Evaluating Web Tools in Environmental Education and Extension

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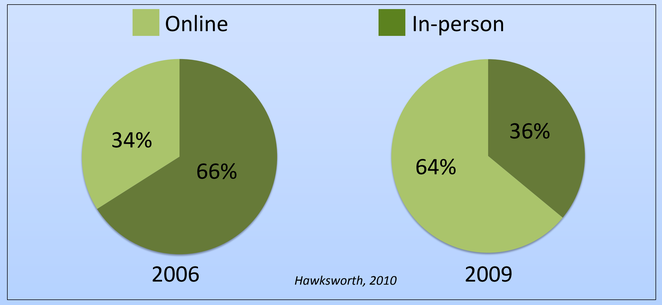
Background

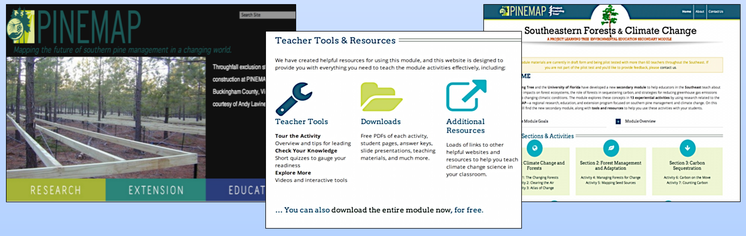
Declining budgets and users in wide geographic ranges make web technology attractive for sharing environmental education and extension programs with larger audiences. Exclusively online programs as well as websites and web tools that supplement in-person programs are growing in number and popularity.[1] It is necessary to **evaluate** online tools to assess their efficacy and determine if they are meeting intended needs. Identifying user issues could improve the use of websites as educational tools.[2] **Internet resources** play an increasingly crucial role in shaping attitudes and perspectives of different audiences. It is important, then, to consider the adequacy of **web-based educational training**.

U.S. Teachers Engaged in Online Education Training



PINEMAP/PLT Southeastern Forests and Climate Change Module Website

Pine Integrated Network: Education, Mitigation, and Adaptation Project (**PINEMAP**) is an integrated research, extension, and education project that focuses on managing critically valuable pine forests in the southeastern United States for sustainability and carbon sequestration under variable climates. PINEMAP has partnered with **Project Learning Tree** (PLT) to develop a new secondary environmental education module, **Southeastern Forests and Climate Change**. A supplementary module website was designed to equip teachers with readily accessible resources and materials that provide them with support and training in order to improve their competence and confidence implementing the module in their classrooms.



Purpose Statement

To promote effective web resources in environmental education and extension programming, the study aims to:

1. Explore the **efficacy** of websites and web tools as replacements for in-person training and professional development;[3]
2. Investigate **characteristics** of useful online tools and exercises as identified by secondary educators;
3. Identify **strengths** and potential **weaknesses** of online training and educative websites.[4]

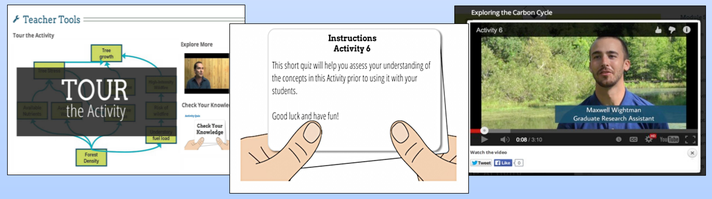
Key Evaluation Questions

Efficacy

1. Do educators face any challenges using websites?
2. How can websites be improved to better meet educators' needs?
3. Can websites be an adequate replacement for an in-person workshop?

Avenues for Improving Online Resources

1. Can web tools prepare educators to teach about complex topics, problem solving, issue investigation, and critical thinking?
2. Would educative websites benefit from social learning?
3. What are the key website components that educators believe are the most effective for providing training and professional development?



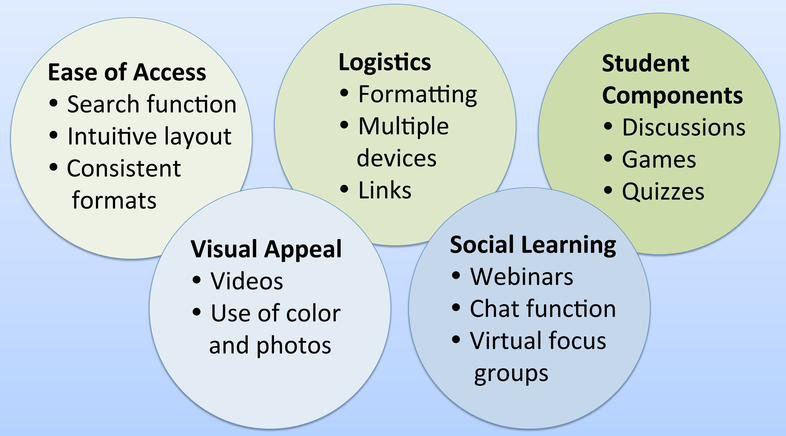
Methods

Data were collected through **qualitative interviews** with six secondary educators pilot testing the PINEMAP/PLT module website. Consisting of eleven, mostly open-ended questions with opportunities to provide additional feedback, the interviews provided clear, comprehensive self-reports that informed a formative evaluation of the website. The evaluation process included:[5]

1. Developing a **logic model** that outlines key inputs and outputs of the website, including intended learning, action, and impact outcomes;
2. Designing and implementing an **evaluation plan** that outlines key evaluation questions, indicators, and information sources considered in the evaluation;
3. Developing an **evaluation tool** for data collection and a rationale for the evaluation design and methodology.

Findings

The most important characteristics of effective educative websites and web tools fell into several key themes.



Recommendations

Effectively designed web tools can increase educators' competence and confidence in teaching something new. The development and implementation of these resources may benefit from the following suggestions:

1. **Assess ease of access, visual appeal, and logistical operations.** Double check links, formatting abnormalities, search function capabilities, etc.
2. **Investigate multiple device capabilities.** Many web components are not accessible on tablets, which are commonly used for education.
3. **Consider incorporating opportunities for social learning** such as webinars, virtual focus groups, or a chat function.
4. **Consider incorporating opportunities for students** to engage in self-guided learning, such as student-oriented discussion boards, videos, or readings.
5. **Plan sufficient time** to complete a full and effective evaluation.

Suggested Formative Website Evaluation Timeline

Month 1	• Develop familiarity with website • Develop logic model • Develop evaluation tool • Identify interview participants
Month 2	• Research relevant literature • Conduct interviews with participants • Transcribe interviews
Month 3	• Compile interview results • Analyze interview data • Compose and compile summary report

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