REALIZING RENTAL ENERGY EFFICIENCY

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About Sean Walsh

- Receiving a Masters in Educational Technology May 2014
- Certificate of competence in sustainable energy 2009
- B.A. in social psychology 2007

- Interest and passion for sustainability and education
- Knowledge of behavioral change
- Familiarity of Hawaii and the obstacles it faces for a sustainable future
Why Energy Efficiency?

- Economic incentives
- Environmental impact
Participant poll 1

- How many of you feel that our fossil fuel consumption has a negative impact on our environment?
Impact of fossil fuel use

- Collection of fossil fuels is costly and harms the environment
- Represents a finite resource
- Releases harmful CO2 into the atmosphere

U.S. Carbon Dioxide Emissions, By Source
How many of you here pay your own electric bill?
Hawaii averaged 37.40 kw/h as of January 2014
Low-income, multi-family, rental households use more electricity than others (Pivo, 2012).

May be a result of minimal responsibility for the electric bill (La Jeunesse, 2013).

Efficiency upgrades are more likely when financial and environmental benefits are recognized (Alberini, Banfi, & Ramseier, 2013).

Reduction in electric use is as simple as altering behavior (Singh Solanki, Sarma Mallela, & Chengke, 2013).

Lighting retrofits can increase efficiency and perceived satisfaction (Kuhn, Hohansson, Laike, & Goven, 2013).
Target audience

- Renters
- Ages 18 and older
- Living in Hawaii
Benefits of asynchronous education

- Optimal flexibility
- On your own time
- At your own pace
- From any location with internet
The website: Wix

- Ease of navigation
- Familiarity with web interface
- Flexibility in design and accepted content
Chunking the site

- Lighting
- Water Heating
- Large appliances
- Phantom Loads
Welcome to "Realizing Rental Energy Efficiency". The goal of this web-based instructional module is for renters, aged 18-40, in Hawaii, to be able to evaluate energy efficiency strategies for potential upgrades in their residence. It covers four clusters: lighting, water heating, other large appliances, and phantom loads. Please read through the consent form to the right then participate in the intro-survey. Participating in the embedded surveys implies your acceptance of the consent form. Once your done, read about the background and start.
## Comparisons between light-bulb cost of use

<table>
<thead>
<tr>
<th></th>
<th>60W Traditional Incandescent</th>
<th>15W CFL</th>
<th>12W LED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electricity Saved (%)</strong></td>
<td>0</td>
<td>~75%</td>
<td>~80%</td>
</tr>
<tr>
<td><strong>Annual Electricity Cost</strong></td>
<td>$ 31.78</td>
<td>$ 7.95</td>
<td>$ 6.36</td>
</tr>
<tr>
<td><strong>Bulb Life</strong></td>
<td>~ 1000 hours</td>
<td>~ 10,000 hours</td>
<td>~25,000 hours</td>
</tr>
</tbody>
</table>

*Based on 4 hrs/day usage at Hawaii’s average rate in September 2013 of $0.3628. Prices shown in US dollars per bulb.*
Poll 3

- How many of you have been on a website with a vast amount of information, but lost interest before reading through all of it?

1000's of pieces of stoneware and bottles over the last few months and more are being added every day. Check out the galleries and keep checking them out. Want to see the most AMAZING antique bottle, stoneware and advertising gallery ANYWHERE? Check out the Spinners at [http://www.wisantique.com/](http://www.wisantique.com/) and while you are there consider joining the most amazing antique bottle, antique stoneware and antique advertising club anywhere.

I spent so much energy working to save the Milwaukee antique bottle and advertising club over the last couple of years it pretty much took all of spare bottle time. I gave up and joined Jon Steiner and dozens of other collectors in an amazing new club. It is the Milwaukee Antique & Advertising Club. It is all of the fun, interest and adventure without the negativitiy. If you love the objects of Wisconsin's past and crave the information that makes them important I highly recommend this club. If you simply want to be part of an amazing positive community of collectors you will love this club. If you join I guarantee you will be glad you did.

01/06/2013 Nate continues to add Wisconsin Antique bottle images. I am adding them regularly too. Even a new Hall Of Famer. I look forward to seeing long time collectors and meeting new ones. Steven

12/19/2012 An Antique Wisconsin Eakton Mineral Spring Water Jug. A nicely decorated Maxfield butter churn and a Hermann cobalt flowered crock just turned up. These very nice people I recently met went to buy an oil painting. As they walked around the home of the owner they realized there was all sort of old things. Knowing the guy was moving out of the house and had no interest in the antique paintings they asked what he was doing with the stone ware. He said everything is for sale. The asking price... Wait for it wait for it... $5 apiece. As usual... I paid more... A LOT more. All three will be in the galleries soon. New images are going up all the time. Nate continues to plug away and I am getting them in. There are lots of good things happening in the collecting world including the Milwaukee Antique Bottle Club taking a proactive role in promoting antique bottle collecting for 2013.

12/14/2012 It is actually hard to believe some of the great antique bottles and stoneware that show up. Look at this pontiled cut At Bourbon's Aromatic Forest Sitter from Madison. Found in an antique shop for $30 with an 18% discount offered. It's
Learner engagement

- Simplistic navigation
- Clear and straightforward content
- Strategic use of multimedia including images and 4 videos
- 4 outside learner activities
- Outside resources
The Intro survey

- Hosted through Google Forms
- Acceptance of the consent form
- Choice of a unique alias
- 7 demographic questions
- 3 attitudinal questions
- 4 behavioral self-assessment questions
Participant demographics

- 17 participants completed the intro and exit surveys
- 53% Female, 47% Male
- Aged 24-54
- Highest level of education skewed toward undergraduate degree 50%
- 65% pay their own electric, 35% have it included in rent
Attitudes: Energy Efficiency Importance

“I feel energy efficiency is important.”
Attitudes: Environmental Importance

“I am concerned about the environment.”
Attitudes: Financial Importance

- 82% Strongly Agree
- 12% Agree
- 6% Neutral

“I'd like to save money on my electricity bill.”
The exit survey

- Re-enter of matching alias
- 4 self assessed, parallel, behavioral questions
- 3 questions assessing potential behavioral change
- 6 questions about impressions of the module
Module effectiveness

Pre and post self assessment responses compared.
Comparative results & implications

- Demographic information to attitude and potential behavioral change

<table>
<thead>
<tr>
<th></th>
<th>Electric included in rent</th>
<th>Pays own electric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy efficiency is important</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Concern about environment</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Would like to save money on electric</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Is likely to perform a retrofit</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Perform retrofit for environmental reasons</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Perform a retrofit for financial gain</td>
<td>4</td>
<td>5</td>
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Implications and discussion

- Accountability: electric included in rent or not
- Motivation for change: economic and environmental
- Did behavioral change result?
Limitations

- Age group representation
- Educational level representation
- Motivational factors
- Scope
“The future is literally in our hands to mold as we like. But we cannot wait until tomorrow. Tomorrow is now.” — Eleanor Roosevelt