Designs & Strategies

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NSDL Annual Meeting 2010
November 3, 2010
Overview

1. Vision - Howtosmile.org
2. Demo
3. User testing and evaluation
4. The Collection and Metadata
5. Seed grants & SMILE Champions
6. Future work
MISSION & GOALS

- Make it easy for out-of-school educators to discover high-quality STEM learning resources and use them with a diversity of audiences.

- Create a metadata profile that captures the value-added information unique to informal educators.

- Build a sustainable partnership among informal science institutions to contribute, share, and use activities.
HOWTOSMILE.ORG
(Science and Math Informal Learning Educators = SMILE Pathway)
SEED GRANTS & SMILE CHAMPIONS

- AAUW
- Astronomical Society of the Pacific
- Assoc. of Zoos & Aquariums (AZA)
- The Bridge
- Coalition for Science Afterschool
- COSI Columbus
- DragonFly TV (TPT)
- 4H Council
- NASA
- NISE Network
- OMSI
- Perkins School for the Blind
- SACNAS
- Smithsonian National Air & Space Museum
- TERC
- WNET
Technology Behind
howtosome.org
**NSDL Cataloging System:**
Interactive collection metadata management system

**NSDL Data Repository:**
Open source Fedora-based digital object repository software

**Data Discovery System:**
Search application with flexible configuration capabilities
## Metadata Editor

### Activity Basics

**NOTES:**
- Items in red are required, and items in black are optional.
- Read the introduction to the Guidelines if you're new here.
- See a preview of this record on the user website.

<table>
<thead>
<tr>
<th>field</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>recordID</td>
<td>s009test-000-000-000-035</td>
</tr>
<tr>
<td>url</td>
<td>Enter the URL for the page that will be most useful to an educator for this resource.</td>
</tr>
<tr>
<td>title</td>
<td>Enter the resource title (required), and if there is a subtitle, enter it separately.</td>
</tr>
<tr>
<td>subtitle</td>
<td></td>
</tr>
<tr>
<td>relatedUrls</td>
<td>Enter related URLs for components of the resource (&quot;Has part&quot;), and higher level pages (&quot;Is part of&quot;). For standards or assessments, enter the URLs in the separate fields below, standardsUrl and assessmentUrl.</td>
</tr>
<tr>
<td>description</td>
<td>Enter a brief (50-125 words) but comprehensive description of the resource. Consider using this format: (activities, game, etc.) about (concept, topic, etc.). Learners will (do stuff). Ideas for use include (ideas). Other important, useful, cool information is (examples).</td>
</tr>
</tbody>
</table>

**Word count:** 0
SMILE Metadata

• Materials, Cost
• Diversity
• Informal categories
• Place and Time
• NSF project #

http://howtosome.org/feedback/
DEMO

howtosome.org
Starburst Graph

Description
In this activity, children use Starburst candy to sort, classify, compare, and graph. Grab a handful of one-inch candy squares, sort them by color, graph your candy, and discuss the results. The bilingual instruction guide is written in parent/educator friendly language with simple instructions and questions to ask the child. It is one of six in the Para Los Ninos Math at Home activity packet.

Quick Guide
- Preparation Time: Under 5 minutes
- Activity Time: 5 to 10 minutes
- Estimated materials cost: $5 - $10 per group of students
- Age Range: Ages 4 - 11
- Resource Types: Activity, Lesson/Lesson Plan
- Language: English, Spanish

Materials List (per group of students)
- Starburst candies
- Crayons the same color as the candy
- 1" graph

Keywords
- Graph
data
analyze
classify
candy
compare
sort
square
grid
probability
Starburst
Community & Personalization

- User Profiles
- Comments & Lists
- Videos
- Badges
- SMILE Blog
- SMILE Widget
sherryhsi's Public Page

Name: Sherry Hsi
City: Berkeley
Workplace: Lawrence Hall of Science
Decade born: 1960s
Work with ages: 3 to Adult

Bio
I create and evaluate formal and informal learning experiences that usually involve science, inquiry, design, learning technologies, new media, and networks. I can be easily bribed with chocolate.

Music Making Activities
Make and take activities about sound. Play all the the instruments together to make...
Public List | View List | ❤️5
sherryhsi's Stuff

- View Public Page
- View Lists

Music Making Activities

Make and take activities about sound. Play all the instruments together to make the sound of a rainforest.

Cuica (Laughing Cup)
These are great noise makers. Use recycled tin cans or yogurt containers if you want to save money.

Sound Sandwich

Make Pan Pipes

Waterbottle Membranophone
Works well when they are water bottles rather than ones with soda or ice tea that are sticky on the inside and need to be thoroughly washed before used.

Place Matters
This is a great activity.
BADGES & POINTS

Enthusiast
Fanatic
Yearling
Student
Nice comment
Good comment
Great comment
Commentator
Pundit
Aggregator
Mortarboard
Epic…
Participate in the howtosmile.org community by earning at least ONE badge between October 1 and December 31, 2010.
**Water Pressure Blaster walk through**

In this experiment, apply pressure to a water bottle to determine how the area of a hole affects the force of the water (which will be observed by measuring the distance the water sprays).
SMILE Widget

http://howtosome.org/widget/

- **Proportionality**
  - In this activity, students build a 1:140 "scale model" of NASA's X-33 Reusable Launch Vehicle (RLV) Technology...

- **Aerogel-lo**
  - This demonstration (on pages 9-11) uses gelatin and lead pellets to model how aerogel, a technology used by NASA.
Usability Methods

- Design Charettes
- Facilitated Brainstorming
- Personas
- Use Cases

- Heuristic Evaluation
- Cognitive Walkthrough
- Contextual Inquiry
- Quality Assurance Testing
User Testing

1. Find **representative users**
2. Ask the users to perform **representative tasks** with the design.
3. Observe what the users do, where they succeed, and where they have difficulties with the user interface.
Charette

What kind of features and functions would [Persona] want to have?
Example of Personas

http://howtosmile.org/wiki/index.php/SMILE_Use_Cases

Jada - Science Museum Educator (high web, high sci)
Kalil - After School Science Educator (med web, med sci)
Luanne - Homeschool Mom (low web, low science)
Marcos - Math For Language Practice (med web, high sci)
Najah - Saturday Science Club for the Blind (high web, high sci)
Oliver - Limited Mobility Scientists (med web, high sci)
Peta - Museum Web Developer (high web, med sci)
Quon - Cataloger (med web, med sci)
Jada

**Uses SMILE for:** finding new ideas for informal science and math activities and supporting materials, as well as finding new ways to do things she already does. She is interested in becoming a regular contributor to SMILE, adding comments, recommending resources and supporting materials, and making links between resources.

**Demographic Traits & Psychographic Traits**

- **Age:** 30s
- **Ethnic Identity:** African American
- **Languages:** English
- **Lives:** Urban city that has a science center
- **Education:** B.S. in physics
- **Interests:** Teaching science in fun and engaging ways outside a formal classroom
- **Hobbies:** Video games, downloading digital content - esp. movies and music.
Basic Usability Testing

1. Look and Feel
2. Navigation
   • Ease of use
   • Labels
3. Functionality
Look and Feel

On a scale of one to five how would you rate the look and feel of the page? One is poor; five is excellent

1. How would you describe the layout?
   a. Open
   b. Intuitive
   c. Clean
   d. Crowded
   e. Cluttered
   f. Other ____________

2. How would you describe the design?
   a. Ugly
   b. Neutral
   c. Beautiful
      i. What would you change about the design?
         Comment:

3. What is your first impression of the colors?
   a. Dislike
   b. Neutral
   c. Like
      i. What colors would you prefer?
         Comment:
Functionality

Purpose - How easily can a person use the features or services of the site? Can a person execute all of the search use cases - search, retrieve, and download; refine.

Search

1. Show me how you would search for TERM
   a. Immediately completes search (3 seconds or less)
   b. Eventually completes search (3 to 10 seconds)
   c. Cannot complete search (10 seconds or more)

2. How relevant are your search results? (How closely do search results match the term you searched for?)
   a. Very close match (Very accurate)
   b. Close match (Accurate)
   c. Not close match (Not accurate)

3. How would you refine your search?
   a. Immediately clicks Advanced Search (3 seconds or less)
   b. Eventually clicks Advanced Search (3 to 10 seconds)
   c. Cannot click Advanced Search (10 seconds or more)

4. Show me how you would refine your search?
   a. Immediately configures Advanced Search (10 seconds or less)
Navigation

Ease of use - How easy is this site to use? (On a scale of one to five.)
One is difficult; five is very easy

1. Where are you?
   a. Immediately oriented (3 seconds of less)
      Hit the page – know where you are
   b. Partially oriented (3 to 8 seconds)
      Hit the page – look around, make a choice
   c. Disoriented (8 seconds or more)
      Hit the page – confused; hard to make a decision.

2. Where can you go?
   a. Immediately describes places to go (3 seconds of less)
   b. Eventually describes places to go (3 to 10 seconds)
   c. Cannot describe places to go (10 seconds or more)

3. What would make the navigation (site) easier to use?
   a. Link position
   b. Menu layout
   c. Menu choices
   d. Types of icons or symbols
   e. Icon position

Comments:
Cognitive Walkthrough

• Experts “walk” through a set of typical tasks

• Do users do the right things intended by the designer?

• If not, why?
**Sound Sandwich**

In this activity, construct a noisemaker called a Sound Sandwich using a straw, two craft sticks, and some rubber bands. When you blow into the Sound Sandwich, you make large rubber bands vibrate, and that vibration produces the sound. The straws can be adjusted to change the pitch of the sound. The resource includes instructional videos, a printable instruction sheet, and ideas for going further, as well as links to other resources with more background science.

[Get This Resource]  [Add to List]  [Add to Collection]

**Breaking the Mayan Code: Mayan Math**

In this activity, you will decipher a page from the Dresden Codex, one of the few Mayan books still in existence. By thinking like an archaeologist, you’ll combine your mathematical abilities with some basic logic and trial-and-error investigation to figure out what the codex means. In the course of your explorations, you’ll discover: How can archaeologists have figured out what Mayan documents mean? How the Mayan system of counting is like ours; How it is different; How Mayan beliefs were tied to their understanding of mathematics.

[Get This Resource]  [Add to List]  [Add to Collection]

**Animal Attraction**

Do you have animal attraction? You can right in your own back yard with some craft supplies, your imagination and a little help from Mother Nature. Investigate a flower’s power of marketing by making an imitation flower that successfully signals a bee (or other pollinator of your choice) to visit. Try to determine what characteristics will attract a pollinator to your flower.

[Get This Resource]  [Add to List]  [Add to Collection]

**Water Bottle Membranophone**

In this activity, you’ll use a straw, a vinyl glove, a water bottle and a paper tube to make an instrument called a Water Bottle Membranophone that sounds very much like a saxophone. Membranophones are instruments that produces sounds from a vibrating stretched membrane, such as kazoos or drums. You can make several variations with holes in different places, tighter or looser balloon membranes, and water bottles of different sizes. The resource includes instructional videos, a printable instruction sheet, and ideas for going further, as well as links to other resources with more background science.

[Get This Resource]  [Add to List]  [Add to Collection]
OUTREACH
Meetings, Workshops, & Classes

NAA
NSTA
CAISE
NYSCI
SMM
Explo
LHS
ASTC
ACM
NYSCI
MakerFair
ISEA
CyTSTEM
Online Outreach

ASTC Connect
Expert Voices
SMILE blog
Facebook
Member Newsletters – ASTC, AAAS, NASA, NSTA, NGCP, COMET, …
GOOGLE ANALYTICS

Sept 24-October 24, 2010

8038 Visits
5615 Unique Visitors
43,263 Pageviews
5.38 Avg. Page Views
00:05:20 Time on Site
44.10% Bounce Rate
67.32% New Visits
LINKING NSF Projects & Reports

What’s informal science education?
Informal science education supports people of all ages and walks of life in exploring science, technology, engineering, and mathematics.

Learn more

Surrounded by Science
CAISE Sparks
Informal science education helps people awaken and pursue interests, build knowledge, and develop an understanding of the scientific process. CAISE Sparks highlight some of the ways informal science education is making a difference in people’s lives—from awe-inspiring films and online games to memorable exhibitions and citizen science projects.

New NSF Cross-Disciplinary Science Education solicitation
The National Science Foundation (NSF) issued a new solicitation August 24 for grant applications on Transforming STEM Learning. The proposals will draw from work in the four primary DRL programs: Discovery Research K-12 (DR K-12), Informal Science Education (ISE), Research and Evaluation on Education in Science and Engineering (REESE), and Innovative Technology Experiences for Students and Teachers (ITEST). It is in line with NSF’s Division of Research, learning in Education and Human Resources.
UCASTER project
Ithaka S & R Sustainability project
Contact

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