies. At the program level, this data helps interest group and software strategies. Each program collects qualitative data during courses and activities, which shows the interest and use of individual learning paths and activities. Because this concept proposes a train the teacher system in which courses are run by Mozilla for educators, the qualitative data is collected through observation, focus groups and interviews. Program directors and project members collect this data during courses as well as at the end of courses. Mozilla observes educators while training them to run each course and focus groups are run to garner feedback on individual methods or materials.

Learners are asked to complete a qualitative and quantitative survey at the end of a course to give Mozilla feedback. That survey is included in Appendix II.

In addition, learners use peer assessment to assess one another. These observations are also collected by Mozilla to further understand the success of the program, courses or activity.

Peers will use the following guidelines¹² to assess one another:

Evidence of Data Gathering

- How well did your peer show that he/she could gather assets (images, text, video and other data from the web) to voice his/her own opinions in a web native story?
- How well did your peer attribute the resources he/she used? Would you be able to find

¹² Guidelines created via email collaboration with Ingrid Dahl of the Bay Area Video Coalition.

those resources again?

Evidence of Understanding

- Would you say that your peer really understood this week's theme and why it is relevant to web native filmmaking?
- How well did your peer explain the material in his/her own words?

Evidence of Reflection and Analysis

- How well does your peer's work incorporate feedback from others? Did his/her work change after sharing with and speaking with you or your other peers?
- Would you say your peer expressed a clear opinion on his or her topic (i.e. the theme of his or her project)?

Evidence of Creativity

- Would you say that your peer really had a solid grasp on their topic?
- Would you say that your peer represented another take or perspective on the topic that you had not really thought of before?

Once the target group has completed the course, they are asked to run the course for their own target audiences. Once the target group has run the course, they too are asked to complete a survey (Appendix III) to help Mozilla and its partners improve on the offered content.

Qualitative data collected on each level gives anecdotal and practical evidence for the Webmaker initiative's success.

3 Conclusion

3.1 Conclusion

Although the target group “formal and informal educators” as referenced in this thesis is fairly specific, I propose that considering the different theoretical frameworks outlined in this concept when planning a blended learning program would be beneficial to any target audience. Presumably, adding gamification to curriculum will engage any audience, as human beings are naturally apt to play. Furthermore, learning by making (as outlined in Chapter 2.2.1) is a pedagogically sound process for acquiring both cognitive and affective skills.

With the combination of frameworks as proposed in this thesis, an organization can compete in the market by creating scaffolded, gamified, blended-learning programs that allow for independent development of the social and technical skills required in the Information Age. These organizations can create programs that highlight the *process* of learning, rather than the outcome of a particular exercise, leading to a real cognitive development. Organizations that create batches of modifiable and modular content, so-called baseline curriculum, that can be modified and reused for specific target groups, will be leaders in the creation of flexible and efficient learning programming. In addition, organizations that measure and evaluate their programs through surveys, quantitative data measuring, peer to peer evaluations, observations and focus groups are able to iterate on their content. They are able to create learning experiences that are co-designed by the people that are doing the actual learning. This gives agency to the learners and a feedback loop to the organization so that the learning experiences are more specialized, original and thought provoking. Learning can be interesting and fun, and organizations that pay close attention to their learners are able to create such learning experiences.

Because media and technology are being redefined and developed at an exponential rate, more detailed research is needed to determine the best game mechanics to use in curriculum. An expansive research project on the topic would need to create two forms of curriculum, one that is gamified and one that is not. The project would then need to run programs with control and variable groups to determine whether or not gamification truly leads to more successful learning of web literacies. Such a research project would need to answer a variety of questions to definitively show how game mechanics are beneficial to learning. Are there specific mechanics that should be used with specific target audiences? Are there game mechanics that lead to cognitive dissonance instead of learning? How gamified can curriculum be before it becomes

just a game and not a learning endeavor? These are just some of the questions researchers must look into to ensure that gamified materials are, indeed, better than other types of curricular designs. Such a research project would be beneficial in determining the nuances of designing gamified curriculum for a blended learning environment.

At the moment we find ourselves in a structural crisis. Our society is and has been changing from the industrial age to the digital age, and we are now organizing and designing two different social worlds, an online life and an offline life. In addition, we're expanding our offline social life through the development of our online social life. From a theoretical perspective, the difference between the online and offline is blurred, at best. We are becoming much more polymorphic. The WWW has allowed us to create multiple definitions of our self. It's also led to the integration of multiple perspectives as the Web is multicultural. The dynamic of new media has led to the understanding of the relativity of information as a common skill. Internet users need to be critical of the information they receive as being critical will lead to a more flexible usage of information (i.e. we'll no longer take information at face value, we will become more inquisitive). Additionally, people using the World Wide Web need to be able to communicate in these two separate social worlds, they need to understand and follow rules and regulations in two separate worlds, and they need to be able to participate in the distilling and creation of new information in two separate worlds. In short, people need to have certain technological competencies to fully participate in modern life.

This is only possible if web literacies become a method of practice in all educational endeavors.

3.2 Appendix

3.2.1 Granularized Learning Objectives for Introduction to Web Native Filmmaking

These learning objectives were created in collaboration with Michelle Levesque and other Mozilla Foundation staff. They begin to define specific learning objectives needed to reach the meta-definitions of the first three Web Literacy categories as defined in Chapter 1.6.1. This list is currently under review.

Exploring:

Browser Basics is about knowing enough about a web browser to be able to navigate through webpages without getting lost.

- How to type in a URL and visit that webpage.
- How to click on things (eg: a link).
- How to navigate back to the page you were previously on
- How to retrieve the URL of the page you are currently on, in order to share it, paste it in an email, return to it later, etc.
- How to pause a current activity (eg: filling in a form) to do another activity (eg: open up another tab to look something up) and return to the original activity without losing state.

Web Mechanics

- Components of a URL - some host name which is a computer somewhere on the web, the path on that computer
- What actually happens when you type a URL into your browser and hit enter. - You are contacting a computer somewhere in the world
- Who owns the web? Who owns a web page? - Understanding that servers are rented (most of the time), understand that people put their content on rented servers
- What does "upload" mean? - Understanding you have to put your content onto a path

Searching

- Find the answer to a specific fact question, eg: What is the capital of Alberta?
- Find information about a topic, eg: How do we digest gluten?
- Find a process to answer a problem, eg: How do I repair a toilet that doesn't flush properly?
- How to re-discover the answers to problems/questions you've previously solved.
- The difference between aggregators and direct content pages.

Bullshit Detection

- How much can you believe what you read online?

- Thinking through who authors things, and what that means about reliability.
- Crowd-sourced reliability
- Involves advanced social skills (eg: understanding “why would someone create a parody website of this company?”) to be able to fine-tune it.

Authoring:

Restaurant HTML The ability to identify HTML and know how it works. The ability to use basic html and understanding of how to create and format basic page structure using CSS, images, links, lists, sound and video.

- Tags (the opening and closing thereof)
- Basic formatting tags (bold, paragraph, etc.)
- Links
- Images, video, audio
- Lists
- Where to find more tags, look up tag/attribute syntax
- CSS and classes
- CSS and ids
- How to find an example of formatting you want to copy, view its source, and then use the example to include it in your own page.

Linking/Embedding The ability to create hyperlinks between content, embed content and the understanding of nuances in linking terminology.

- Links vs Embedding
 - absolute vs relative
 - internal vs external
 - anchors
 - Navigational vs Non-Linear
- Attributes
 - target
 - href
 - src
- Styling Links with CSS
 - a:link
 - a:hover
 - a:active
 - a:visited

Designing for the Web The ability to plan and organize content for an interactive series of webpages with adherence to the fundamental principles of design and acknowledgement of web

limitations. Introduction to basic CSS as a tool for design. Does not include the ability to PROGRAM webpages or how to USE layout software.

- planning
 - determining purpose
 - designing for your audience
 - content
 - navigation
 - accessibility
- Principles of design
 - page elements
 - Identification/Logo
 - Fonts/Webfonts
 - Masthead/credits
 - Headlines
 - Subheads/subtitles
 - Pull-quotes, lead-ins and kickers
 - Artwork/photographs
 - anchors/links
 - Breadcrumbs
 - interface design
 - Icons
 - Logic versus reality
 - Using metaphor
 - grids
 - Grids as Guidance
 - Grid Design Methods
 - typography
 - Designing for the Reader:
 - Reading with ease
 - Defaults
 - Webfonts
 - Columns as Control
 - The blech factor
 - Capitalization
 - Centering
 - Cascading Style Sheets

- Graphics as text
- color
 - hexidecimals
 - Color Association
 - Color Terms
 - Hue
 - Saturation
 - Brightness
 - Neutral Colors
 - Chromatic Hues
 - Monochromatic Color
 - Choosing Effective Colors
 - Helpful sites
 - consistency
- images
 - formats
 - gif
 - jpeg
 - png
 - vector vs pixel
 - background graphics

Remixing The ability to alter someone else's content. An understanding of copyright and copyleft licensing. A grounded understanding of why allowing others to remix your content is advisable, and why the practice of remixing is a new derivative art form.

- Definition of remixing
- How to remix. (eg: view source)
- Ability to recognize remixes on the web as remixes.
- Licensing
 - Copyright
 - per country stipulations
 - fair use policies
 - Copyleft
 - CC licenses
 - as an ethos
 - Ability to tag one's own work for remixing by others
 - Forking and Copying Code

- Changing Content

- Creativity

Open Web The ability and foresight to advocate for an Open Web. Includes the understanding of its difference from the closed web, the understanding and usage of open content/code and adherence to open standards.

- History Lesson: The Web was Built to be OPEN

- Intro to Open Standards
 - Decentralization
 - Transparency and hackability
 - innovation

- Why you should care

Connecting:

Linking vs Copying When you make a copy of something, there are now two versions in the world. If you change one, the other does not get changed. When you link something, there is still only one version in the world. If you make changes to it, everyone sees that change.

- The difference between emailing someone an attachment versus emailing them a link
- The difference between editing and forking copying then editing
- When linking is appropriate, when copying is appropriate

Sharing

- The use of permalinks to send someone to a specific part of the web
- Broadcast versus one-to-one communication
- Online social network knowledge

Designing for your Audience

- Thinking about how your audience wants to consume your content
- Age-appropriate / geographic-appropriate / attention-span-appropriate content
- Accessibility, data portability, etc.

Community Etiquette

- You're on a forum and have a question. Is it okay to post a question here? Is there a FAQ you should look up first?
- Being an active participant versus being a consumer
- Each community has its own (usually unspecified) set of rules, and how to suss them out

Collaborative Making Harnessing the collaborative, open nature of the web to produce something authored by more than one person. Also see: [open web](#).

- Using the web to produce something in collaboration with someone else

- Asynchronous collaboration (eg: git, wikis)
- Synchronous collaboration (eg: [etherpad](#), etc.)
- Working with people you've never met (eg: open wikis)
- Best practices and etiquette, see [Community etiquette](#)

3.2.2. Survey for the Learners

How much did you know about Web Native Filmmaking before the course? (rating scale)

How much did you learn about Web Native Filmmaking during the course? (rating scale)

What was your favorite popcorn project?

- Make a MadLib
- Hack a Commercial
- Report the News
- other (text box)

Who was your favorite guest speaker?

- Week 1 - Kick Off - with Damian Kulash of OK Go
- Week 2 - Media Literacy - with Cory Doctorow
- Week 3 - Intro to Remix - with Jonathan McIntosh
- Week 4 - Web Literacy - with Michelle Levesque
- Week 5 - Media Empowerment - with Anita Sarkeesian
- Week 6 - Leveling Up - with Greg Pak and Tommy Pallotta

Why? (text area)

How much do you feel you learned of the following:

- How to use Popcorn
- Open web and open video standards
- Web mechanics - cutting and pasting, browsing, searching
- Digital storytelling
- Media aggregation
- Copyright
- Remixing

- Other

The tool was easy to use. (rating scale)

I got stuck. (rating scale)

I had fun at an Introduction to Web Native Filmmaking. (rating scale).

I'd go to another advanced Web Native Filmmaking course. (rating scale)

I am going to use Popcorn again. (rating scale)

If we were to do this again - what feedback would you have for us? What worked? What didn't?

Everything you say influences how we work. Your feedback shapes our software, our resources, our goals. Tell us more! (Open ended)

3.2.3. Survey for Facilitators

How many participants did you facilitate during the course? (text area)

How closely did you follow the teacher guide during the course? (rating scale)

How useful was the guide? (rating scale)

How can the guide be improved? (text area)

I found the Mozilla projects and materials helpful. (rating scale)

I felt supported by the Mozilla Team. (rating scale)

The participants enjoyed themselves and were excited about doing more. (rating scale)

I feel like my participants learned a lot. (rating scale)

I learned a lot. (rating scale)

I plan to teach with Popcorn in future events / courses. (rating scale)

I would be happy to host another Mozilla Webmaker event. (rating scale)

What did you enjoy most about the course? (text area)

Any tips we should keep in mind for future courses? (text area)

3.4 Bibliography

- About Webmaker. (2012, May). *Mozilla Webmaker*. Retrieved June 29, 2012, from <https://webmaker.org/en-US/about/>
- Belshaw, D. (2011). *What is "digital literacy"?* Durham University. Retrieved from <http://neverendingthesis.com/doug-belshaw-edd-thesis-final.pdf>
- Brennan, K., Chung, M., & Hawson, J. (2011, September 23). Creative Computing: a design-based introduction to computational thinking. Retrieved from <http://scratched.media.mit.edu/sites/default/files/CurriculumGuide-v20110923.pdf>
- Connected Learning Principles. (n.d.). *Connected Learning*. Retrieved May 16, 2012, from <http://connectedlearning.tv/connected-learning-principles>
- Csikszentmihalyi, M. (1990). *Flow : the psychology of optimal experience*. New York: Harper & Row.
- Flick, U. (2009). *An Introduction to Qualitative Research*. Sage.
- "Gamification.org." *Gamification.org*, 2011. <http://gamification.org/>.
- Garrison, J. (1999, November 10). John Dewey – Encyclopaedia of Philosophy of Education. *Encyclopedia of Philosophy of Education*. Retrieved May 17, 2012, from http://www.ffst.hr/ENCYCLOPAEDIA/doku.php?id=dewey_john
- Graham, C. R., & Bonk, C.J. (2006). Blended learning systems. *Handbook of blended learning: Global Perspectives, local designs*. San Francisco: Pfeiffer Publishing.
- Grayson, R. (2011). *Managing your digital footprint*. New York: Rosen Central.
- Hinze, U. (2004). *Computergestütztes kooperatives Lernen: Einführung in Technik, Pädagogik und Organisation des CSCL*. Waxmann. Retrieved from <http://books.google.de/books?id=V0CZusCnjkcC>
- Jank, W., & Meyer, H. (2005). *Didaktische Modelle*. Berlin: Cornelsen Scriptor.
- Khan, B. (n.d.). About the Framework. *E-Learning Framework*. Retrieved July 18, 2012, from http://asianvu.com/bk/framework/?page_id=171
- Klafki, W. (1993). *Neue Studien zur Bildungstheorie und Didaktik : zeitgemäße Allgemeinbildung und kritisch-konstruktive Didaktik*. Weinheim [u.a.]: Beltz.
- Knight, E. (2011). School of Webcraft Assessment and Badge Pilot Phase 1 Evaluation Report. P2PU and Mozilla. Retrieved from <http://interoperability-and->

education.wikispaces.com/file/view/Pilot1_evalreport+P2PU+Badges.pdf

Levesque, M. (2012). Mozilla's Web Literacy Skills (v0.1 alpha). *RWXWeb*. Retrieved June 5, 2012, from <http://rwxweb.wordpress.com/2012/01/30/mozillas-web-literacy-skills-v0-1-alpha/>

Marotzki, W., & Jörissen, B. (2005). *Bildungstheorie und neue Medien: Modul: Bildung in der Mediengesellschaft, Lerneinheit: Bildungstheorie und neue Medien*. Univ., Zentrum für Qualitätssicherung in Studium und Weiterbildung. Retrieved from <http://books.google.de/books?id=ikTETwAACAAJ>

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010). *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies* (No. ED-04- CO-0040 Task 0006) (p. 94). U.S. Department of Education, Office of Planning. Retrieved from <http://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf>

"Mozilla Popcorn | Making Video Work Like the Web", n.d. <http://mozillapopcorn.org/>.

Murphy, C. (2011). Why Games Work and the Science of Learning. Alion Science and Technology. Retrieved from http://www.goodgamesbydesign.com/Files/WhyGamesWork_TheScienceOfLearning_CMurphy_2011.pdf

Paine, A. B. (1912). *Mark Twain: A Biography ; the Personal and Literary Life of Samuel Langhorne Clemens* (Vols. 1-4). Harper. Retrieved from http://books.google.de/books/about/Mark_Twain.html?id=EgridR2zyJcC&redir_esc=y

Pinto, M., Cordon, J. A., & Gomez Diaz, R. (2010). Thirty years of information literacy (1977--2007): A terminological, conceptual and statistical analysis. *Journal of Librarianship and Information Science*, 42(1), 3–19. doi:10.1177/0961000609345091

Researchers Introduce New Model of Learning, Connected Learning: Designed to "mine the new social, digital domain." (2012, February 27). *DML Central*. Retrieved from <http://dmlcentral.net/press/2012-02/researchers-introduce-new-model-learning-connected-learning-designed-%E2%80%98mine-new-social>

Röhrs, H. (1993). Georg Kerschensteiner. *Prospects: the quarterly review of comparative education*, XXIII(3/4).

Scheibe, W. (1999). *Die reformpädagogische Bewegung : 1900-1932 ; eine einführende Darstellung*. Weinheim; Basel: Beltz.

Schütt, S. (2002). *Evaluation Von Bildungsprojekten: Modul: Anwendung I, Lerneinheit: Evaluation Grundlagen*. Univ., Dezernat Studium u.Lehre.

Singh, H. (2003). Building effective blended learning programs. *EDUCATIONAL TECHNOLOGY-SADDLE BROOK THEN ENGLEWOOD CLIFFS NJ-*, 43(6), 51–54.

Swertz, C. (2010). *Didaktische Aufbereitung von Lernmaterialien*. Universität Rostock: Zentrum für Qualitätssicherung in Studium und Weiterbildung.

Tseng, M. M., & Piller, F. T. (2003). *The customer centric enterprise : advances in mass customization and personalization*. Berlin; New York: Springer.

Who's Online: Internet User Demographics. (2012). *Pew Internet & American Life Project*.

Retrieved May 29, 2012, from [http://www.pewinternet.org/Static-Pages/Trend-Data-\(Adults\)/Whos-Online.aspx](http://www.pewinternet.org/Static-Pages/Trend-Data-(Adults)/Whos-Online.aspx)

Wing, J. (2006, March). Computational Thinking. *COMMUNICATIONS OF THE ACM*, 49(3), 33–35.

Wolf, G., & Wired Magazine. (1996, February). Steve Jobs: The Next Insanely Great Thing.

Retrieved from <http://www.wired.com/wired/archive/4.02/jobs.html>