

# Development of a High-quality, Low-cost Online Pesticide Policy Module Aimed at Adult Learners

Megan M. Miller<sup>1</sup>, Dr. Catherine H. Daniels<sup>2</sup>

<sup>1</sup>Washington State University, <sup>2</sup>Washington State University Puyallup Research and Extension Center

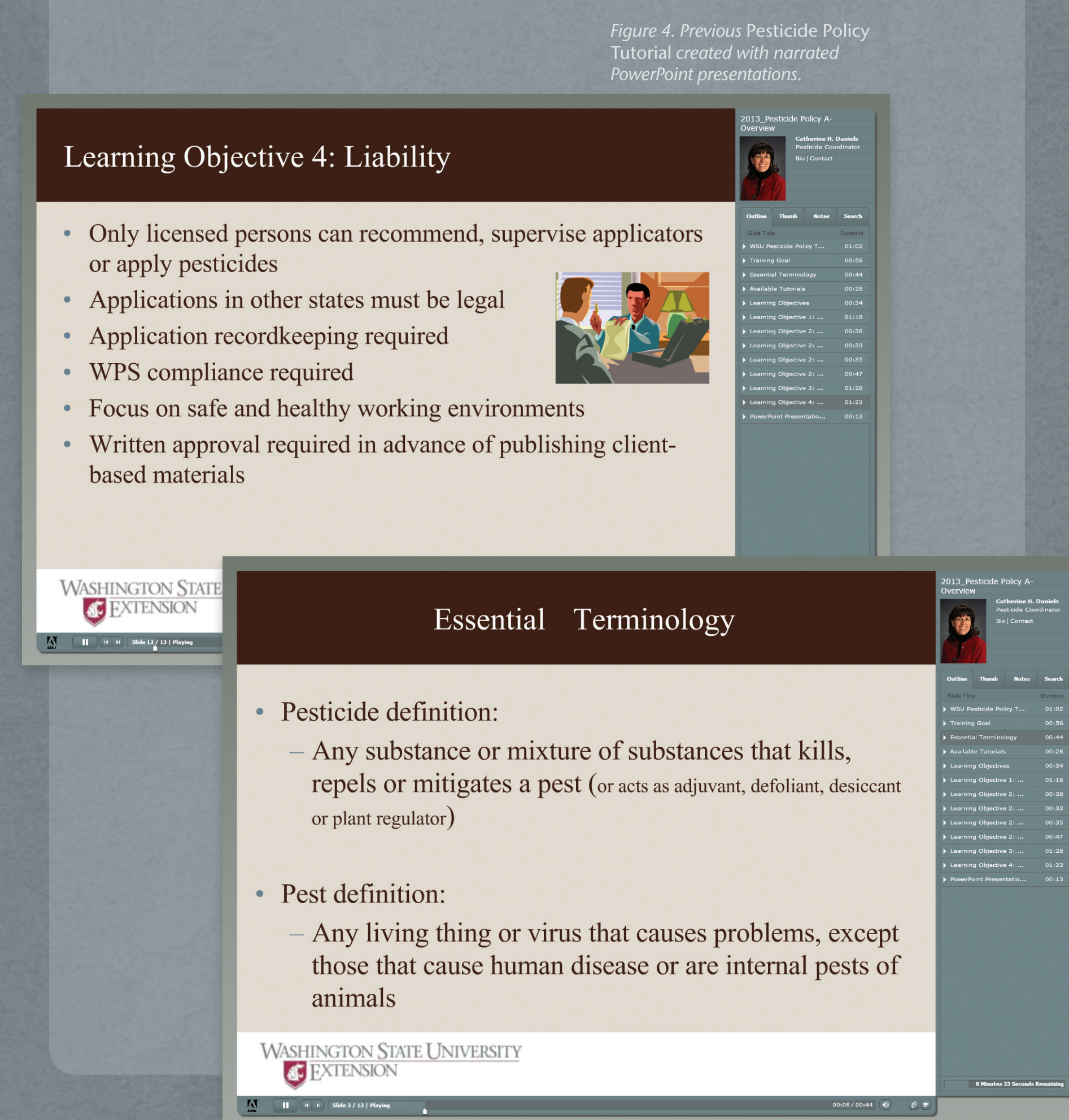
## Introduction

Adult learning differs greatly from that of younger students, and was coined as the term “andragogy” in the 1970’s by Malcom Knowles (Ota et al., 2006). Six key principles contribute to that of adult learning: need to know, self-concept, prior experience, readiness to learn, learning orientation, and motivation to learn. Significant emphasis is placed on the “need-to-know” and “prior experience” concepts when performing extension education services. Educators must adapt their teaching styles, strategies and materials to methods where adults will comprehend the materials more effectively.

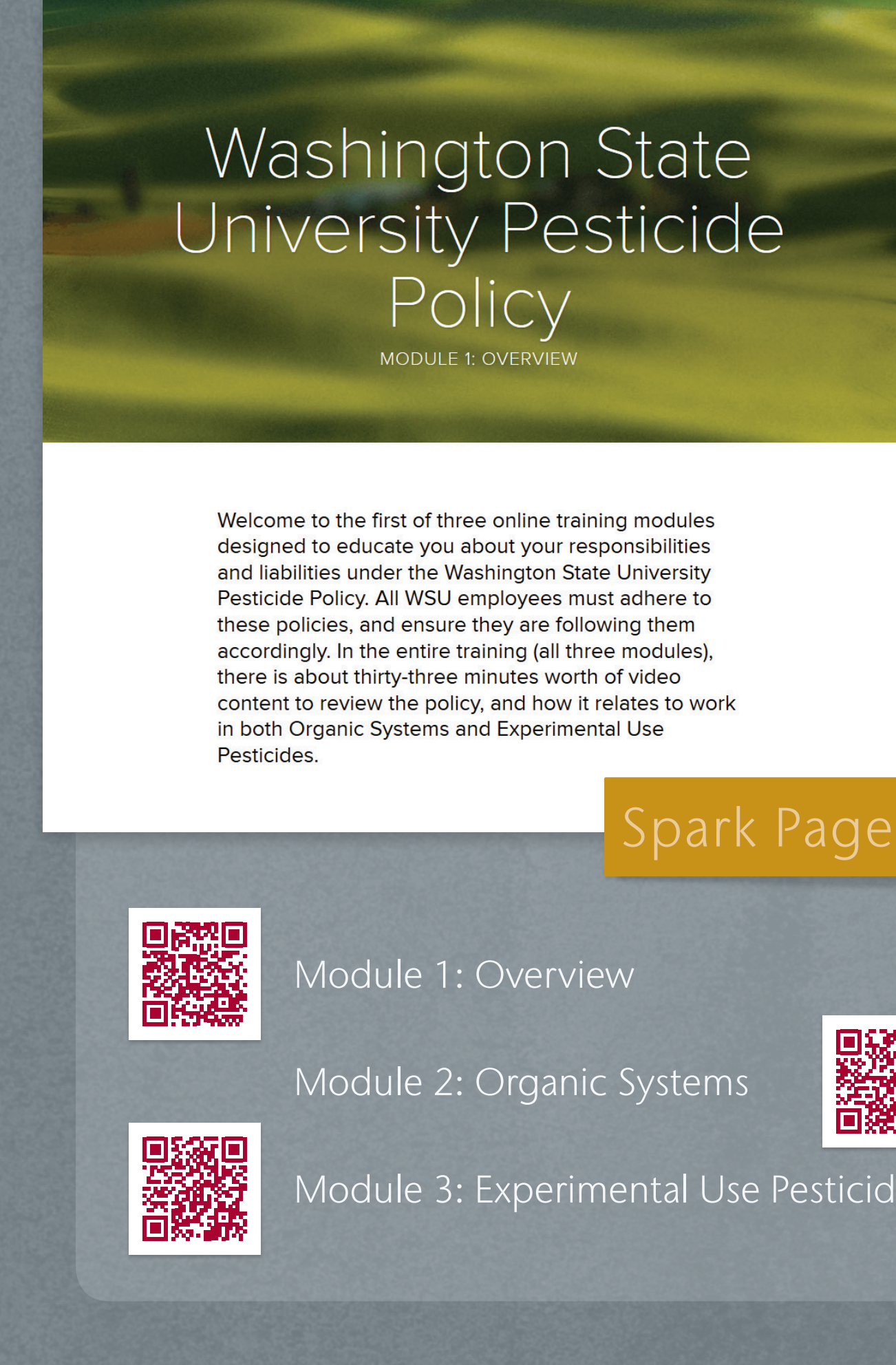
According to the research of Strong et al., lectures were the least effective strategy where adult learners cited them as, “dull, uninteresting or boring” (Strong, Harder & Carter, 2010). Therefore, by utilizing other forms of media than lectures, the audience will be more likely to be engaged and interacting with the content. The research of Strong et al. yielded that, “Adults are able to apply new information and skills effectively when the knowledge is applicable to them practically” (Strong, Harder & Carter, 2010). The knowledge being communicated to the adult learning community through these online modules must show relevancy to their jobs, research, values, and general everyday lives for the best comprehension and skill application.

The research also recommended that educators should create learning modules that encourage adult learner’s self-concept and self-directed learning skills (Ota et al., 2006), and therefore allow the learner to take their education into their own hands. Finally, asynchronous learning through podcasts allows users to gather information without limits and at a self-determined pace (Kinsey, 2010). Asynchronous learning through this online module will give the individual the freedom and flexibility to learn at their own pace. These findings were the foundation for creating a low-cost Pesticide Policy training module that was highly effective at reaching online adult learners in various settings.

## Before



## After



## Materials & Methods

**Adult learners**  
Communicating with the adult learner  
*Educating the adult learner*  
**Outreach**  
ONLINE LEARNING  
Successful learning strategies  
Educational podcasts  
Educational videos  
Color-blind individuals

Figure 1. Keywords used for literature search.

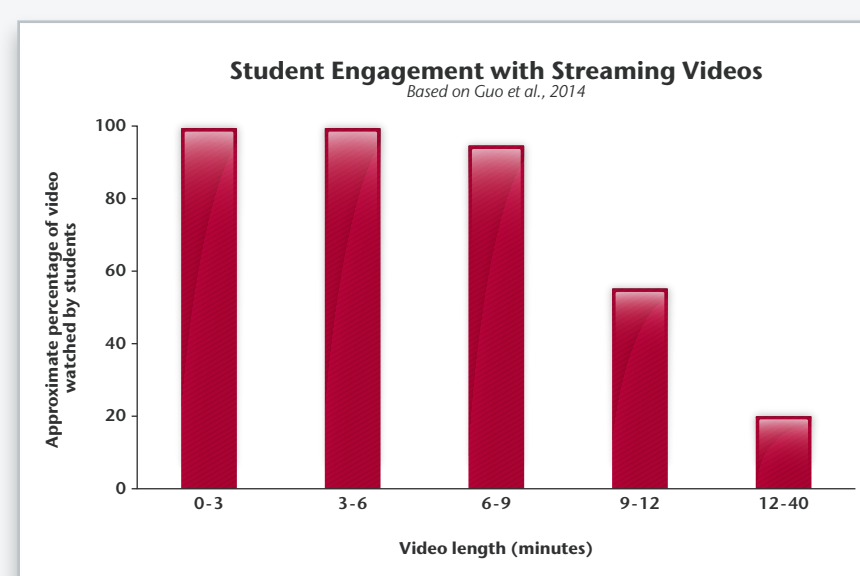


Figure 2. The impact of content length on viewer engagement. Taken from “Effective Educational Videos” by C.J. Brame, (2015).

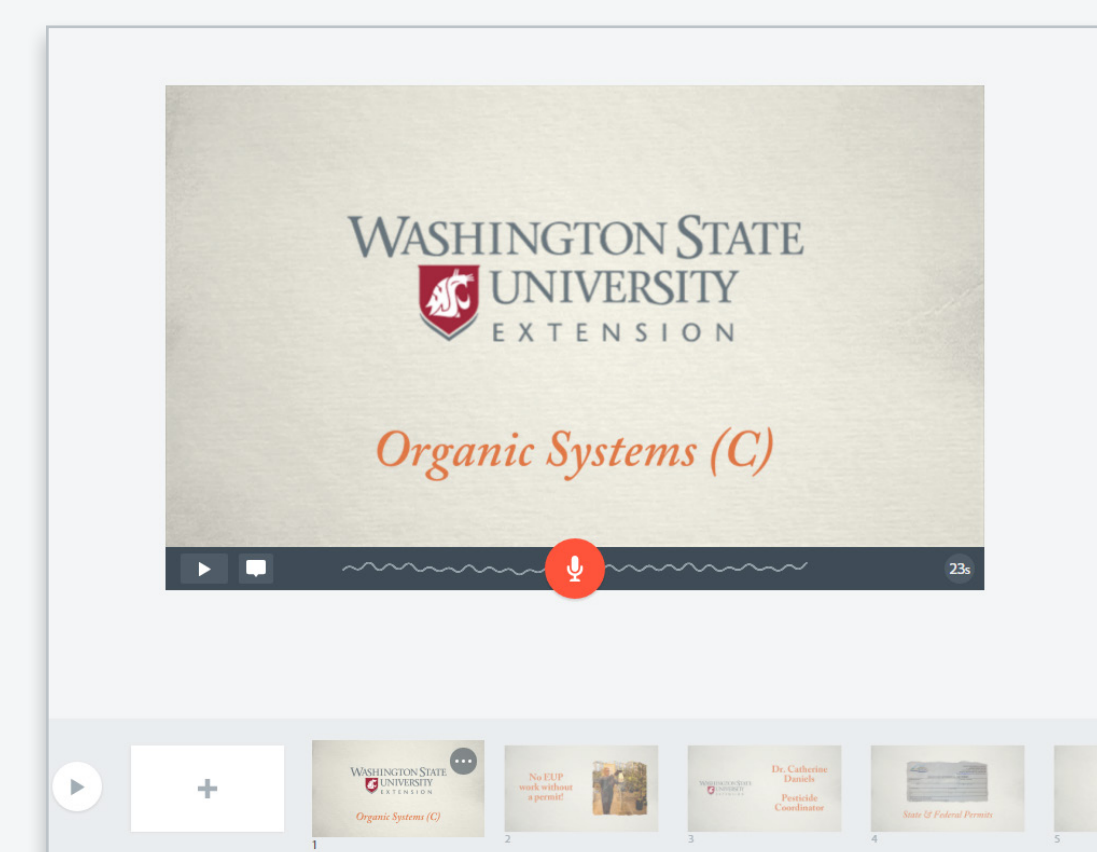


Figure 3. Video creation using Adobe Spark.

A literature search was conducted to investigate scientific recommendations on the most effective methods to educate online adult learners, and to provide logical reasoning to guide the creation and implementation of the updated online Washington State University Pesticide Policy training modules. This literature search was conducted in the online *Journal of Extension* to gather data on how to best approach updating the Washington State University Pesticide Policy training modules using these key words (Figure 1, 2).

Journal articles were then evaluated and reviewed to identify effective educational strategies, and approaches to enhance an online adult learner’s educational experience and comprehension level. The online software program *Adobe Spark* was determined as most effective and therefore was utilized to develop and refresh the Pesticide Policy modules. Training videos, informational posts, and web pages were created through using the *Adobe Spark* software (Figure 3). The eight videos from the three training modules were shared with four separate reviewers for their feedback via a *Dropbox* account. Final review was conducted by Dr. Catherine Daniels and final edits were made. The videos were then published to *Adobe Spark* and downloaded to project file for the next steps of the module creation.

Scripts were created for the podcast versions of the content, and *Audacity* was the software program that was utilized to record these audio files. Dr. Catherine Daniels reviewed the scripts for additional changes and approved them to be recorded. Once finished, the audio files were uploaded to *Sound Cloud* to become podcasts, and they were embedded directly into the Washington State University Pesticide Policy training modules according to their content. The final training module web pages were created through *Adobe Spark* and were published to the Washington State Pest Management Resource Service homepage (WSPRS) in the place of the outdated modules.

In all, *Adobe Spark* was utilized to create thirteen informational posts, eight videos, eight podcasts, and three training modules to take the place of the original three tutorials that were created with narrated *PowerPoint presentations*. The updated training modules consisted of approximately 40 minutes worth of content in total, available via three different types of media so the online learner can have the freedom and flexibility to learn at their own pace, as supported by the literature search (Kinsey, 2010).

## Results

### New Training Modules Developed for Adult Learners

A new Pesticide Policy online training package was created for Washington State University primarily using *Adobe Spark*, *Sound Cloud* and *Audacity*. These software platforms are free and can be utilized by anyone to create high-quality audio and visual forms of communication to spread a message or educate. The original modules that were created with narrated *PowerPoint presentations* (Figure 3) had 36 minutes of content in three very long narrated *PowerPoints* that did not effectively target the attention of the online adult learner. Alternatively, the updated modules have 16 informational posts, eight videos with PDF transcripts, eight podcasts, and three training modules that consist of almost 40 minutes worth of content spread out among three different types of media.

**Versatile, Flexible, Easy to Use Platform**  
This variety of media and information made the educational material more attractive to the online learner and allows them to create a self-determined pace of learning. The versa-

tility and flexibility of the online *Adobe Spark* program allowed us to integrate all important facets of the pesticide policy into videos and posts, and then compile them into an interactive blog format known as the *Spark Page* on *Adobe Spark*. Links were then embedded to bring the individual to either a podcast or a PDF transcript of the video. Akin to a web page, this allowed us to narrow all of these resources to one page which would act as a single module. In all, three separate *Spark Pages* were created for the three separate modules—*Overview*, *Organic Systems*, and *Experimental Use Pesticides*—that combined to create the full Pesticide Policy training package.

**Reformatted for the Adult Learner**  
The original content from the tutorials were kept the same, but were reformatted according to the recommendations from the literature search on how to best educate online adult learners. The updated modules more effectively target the way in which adults learn through the concepts addressed in Knowles’ research of “andragogy” or adult-learning (Ota et al., 2006) through the emphasis placed on:

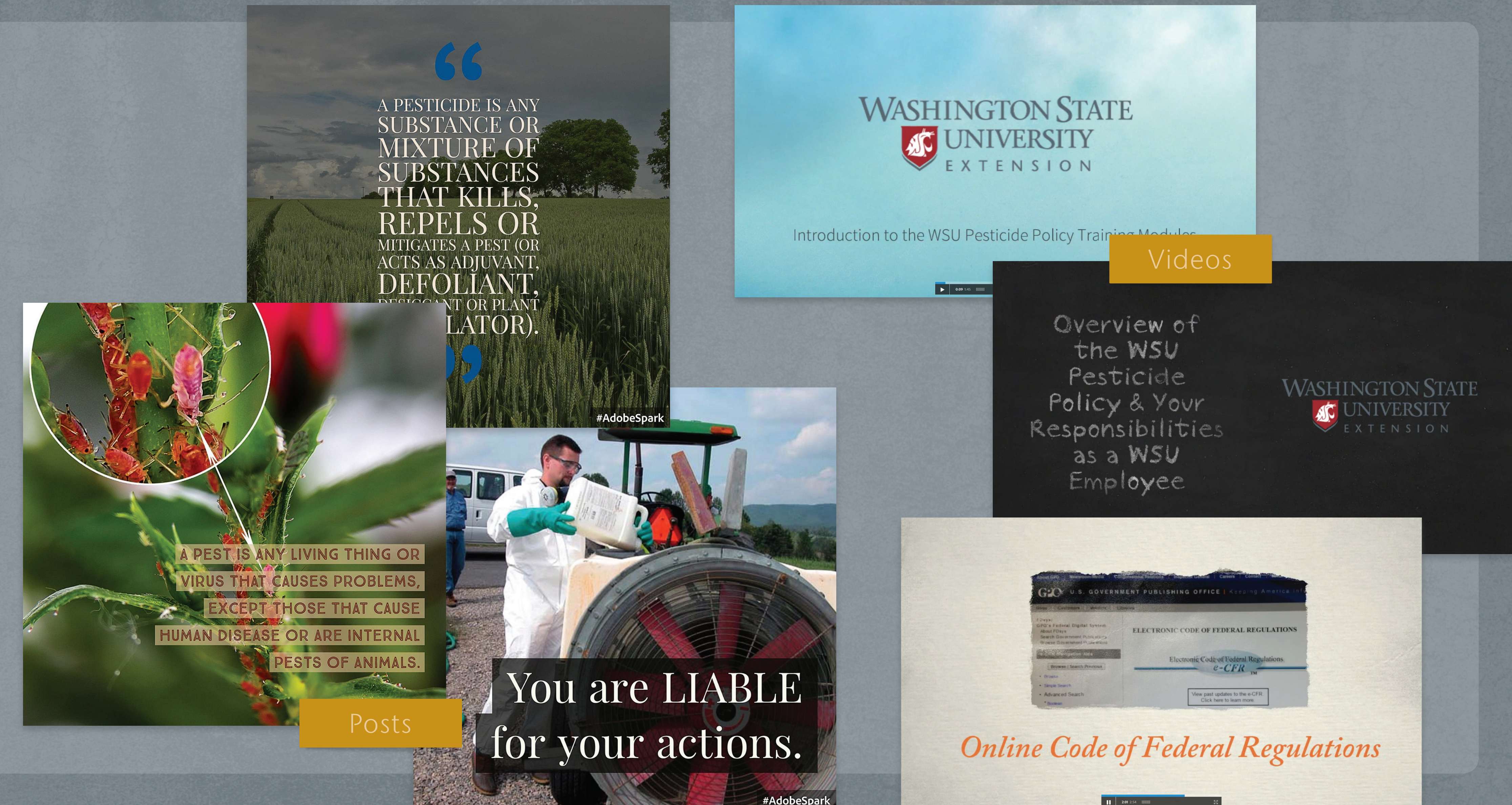
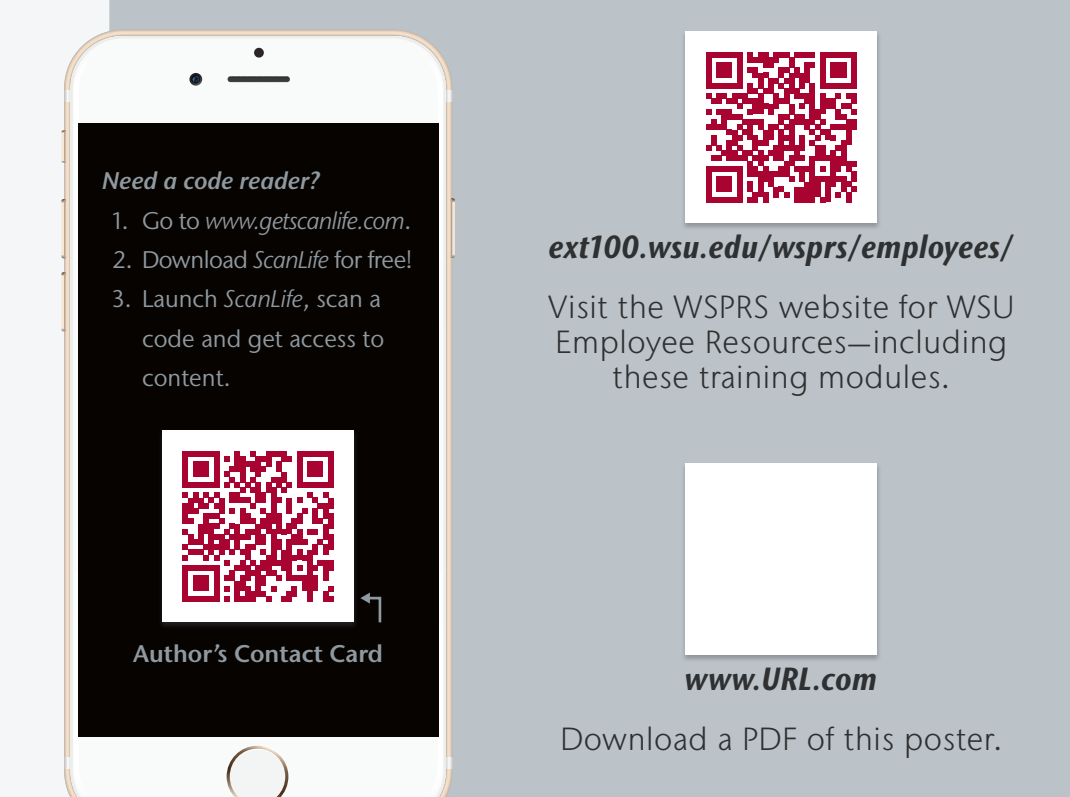
- 1. Need to Know.** Their liabilities when working with pesticides under the employment of Washington State University
- 2. Self-concept.** How they view their knowledge of the pesticide policy now
- 3. Prior Experience.** Previous experience with pesticide training modules
- 4. Readiness to Learn.** How intriguing the material was that was recently created
- 5. Learning Orientation.** Whether they preferred learning through videos, reading the transcripts or listening to podcasts, they had a choice of how they wanted to be educated
- 6. Motivation to Learn.** How the material captivated their interest and kept it throughout the training

## Conclusions

The findings in this research will change the perspective of extension education and give many new resources for extension educators to use when developing online educational content for adult learners. This research will also:

- Serve as examples on how to take outdated educational material and transform it into free, flexible, and fun material that is engaging for all individuals.
- Show that by making the same content more intriguing, comprehension levels will rise substantially, as well as compliance with pesticide policy.
- Demonstrate that by creating the content in three different types of media, flexibility and a self-oriented learning pace is achieved, which also aids adult learning.
- Illustrate that individuals can choose how they want to learn, when they want to learn and how long they want to learn.

### Further Information



## Acknowledgements

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