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# SCLDA

## Piloting Tools Data Analysis

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Analysis of data collected during the project: *Piloting tools to enable active and participatory learning for middle school students: Research Project on how a digital toolset will help students integrate Smithsonian digital resources into their learning experiences.*

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# Introduction

## Digital Learning Resources Project Background<sup>1</sup>

Through the Internet, the Smithsonian makes information, thousands of images, and instructional materials available to anyone with a connection. To better understand educational uses of Smithsonian digital resources by teachers and students, provide a roadmap for future digital development, and develop and test digital prototypes, the Smithsonian Center for Learning and Digital Access (SCLDA) launched the Digital Learning Resources Project (DLRP), beginning in 2011.

An early DLRP evaluation study conducted by Cross & Joftus (2012) in collaboration with SCLDA concluded that “a new examination of the student user as a growing audience for digital museum resources” was needed. In response to this, the DLRP continued to explore the role of digital museum resources in learning. Specifically, SCLDA wanted to focus on middle school students' needs to become active creators of digital resources personalized for learning.

## The Smithsonian Search Engine

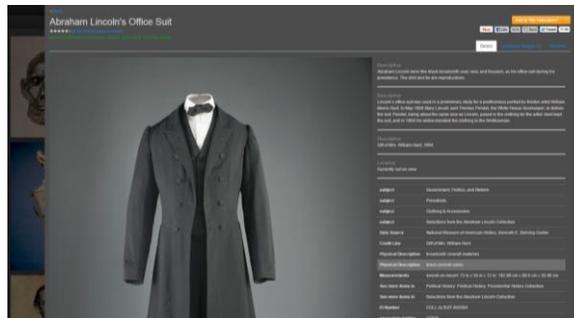
SCLDA and University of Maryland College of Education faculty worked with middle school students during the 2013-2014 academic year to explore development and use of a prototype digital tool (i.e. the Smithsonian search engine) which would enable students to produce digital projects guided by their own interests.

Based on their own interests, students can use the search engine to, for the first time, search for and view items in the database of educational resources, the Smithsonian collections, and YouTube videos

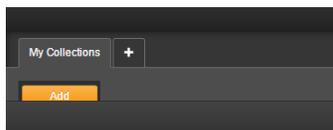


<sup>1</sup> DLRP Background information was taken from the following source: Smithsonian Center for Education and Museum Studies Digital Learning Resources Project, Volume V, Final Report, October 2012, v.1.0., SCEMS and Cross & Joftus] <https://smithsonian-digital-learning.wikispaces.com/Student+Toolkit+%28Project+Overview%29> (accessed 12-22-2014)

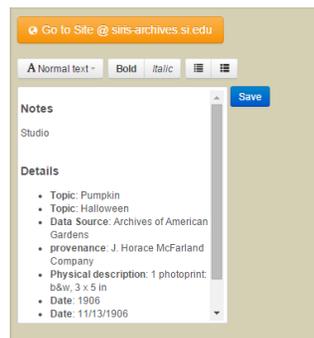
When viewing items, the search engine users can see information related to the object (background, provenance, source, where/if it's on display, creation dates, etc.). The digital catalog includes photos of objects, videos, sound recordings, and learning resources such as lesson plans and interactives.



In addition to searching the database, the Smithsonian search engine allows users to create their own collections. Collections can be given any name. Any number of objects can be saved to each collection.



The titles and descriptions of each item in the collection can be changed or personalized. For example, the user can edit the item title, add their own research notes to the description, remove description information, or bold/italicize important information in the description.



Additionally, the user can attach tools to any of the items added to their collections. In the current prototype, tools include things such as discussions, quizzes, crosswords, maps, common core standards, etc.



## **Search Engine Prototype Evaluation**

A prototype of the Smithsonian search engine was tested with middle school audiences June 2014 in College Park, MD and in October 2014 in Chico, CA. This testing looked at measures of learning and student interest that will inform the developers about further refinement of the existing digital toolset. The testing was conducted by SCLDA. SCLDA then contracted with Oberg Research, LLC to analyze and report on the data collected during testing.

# Methodology

## Prototype Testers

The prototype was tested in two different locations by four groups of middle school students. Groups are listed below in the order of testing dates.

### Group 1

Location: *College Park, MD*

Date: *June 2014*

Student type: *Afterschool program*

Number of students: *16-18 students over the two days*

Grade level(s): *6th and 7th grade students*

Login IDs: *CPA1 thru CPA25*

# of Login IDs With Changed Collections: *21*

### Group 2

Location: *Chico, CA*

Date: *October 2014*

Student type: *Daytime classroom students*

Number of students: *Approximately 30 students*

Grade level(s): *6th grade students*

Login IDs: *STUDENT1 thru STUDENT30*

# of Login IDs With Changed Collections: *30*

### Group 3

Location: *Chico, CA*

Date: *October 2014*

Student type: *Daytime classroom students*

Number of students: *Approximately 30 students*

Grade level(s): *6th grade students*

Login IDs: *STUDENT101 thru STUDENT130*

# of Login IDs With Changed Collections: *28*

### Group 4

Location: *Chico, CA*

Date: *October 2014*

Student type: *Daytime classroom students*

Number of students: *25 students*

Grade level(s): *6th grade students*

Login IDs: *STUDENT201 thru STUDENT230*

# of Login IDs With Changed Collections: *21*

## Testing Instructions

Following best practices in utility testing of a prototype, testing was conducted using a rigorous set of instructions and tasks. For report brevity, only a summary of the instructions and tasks are below. The full set of instructions and tasks can be found in Appendix C. A video of the testing process is also available through SCLDA.

Each group began with the following:

- Introduction to the Smithsonian Institution using maps.
- Question as presented: “How many things are in the Smithsonian?” and responses were connected to more background on the Smithsonian.
- Description of the project, “The Smithsonian is investigating how to make their 137 million things [easier] to find and use.”
- Description of the role of the testers, “you are going to test one of the tools” designed by the Smithsonian to do this.
- Prototype opened to [www.scems.navnorth.com](http://www.scems.navnorth.com) and students observe a brief introduction to prototype by conducting a search on Abraham Lincoln; discuss number and types of results.
- Testers shown how to filter results and save images, etc in “collections.”

The group then used the prototype to complete a guided task:

- Using own computers, testers log into prototype.
- Students built a collection about Abraham Lincoln which needed to include 2 images and one video.

The group then used the prototype to complete one of the two unguided tasks below:

- (A) Students individually pick a topic of their own interest or of a general area in which they’ve been studying and figure out a few search terms for each and run them in the prototype. Students are to find 3-5 items that they find interesting and relevant to their topic and add them to a collection with the topic title.
- (B) Students will be given a random topic or one of the related teacher determined topics to research. Students are to find 3-5 items that they find interesting and relevant to their topic and add them to a collection with the topic title.

Finally the group was asked complete their collection by:

- Amending the descriptions already attached to the 3-5 items with their own text about the item.

The testing session ended with an all group interview in which students were asked to describe the process, including what worked and what was frustrating.

## Data Collection Methodology

- Observations

Students were observed by Smithsonian researchers. One observer was assigned to 5 students. Observations occurred through all tasks, with emphasis on recording any issues, types of searches conducted, and how the utility of the prototype. Observation notes were then analyzed to understand what works and what needs to be changed about the prototype. Observation notes can be found in Appendix B.

- Group Interview at end of testing session

Observers took notes on students responses to interview questions posed at the end of the testing session. Interview notes can be found in Appendix B.

- Students' Collections

Students' collections were saved. (All identifying information was not saved). Collections were then analyzed by researchers to determine patterns in the collections and infer meanings to those collections as they related to prototype use. However, it appears that not all of the changes made to collections were saved by the prototype.

The findings in this report are based on the notes of the data collectors and the collections created by the participants (in the format that were saved when the participants logged out of the account).

# Findings

## Collections

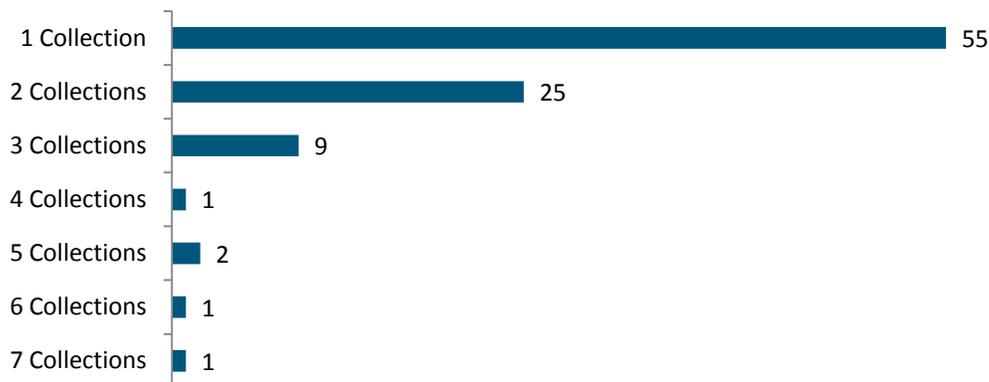
According to the observational data, participants did not struggle to begin searching or to create collections. Some of the students were creating collections before the explanation of how to create the collections was completed.

The observers noted that students were working collaboratively. They shared their searches, showed each other things they were finding, and some students made similar collections.

### *Number of collections*

There were no patterns in the number of collections participants made. Participants made the following number of collections:

To read this chart, say *"55 participants made 1 collection."*



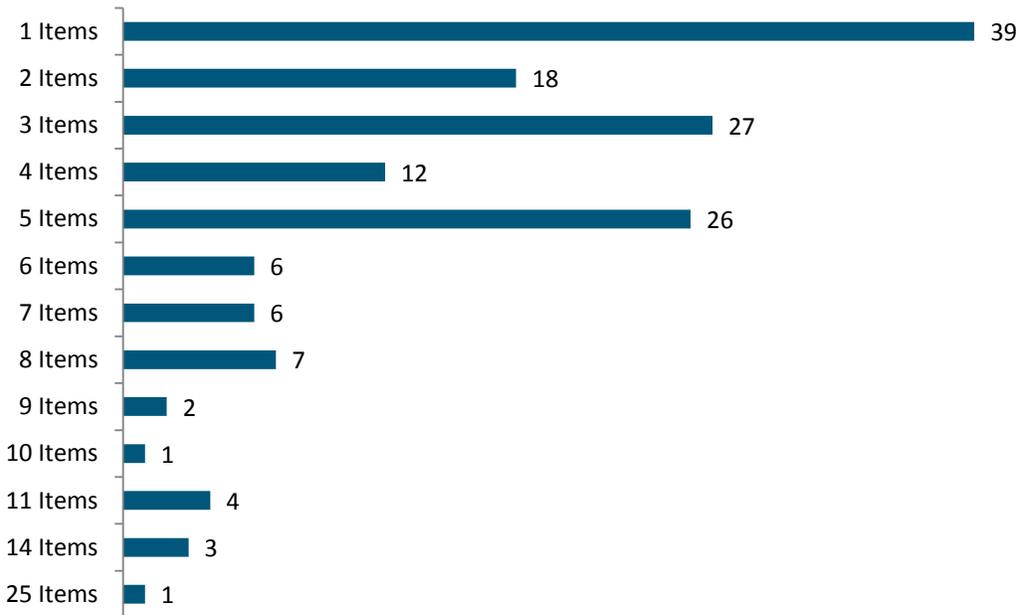
Please note:

- If the default collection titled "My Collections" had no items added to it, it was not counted as a collection made.
- Unique collections that were created and named by the student were counted as a collection even if that collection was empty.
- Duplicate collections that had no items added were not counted as a collection made (i.e. if a student had two collections titled "basketball" one with items and one without items, it was only counted as one collection).

### Number of items in collections

There were no patterns in the number of items participants added to each collection. The collections created had the following number of items in them.

To read this chart, say "39 of collections created had 1 item in them."



### Collection content

There were no patterns in the contents of the collections. The collections appear to be made from various things that caught the attention of the participants, such as:

- *Collections relating to a specific person* (e.g. Abraham Lincoln, Barack Obama, or Thomas Edison)
- *Sports related collections* (e.g. dance, basketball, or lacrosse)
- *Collections revolving around a specific name—possibly the name of participant* (e.g. portraits of several different women all with the name Elise)
- *Collections of a specific item* (e.g. gems, butterflies, flowers, rainbows, lunchboxes, airplanes, weapons, dogs, racecars, etc.)
- *Popular movie related collections* (e.g. Wizard of Oz or Star Wars)

There were 16 participants who created a collection related to Abraham Lincoln. This is probably because Lincoln was used as an example when the instructors were demonstrating the prototype. The instructor also used "doughnuts" and "lunchboxes" as potential searches. These suggested searches show up occasionally in the student's collections (see Appendix A).

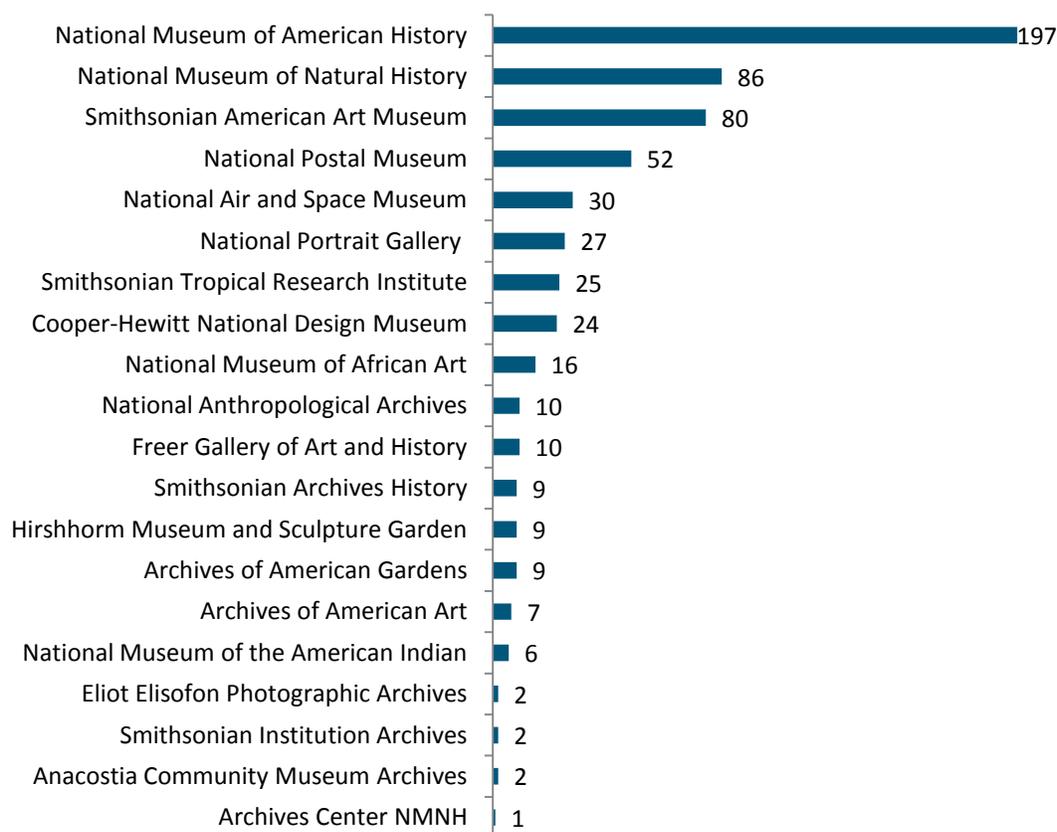
## Originating Museums

Additionally, we looked at all of the museums that own the items added to each collection. When looking at whole collections, there were no patterns in the originating museums. Students were not searching by museum, instead they were searching by objects or subjects that caught their interest. Items within a collection often came from different museums

When you look at each of the individual objects, a high number of the individual items came from the National Museum of American History. However, this is likely because, as mentioned previously, many of the students were searching for items related to Abraham Lincoln (the example used by the instructor) and most of the Lincoln related items are found the in National Museum of American History.

A few other museums (e.g. the National Museum of Natural History, the Smithsonian American Art Museum and the National Postal Museum) were popular originating museums. This is likely because the students were interested in subjects that relate to those collections. It is also likely that a different group of students with different interests (or who are provided with different example searches) would generate collections that come from different museums.

The following chart illustrates which unit owns the items added to the collections. To read this chart, say "197 of the items added to collections originated from the National Museum of American History."



## Examples of collections

The collections created were varied and unique, but some example collections are listed below. Each collection was created by a different participant. A full chart of all collections created by all the participants can be found in Appendix A.

### Collection Example 1:

Name: *butterflies*

Content:

- Heliconius sp. butterfly (Smithsonian Tropical Research Institute)
- Butterflies: *Anartia fatima* (Smithsonian Tropical Research Institute)
- Butterflies: *Callicore pitheas* (Smithsonian Tropical Research Institute)
- Butterflies: *Morpho helenor* (Smithsonian Tropical Research Institute)

### Collection Example 2:

Name: *Hope Diamond*

Content:

- Catherine the Great Portrait, Hillwood (Smithsonian Archives)
- Hope Diamond Presentation (Smithsonian Archives)
- The Hope Diamond (National Museum of Natural History)

### Collection Example 3:

Name: *Candy*

Content:

- Space Food, Candy-Coated Chocolates (National Air and Space Museum)
- Space Food, Candy-Coated Peanuts (National Air and Space Museum)

### Collection Example 4:

Name: *Sketchs (sic)*

Content:

- Quick Sketch for Bicentennial Dollar (National Museum of American History)
- Sketches (Freer Gallery of Art and Arthur M. Sackler Gallery Collection)
- Eero Saarinen travel sketches to Florence Knoll Bassett (Archives of American Art)

### Collection Example 5:

Name: *The Piggys*

Content:

- Pig figure (National Museum of the American Indian)
- Smooth Blue Pig II (National Museum of the American Indian)

### Collection Example 6:

Name: Cool Things

Content:

- Reggie Jackson (National Portrait Gallery)
- Sword (National Museum of Natural History)
- Tomahawk-Pipe (National Museum of Natural History)
- Chicago Bulls Basketball Jersey, worn by Michael Jordan (National Museum of American History)
- Muhammad Ali (National Portrait Gallery)

## Manipulating Collections

### *Changes to item descriptions*

The prototype allows students to make changes to the descriptions and titles of items in their collections. When looking at the student's final collections, it appeared that the only changes that students made were changes to the item titles. For example,

- "Woman's Ostrich Feather" was changed to "Trendy Ostrich Hat"
- "Axe" was changed to "wood axe"
- "Sword" was changed to "unicorn slaying sword"

However, it should be noted that the prototype may not have saved changes that students made to their descriptions. Students were asked to modify at least one item and observers saw student make changes to the descriptions, but those changes were not preserved.

### *Tools*

Students had the opportunity to add tools to the items in their collections. When looking at the data it appears that none of the students in the testing group added any tools to their collections. However, this was most likely due to the fact that the tools added were not saved.

## Prototype Usage Challenges

There were several challenges that participants encountered while using the prototype. These challenges include:

### *Loading times*

Observers noticed that the participants felt many of the items took too long to load, if they loaded at all. Students also struggled to get videos to load, partially because of slow loading times (due to the school's bandwidth), but also because viewing the videos required software they did not have (such as Quicktime).

### *Saving descriptions*

Observers noticed that students were having troubles getting their descriptions to save. Additionally, during the data analysis process, we found that none of the description changes were saved.

### *Could not delete items from collections*

An observer noted that the students were unable to delete items from their collections. This was noted during the data analysis phase as well. For example, some students had the same image in multiple collections, although the item only thematically belonged with one of the collections. It seems that the students added an item to the wrong collection, but could not see how to remove it. The student then added the item to the correct collection.

### *Descriptions were hard to understand*

Observers noticed that since the item descriptions were not written for a 6th-7th grade audience, some of the students found that the descriptions were too difficult to understand. This is understandable since the information provided on collection items is museum cataloging information rather than education information specifically designed for students.

### *Spelling limitations*

Observers noticed that some of the students could not find the items they were looking for because they could not spell the words correctly. Some of the students wanted auto correct for their spelling, or that capability to conduct predictive searches (like Google does).

### *Loss of Authority*

The observers noted that some of the participants seemed to think that the information in their collections was unreliable. If they (or anyone else) were able to change the information then the information was no longer reliable.

## Suggestions for Additional Features

The participants gave suggestions for features they would have wanted in the prototype. All of these suggestions were overheard by the observers, or mentioned during the group interviews conducted after the activity.

- Participants wanted to see features that are familiar from other search engines/software such as:
  - Auto-correct to assist with spelling
  - Predictive searches like Google
  - Recommended searches based on searches they have already conducted
  - Filters for children (so that they aren't exposed to inappropriate material)
  - Ability to change the text to different fonts
  - Microphone speech to text searching capabilities
- Participants wanted the ability to personalize the collection more by being able to:
  - Draw on objects
  - Put images from Google/personal computers into their collection (the prototype can do this, but the students may not have realized it)
  - Share collections outside of the prototype (social media)
  - Export their collection (word documents, slide shows, etc.)
  - Ability to build artifacts out of different pieces of things (e.g. create unique collages of images)
- Participants wanted to see some improvements in the functional aspects of the search engine such as:
  - Screens that show more of the image/description
  - Faster loading times (school bandwidth made for slow loading times)
- Participants wanted additional content such as:
  - More modern photos
  - The ability to watch videos on the site (school bandwidth did not allow for video watching)
  - More information about the items (specifically students were asking for more information about animals, such as whether or not they're endangered or where the animal lives).

# Conclusions

The data collected during this testing show that students can easily use the prototype. The initial utility of the prototype was fairly self explanatory. Students were able to begin searching the database and creating collections even before the initial instructions were complete.

However, as students went further with the prototype, they found that they wanted to do more with it than the prototype could do (such as delete items, personalize it further, search using predictive searching, etc.). Basically, they were looking to use features that are available to them in familiar software (Google, social media sites, etc.). SCLDA should review the suggested changes and decide which of the changes (if any) best help achieve the goals and aims of the search engine.

Additionally, the vocabulary in the Smithsonian's collection was (not surprisingly) too advanced at times for these participants. However, the descriptions can be edited and rewritten. This could be used as a selling feature of the search engine, giving students who use the tool the opportunity to exercise their critical thinking and writing skills to synthesize the material. Or perhaps SCLDA may want to consider seeking funding to create a child accessible version of the Smithsonian digital catalog.

SCLDA may also want to consider adding a feature where students can edit the catalog text, but still leave the original text in the descriptions. As the observers noted, some participants felt that when they changed the content of the catalog items the information then became unreliable. Perhaps there could be a way to distinguish the curator's voice from the student's voice.

Further, SCLDA may also want to consider what additional audiences might benefit from this tool. This tool was originally developed for use by students and teachers in the formal education system. But perhaps learners in informal learning situations would enjoy using this tool as well. For example, Smithsonian general visitors (whether visiting physically or virtually) might like to delve into the Smithsonian's collections and create unique collections of their own.

## Further Prototype Testing

If SCLDA wants to test this prototype further, they may want to consider conducting some of the following testing:

- Make some of the changes recommended by the students and repeat this testing.
- Find out what software/social media sites participants use. What software are they looking for the prototype to emulate?
- Give participants an assignment that simulates a school assignment and ask them to complete the assignment using the Smithsonian search engine. For example, give them specific topic to research and see what information they can generate using the search engine.
- Test the prototype with other age groups. Can students younger than 6th grade use the tool? Are students older than 7th grade interested in using the tool? Is the tool useful for university students, professors, or researchers?

# Appendix A: Participant Collections Data

The following chart shows the collections created by each of the participants.

Participant ID	Number of Collections	Name of Collections	Number of Items in Collection
CPA1	4	My Collections Defense Intelligence Culinary Basketball	0 4 0 0
CPA2	2	My Collections Hubble telescope	2 1
CPA3	6	My Collections Abraham Lincoln Dance Flowers Flowers Fruits	0 1 4 5 0 4
CPA4	2	My Collections Gems	0 5
CPA5	3	My Collections Electronics Chicken	0 5 3
CPA6	3	My Collections JustAbeLincolnPortraits basketball	0 1 7
CPA7	7	My Collections Abe Lincoln Portraits Fallingwater Civil war Civil war Civil war Civil war	0 3 5 11 1 0 0
CPA8	9	My Collections Abe Lincoln Portraits Stamps Worldwide stamps Art Violin Sketchs ( <i>sic</i> ) Korea korea	0 2 14 5 8 7 3 0 8
CPA9	0		
CPA10	0		
CPA11	4	My Collections Abe Lincoln Portraits China Princess Crowns	0 1 14 9
CPA12	3	My Collections Abe Lincoln Portraits Computers	0 2 5
CPA13	3	My Collections	0

		Abraham Lincoln Portrait Roses	1 8
CPA14	4	My Collections Abe Lincoln Candy Thomas Edison	2 0 2 8
CPA15	5	My Collections Abraham Lincoln Portraits Interesting Stuff Howard University Make up	2 5 1 0 0
CPA16	2	Pres Obama Pres Obama	5 14
CPA17	2	My Collections Airplanes	0 3
CPA18	4	My Collections B Basketball-nba Rocks	0 0 11 7
CPA19	3	My Collections Candy Dance	0 1 5
CPA20	4	My Collections Abe Lincoln Portrait Hope Diamond Warefare	0 1 3 6
CPA21	4	My Collections Soccer Portraits Crystals and Gems Metals	0 5 5 0
CPA22	2	My Collections Roses	0 5
CPA23	0		
CPA24	1	My Collections	2
CPA25	0		
STUD1	1	Monster party	3
STUD2	1	Mask	1
STUD 3	1	King Kong the Invinsubiul ( <i>sic</i> )	3
STUD4	1	LAX for life	10
STUD5	2	Doughnuts Elise	1 2
STUD6	1	Mallory's Collections	5
STUD7	2	Donuts Elvis Presley	4 3
STUD8	2	Color Changing Mutant Abraham Lincoln's Treasures	0 3
STUD9	1	Cool Stuff	3
STUD10	1	My collection	5

STUD11	1	My Collection	7
STUD12	1	Ostriches	4
STUD13	1	Sword	5
STUD14	3	The wagon The wagon wiele ( <i>sic</i> ) The wagon wiele ( <i>sic</i> )	1 0 5
STUD15	1	Beast swords	3
STUD16	2	Temple Iron Swords	1 4
STUD17	1	Axe	2
STUD18	1	Donut maker	3
STUD19	3	Elephant mask Figure of a lion Owl mask	2 2 1
STUD20	3	Abe Lincoln (vampire hunter) Abe Lincoln (vampire hunter) Stuff I like	2 1 5
STUD21	1	Benjamin Franklin	1
STUD22	1	Donuts	2
STUD23	4	Skeletons Skeletons Old guns Tomohawks ( <i>sic</i> )	0 3 1 4
STUD24	1	Donut	1
STUD25	1	Abe	1
STUD26	1	Baseball	4
STUD27	1	Old weapons that are cool	2
STUD28	1	Famous weapons	1
STUD29	1	Ray Strong	4
STUD30	1	Cool stuff	11
STUD101	2	My Collections Buddy the kid that ate all of the apples	0 1
STUD102	3	My Collections Abe Pigs	0 8 3
STUD103	2	My Collections HOLOCAUST	0 1
STUD104	2	My Collections Cool stuff	0 5

STUD105	2	My Collections Painting from the Homo Sapien Sapiens to 2014	0 5
STUD106	Not used		
STUD107	Not used		
STUD108	2	My Collections Dogs of the world	0 7
STUD109	2	My Collections Cool lunch boxes	0 3
STUD110	2	My Collections Planes	0 3
STUD111	2	My Collections Rainbow Shapes	0 5
STUD112	2	My Collections Sports	0 5
STUD113	3	My Collections Animal bones Wizard of OZ	0 3 3
STUD114	2	My Collections Zombies	0 3
STUD115	2	My Collections Wonders of the diamonds	0 3
STUD116	4	My Collections Cool Stuff Wizard of Oz Starwars (sic)	2 1 1 0
STUD117	2	My Collections Abraham Lincoln the murder	0 6
STUD118	1	My Collections	3
STUD119	2	My Collections Weapons	0 5
STUD120	2	My Collections The unicorn slayers acoossiation (sic)	0 3
STUD121	2	My Collections Be heading day	0 3
STUD122	2	My Collections Brodie the hunter	0 6
STUD123	0	**No title**	0
STUD124	2	My Collections The Murderers Diary	0 11
STUD125	2	My Collections Cats	0 5
STUD126	2	My Collections Liams awesome stuff	0 6
STUD127	2	My Collections The collection of cool stof (sic)	0 2
STUD128	2	My Collections Pearls	0 3
STUD129	2	My Collections Old fashion lunch boxes	0 4
STUD130	2	My Collections Dorthy the Wizard Slayer	0 3
STUD201	4	My Collections	25

		SEE YA DONT WANT TO BE YA SPEEDSTER SPEEDSTER	2 1 1
STUD202	0		
STUD203	0		
STUD204	3	My Collections Cool Things Cool Things	1 5 1
STUD205	2	My Collections The turtles of the world	0 8
STUD206	0		
STUD207	2	My Collections Creapy, Crazy Spiders	0 6
STUD208	2	My Collections Lincoln, The Vampire Hunter	1 1
STUD209	2	My Collections New Jersey, The Garden State	0 5
STUD210	2	My Collections Game boy	0 3
STUD211	0		
STUD212	2	My Collections Goldstate basketball	1 8
STUD213	2	My Collections Beast basketball	1 5
STUD214	2	My Collections The Deadly Butterflys	0 3
STUD215	0		
STUD216	2	My Collections Best video game	1 1
STUD217	2	My Collections Mary Todd	1 4
STUD218	2	My Collections The Piggys	1 2
STUD219	3	My Collections 2spooky4us Homestuck	0 1 1
STUD220	3	My Collections Old air planes New Jersey Flow	0 9 1
STUD221	0		
STUD222	Not used		
STUD223	Not used		
STUD224	Not used		
STUD225	2	My Collections Money!!!!!!!	0 6
STUD226	Not used		
STUD227	Not used		
STUD228	Not used		
STUD229	3	My Collections Butterflies Daisies	0 4 7
STUD230	Not used		

# Appendix B: Observation Notes

## Observation Notes—College Park, MD

### Day 1 Questions

*# of 6th graders*

Pino	2 both days (C and D; (C with a lap top; D without the lap top) ; The second day an additional 6th grader (F)
Darren	3
Ashley	1
Philippa	
Kelsie	3 the first day, 1 the second day: Students 13, 15, and 16
Charlotte	0

*# of 7th graders*

Pino	2 the first day (A with a lap top; B without the lap top). They were missing the second day even though A stepped in for a few minutes without really participating. The second day an addition 7th grader participated (E)
Darren	0
Ashley	
Philippa	2 first day/3 second day
Kelsie	0
Charlotte	3

*How many had seen the prototype before?*

Pino	E vaguely recalled to have used during the NHD activity. She did not further use outside of NHD the activity
Darren	0
Ashley	
Philippa	0
Kelsie	0
Charlotte	3

#### 1. Search

*Do students search by:*

1. browse by existing taxonomy of topic/terms
  2. use search terms as typed into a text box
  3. access existing collections (selecting an existing highlighted collection or resource)
  4. multiples of the above
- What did students search for? Topics?*

#### 2. Saving/Storing

*Which view did students prefer with results?*

1. list view
2. gallery view

*Filter options - Did students filter their results in any way?*

*Did students:*

1. save to favorites
2. save to general default collections
3. save to specific custom collections created in advance (created as part of process)
4. save in "off-line" format
5. save to other social/professional community environment
6. other?

Pino	First day: activity started around 4:25pm. The 6th graders (C and D) seemed more active than the 7th graders (A and B). D and B did not have a computer so were invited to explore with A and C. All mostly started exploring the website, trying different search words. C/D searched for "The Hope Diamond." Then for "Laser," "Ice Age" and "Wars before 1900." C searched for "basketball" and "rocks." A and B started looking at all the pictures of basketball players and started commenting on them. B seemed finally more engaged. Most of the activities for all the 4 students were about exploring the different pictures and selecting some for the collection (around 4:50pm). They moved back and fourth between collections without an apparent focus. D found "Corundum," and went to google/pictures to explain to the observer what a corundum was. Activity stopped at 5:00pm. When asked, students said that they liked the activity because they could find a lot of information and it was easy to use. Second day: activity starts around 4:20 with Ashley explaining how to modify. D
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	<p>doesn't have the computer so he interacts with C. A new 6th grader (F) participates. A and B are missing (A joins for a short while without really participating). A new 7th grader participates (E). F chooses "Roses," (because she likes them), and E chooses "electronics" because she's interested. C and D keep playing with other websites. It takes a LOT OF TIME before students address the tasks indicated by Ashley. After selecting one object from the "Wars before 1900" collection (a sort of African knife), C trying "maps" (tool) but he's not able to focus on Africa. Plays with other websites. Students keep going back and forth between the task (modify the labels) and browsing other web sites and other pictures from the SI web site. C and D change collection, "Plants."</p>
Darren	<p>Students: 1, 3, 14</p> <p>Searched for:</p> <p>14: Edison 3: strawberry 14: candy 3: lipstick 5: dance 1: fruits 1: culinary school 1: defense intelligence agency</p> <p>1: used filters to find videos 1: selected a video and followed it to Youtube to watch 1, 3, 14: never clicked and object to enlarge and read metadata while in the "collection creation" phase</p> <p>1, 3, 14: all misspelled search items and assumed there were no results (misspelled names get zero results)</p>
Ashley	<p>Interesting to note that it took a few minutes for start searching for topics based on interests or past projects. Some of the students didn't realize you could click on the images to open them &amp; read the descriptions, or simply knew, but chose to save a bit haphazardly. Would be interesting to see these students in action if there had been a formal project or question they were hoping to answer.</p>
Philippa	<p>1st day: students searching both by existing topics and also by typing in the box. They used the gallery view, and saved to their personal collections. Topics: Student 1: Falling Water, Frank L. Wright, Civil War; Students 2: craters, stars, stamps, art, violins, Korea; student 3: basketball; student 4: airplanes Observations: students are savvy searchers (I had strong students in my group). They got the hang of it right away and were off creating collections. Students 1 and 2 moved through various searches with ease, science-related, art-related, history, etc. #1 said that computer was slow so she ended up creating 4 folders for Civil War but was then not able to delete the repeat folders. # 1 and 2 were not as interested in all the media types. They suggest4ed maybe grouping media into fewer types and have some of the others as subgroups so it's not such a daunting list.</p>
Kelsie	<p>Each student searched by typing in the box. Student 13 expressed frustration that nothing was coming up when she searched for stillettos and fake nails. Student 16 asked what to search, but then searched Barack Obama. Expressed interest when she found a coin with Obama's face on it, said, "I didn't know he had a coin." Student 15 searched a wide variety of topics with no problems. None of the students used a filter for their searches.</p>
Charlotte	<p>Students: 10, 11, 12- a few other students (23, 24) logged on but didn't stay long enough to participate much 10 forgot laptop both days and used website on phone second day</p> <p>All students searched for objects by typing in a term. 11 used image filter occasionally 11 looked at filter options and categories but didn't use them more often than not All students had little interest in resources without images. 11 went to original site of object once or twice</p>

*Which resources were selected?*

Identify resources selected by Title/URL

(don't need to capture all since we will have access to the accounts, just jot down some of the resources you observe)

Pino	
Darren	

Ashley	
Philippa	
Kelsie	Students searched for jordans, stilettos, fake nails, mac lipstick, chipotle, barack obama, amish school, jackson, barbie, roses
Charlotte	Students searched for squirrel, Disney, hamburger, candy, french fry, crowns

### 3. Organizing

• Did student start to organize resource(s) directly upon initial review of results list from search? • Did student review expanded metadata prior to trying to store in an organized manner? • Did they prefer to place in collections • Did student elect to or want to link this resource to another resource • Other?

Pino	
Darren	1, 3, 14: yes, immediately began creating multiple collections
Ashley	
Philippa	Immediately began saving to various folders. Did not show much interest in the metadata - saved instead directly from thumbnail boxes.
Kelsie	All three students ended up creating multiple collections. Students 15 and 13 had no problems, student 16 seemed confused by the process at first. Student 15 looked at each picture to learn more about it before putting it in a collection, Students 13 and 16 generally just saved them directly to collections. None of the students used a filter for their searches.
Charlotte	All students made multiple collections and added objects to them from the main search page 11 added many objects without reading descriptions then went back and read them 12 read descriptions before deciding whether to add to collection 10 mainly looked at images without reading descriptions or adding to collection

### 4. Sharing

How would students prefer to share out their findings to others either on or off the site?

• Share/recommend via email • Share via other social online environment that the student belongs to • Share resource to SCLDA community (site in which they found the resources) • Share annotative data back to community where resource was found (student leaves a comment or a rating or in some way adds data to the resource that is shared back to the site where the resource was found) • Did not share

Pino	Not addressed
Darren	
Ashley	
Philippa	Not addressed
Kelsie	Not addressed
Charlotte	10 (looking at website from phone) said she wouldn't want to save the images to her phone

### 5. Annotate

Implies any action in which a student submits data of their own about a resource on the site in which they found the resource.

• re-title or re-describe a resource within own collections/galleries – were they able to figure out how to do this on their own? Did they need help? How much?

Pino	
Darren	Students did not need help but struggled with what to change, what to replace the museum content with.
Ashley	
Philippa	
Kelsie	Student 13 retitled, changed description easily after seeing Ashley's demonstration. No help needed. She read the Smithsonian information before deleting some of it and adding her own descriptions of why she liked it and why she saved it.
Charlotte	No students changed the title 11, 12 had trouble saving changes to description but were not interested in going back to look at it or do it on their own with other objects.

### 6. Assembling for project/presentation

Students will be told that most of the current "tools" on the prototype do not function – we want to know if any of the tools listed interest them, do they find them useful?

What would they want to be able to do with their collection?

For school:

• Construct simple linear (slide show like) presentation of objects? • Construct non-linear presentation of objects? • Prepare "off-line" versions of presentation? • What other "tools" would be helpful for students to use the prototype to create projects/presentations? • How would they like to interact/manipulate SI resources?

Do they see themselves using the prototype outside of school? For what? What would they like to be able to do with it?

Pino	See note above. Points not really addressed. On the second day, because of the instructions, students plaid with deleting text, adding new text. They were not really focused.
Darren	1: create a timeline with pictures 3: wanted generalized information (searched for Edison and saw the collection photos, but wasn't sure who he was, and could not tell from our collection metadata)
Ashley	
Philippa	Students 1 and 2 were the most interested and talkative. They had a couple of suggestions: 1. be able to delete albums (mentioned above); 2: Make it so you have to go back to the photo if deleting from an album to be sure you are deleting the right one. Students #1 said that yes, she could use this for school. It would be helpful for reserach and in organizing information.
Kelsie	Student 13 wanted to save things directly to her computer. Student 15 wants it to suggest searches for her based on searches she had already done.
Charlotte	Students were not interested in other tools already there 11, 12 Wanted to costumize the description more (could only make it bold or italicize)

## Day 2 Questions

Tell us what you liked about the experience

Pino	
Darren	
Ashley	
Philippa	1: being able to group them where you want
Kelsie	Student 13 liked editing the descriptions
Charlotte	11, 12 liked being able to make the collections 11, 12 were curious to see what would come up when searching

What didn't you like?

Pino	It seems unreliable. If everybody can modify it then it becomes unreliable
Darren	14: ability to explore on your own 3: learning things to make you smarter
Ashley	A student mentioned they wanted to be able to search for resources outside of the Smithsonian & compile with the ones they found.
Philippa	1: She would like to be able to watch a video there rather than having to go through youtube. (I think connection may have been slow?); 1 and 2: instead or editing, be able to add notes. It would be cool if you could put notes in a summary because you might want other information later. 4: Be able to change "note" tab to whatever you want it to be. (I asked: "be able to add your own tabs?" Answer: yes.)
Kelsie	Not addressed
Charlotte	11 wanted an easier way to search for objects 11 wanted to be able to personalize the description more

How would you use something like this for school?

Pino	
Darren	
Ashley	
Philippa	
Kelsie	Student 13 said projects, slideshows, powerpoints, and prezis
Charlotte	

Pino	
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Darren	14: environmental club: get points for making collections and using them on blog posts 14: learn about dance techniques to be better at dance class (student said she looked at the toolkit in the evening and found dance tips) 14: something like "peach_" where you can edit the pictures, make your own designs with them, add color, or change the color of photos
Ashley	
Philippa	2: debate club
Kelsie	Student 13 said she wouldn't use it outside of school
Charlotte	

*What other "tools" would you want to have? (Currently there are quiz, discussion, crossword, word cloud, map, etc.)*

Pino	
Darren	14: ability to stay logged in to the site 14: ability to rate objects
Ashley	
Philippa	Lots of suggestions from this group, including: 1 and 2: Have a button to recommend the website or the boject you have found - social media component. 2: Be able to have notes on notes - be able to keep a word document open at the same time so can add additional notes going back and forth. 1: be able to save your edited part as a word document - with option to make new word document or edit previous work documents. 2. Drag and item from your collection onto a map. 1. make a slode show - be able to put your pictures together and show. 2. When you log back in, program would give suggestions based on previous search.
Kelsie	Student 13's suggestions were mostly about widening the possible search topics, and being able to easily save images to her own computer or share them somewhere off the site. She also wanted to be able to edit, crop, or create a collage with the images.
Charlotte	

*any other notes:*

Pino	
Darren	14: student did use the toolkit in the evening between sessions at home. Said she found new dance steps and even practiced them based on what she saw.
Ashley	It would be interesting to compare these responses in an informal setting with little direction on what to create a collection about with something more formal that had a purpose in their schoolwork for example.
Philippa	PR's thought on editing function: it would be great to be able to distinguish the curator/official metadata SI voice from personal edits – perhaps do this with different text color. Users could check original information back in the opening searches, but I doubt they would really go that far back, and over multiple uses and time, it would be very difficult for the user to remember the changes/edits he/she made from the original text. If it shows up as a different text color (like the way it shows up in outlook when we reply to an email and edit an existing message), it would be easier to follow the edit trail.
Kelsie	
Charlotte	

## Observation Notes—Chico, CA

*What were types or samples of search terms used and the resulting returns?*

Brian	<p>Considerable number of students used general search terms like: Sports, Baseball, Animals, Bugs, etc. Some students searched for terms very specific to their lives like: Their family's last name, their father's full name, a city they used to live in (Akron, Ohio) Others used terms of personal interest: Swords, Martial Arts, Mary Todd, Cheetah</p> <p>Searching with phrases and slang: In order to yield better results, students had to pare down some of their initial search terms like, "most beast swords" which is akin to searching for "most coolest, awesome swords"...and instead just search for deadly swords or swords to get a good return of resulting records.</p> <p>Searching with too broad a term: Conversely, some students had to be more specific, such as one young lady who initially searched for cats, but was not satisfied with the results, and was trying to browse just to see pictures of cheetahs and leopards, so she modified to Cheetahs, and was pleased with those results.</p>
Jodi	<p>Search terms: Star wars, Ostriches, Elvis Presley, Ancient Egypt, war, wizard of oz, cotton candy, mickey mouse, swords, camera, dog, gems, football, basketball, baseball, barbie, krispy cream donuts, snowboard = students were easily able to find. Only issue was when students could not spell the word correctly. Some students would spell a word incorrectly, not realize it was incorrect and "it must not exist in the Smithsonian." Some would ask for assistance in spelling their search word, some would open Google tab to find spelling, some would simply move onto another search</p> <p>"first snowboard": very specific terms such as this were searched for and students would get a list of all snow boards and question why they couldn't find the specific item searched for.</p>
MaryRose	<p>Total number of students: 8 in first class, 8 in second class</p> <p>pandas skeletons gold rush iPad blanket Michael Jackson their own name Washington Sandwich Snoopy Pizza Cash register holocaust cats Minecraft snow boards video games</p> <p>Most returned results. If they did not, they changed the search term completely and did not try to fine-tune the original search.</p>
Darren	<p>Chico County Day, Group 1: football, baseball, indian, cheese, soccer, computers, ties, bugs, adeline (the student's name), poseidon, fish, egyptians, dogs, star, andy (the student's name), monster, ghosts, africa, famous statues</p> <p>Chico County Day, Group 2: glasses, comics, dolphins, candy, dogs, child, bow and arrow, sword, eyes, tom Richmond, french revolution, volleyball</p> <p>Little Chico Creek: basketball, bunnies, vampire bats, 1940s penny, rasta, dresses, shoes, chocolate bars, video games, moon suits, clothes</p>

*What were issues students encountered with searching?*

Brian	<p>Students inability to spell, and the systems inability to indicated that they had mis-spelled an item led students to few returns, and then believing that there was a very limited number of items available in some instances. Most students were able to surmise that there had to be more items, and they re-examined their spelling as a potential problem and then used Google's predictive type feature to help them spell the item correctly.</p> <p>Students suggested voice-activated searches, predictive-type, visual identifiers for mis-spelled items, existing lists of subjects and topics, and real-time lists of most popular/most recent searches being performed on the system as assistance.</p> <p>Students wanted to, and appreciated filtering of returns in order to discourage card catalog returns and instead focus on videos and images as the types of files they wanted access to predominantly.</p>
Jodi	<p>Major issue was spelling. If students could not spell their word they would do one of three things: ask assistance from fellow student, teacher or researcher on how to spell word; they would move onto a different search term, assuming the item they were searching for did not exist; or they would open up Google and search for the word on Google to find the correct spelling using their predictive spelling feature.</p>
MaryRose	<ul style="list-style-type: none"> <li>- Some were unable to find what they were looking for due to errors in spelling (valcano instead of volcano, for example)</li> <li>- 2 students (one per class) asked why the page loaded so slowly</li> <li>- Students in these groups often helped each other to figure out how to use the tool</li> </ul>
Darren	<p>Chico County Day, Group 1:</p> <ul style="list-style-type: none"> <li>- no results</li> <li>- spelling trouble, hard to find items if you do not know spelling</li> <li>- teacher: problem understanding how to close enlargements</li> </ul> <p>Chico County Day, Group 2:</p> <ul style="list-style-type: none"> <li>- very few students clicking to enlarge the resource image from the search results page</li> <li>- difficulty understanding that video landing pages were for videos</li> <li>- did not scroll through the metadata past the "fold"</li> <li>- items without images were totally ignored</li> <li>- filtering seemed to have mixed results (semi-functional)</li> <li>- adults (teachers) were continually using the browser back button to return to search results</li> </ul> <p>Little Chico Creek:</p> <ul style="list-style-type: none"> <li>- confused by the digitized index cards</li> <li>- spelling causing multiple problems</li> <li>- items without images are not understood</li> </ul>

*How did students access and engage in the resources?*

Brian	<p>Students actively and aggressively scrolled through return until something caught their eye or appealed to them visually. They regarded the truncated meta-data to a large degree that was associated with the thumbnails of the items.</p> <p>Students did engage in the supporting, more comprehensive descriptive data once they selected an item of interest and were presented with that information in addition to a larger version of the image of the item.</p> <p>Some students were frustrated by not being able to listen to audio files or watch videos because they were either not included, merely alluded to as a matter of record, or if they were there, they required the students to access an existing SI page where the media was not easy to find, or the file required a player application that was not available on the students computer or device. (Media Player, Quicktime, etc.)</p>
Jodi	<p>A few if the students were able to find the different types of content without direction from researchers (find video, images, text) and also noticed the rating feature. None of the 8 students I directly observed created a collection on their own prior to direction from the research lead. After direction was given, all were able to create a collection without difficulty. The two biggest obstacles were when searching for an item they wanted to add to their collection; which were spelling and being too specific in their search (first snowboard, oldest barbie, biggest dog).</p>
MaryRose	<ul style="list-style-type: none"> <li>- 2 students chose a video but did not know to select "view on YouTube" button and gave up until I pointed it out</li> <li>- 6 students did not use media type filters until I showed them. Then they all chose Videos</li> </ul>
Darren	<p>Chico County Day, Group 1:</p>

	- easy filtering of videos and moving from youtube to toolkit and back again.
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How effective were students at creating collections?

Brian	<p>Students were largely able to create collections. In each of the 3 classes (27-30 students in each class), approximately 3-5 students started creating collections prior to being shown how to do it. Having been quickly shown the process of creating a collection once, almost all student were able to create a collection of 3 or more items of interest. (in each class, through raising of hands, and confirmed by observers, all students but 1-2 had created a collection - out of 3 classes of 27-30 students per class)</p> <p>Issues: Some students were not sure on how to delete and item from a collection at a point in which they wanted to remove one for whatever reason. Some students were not sure on where their collection was located once they had created one and added items to it.</p>
Jodi	<p>Students were able to create the collection without difficulty after being given minimal instruction. All were able to rename and change the description of the items in their collection.</p> <p>Difficulty did not appear to come from using the tool (other then spelling, or choosing too specific of a search term); but in deciding to what then name their collections.</p>
MaryRose	<ul style="list-style-type: none"> <li>- Examples of collection names were Abe, doughnut, old guns, skeletons, tomahawks, elephant mask, owl mask, cool stuff (2), pearls, spinning top</li> <li>- Often their collection seemed to be named after the first item they had searched for, not understanding that it was to be a collection of more than one item</li> </ul>
Darren	

How effective were students at modifying content of collections?

Brian	<p>Students were provided a very brief demonstration on how to modify content (descriptive/meta data) for items in their own collections. Students were instructed on amend the data for at least one item to describe in their own words. By show of hands, it seemed that approximately all but 3-5 students per class (out of 3 classes of 27-30 students per class) were successful at modifying content or data in this way.</p> <p>Approximately a third of the students I observed attempted to modify the data on the items that actually existed in the data-directory as opposed to the version of the items they had saved to their collection. The prototype only allows them to amend the data of the version in their collection, and because the rendering of those items were almost identical, they deferred to the actual item before them and attempted to click on and edit text there to no avail. Once shown how to access the collection thumbnail and generate their own version of the item, these students quickly realized how to amend the data on their own items in their own collection. We might consider enacting some visual alteration that clearly delineates items of a personal collection from the corresponding items in the general database as a means to let users quickly recognize which they are looking at in a given point in time during their visit.</p>
Jodi	<p>Football: changed to "favorite sport." The descriptions of each item pulled into the collection was not changed</p> <p>Krispy cream: found a color changing mutant with a donut shaped brain. When this was announced in the class, I observed 5 students searching for this same item and creating collections.</p>
MaryRose	<ul style="list-style-type: none"> <li>- Students had trouble understanding how to edit the collection. There is an "Add/Edit" button that they would click that didn't edit the collection itself.</li> <li>- Some didn't know to select "close" to close the collection bar</li> <li>- 3 students did not realize that you had to first save an item to a collection and THEN click on the item to edit the item</li> </ul>
Darren	<p>Chico County Day, Group 2:</p> <ul style="list-style-type: none"> <li>- not an intuitive understanding about how to edit titles.</li> </ul>

*What were some general findings that surfaced during the reflective discussion at the end of the activity?*

Brian	<p>Slow Data Exchange: Students were frustrated with the slow return of images. The default return style for records is the more visually oriented grid-style thumbnails. The alternate return style is a much more muted visual treatment that primarily returns descriptive data (text). The image based return does tax local networks, primarily wireless, when an entire group of students are simultaneously searching via one wireless access point in a classroom. The slow rendering of images causes some students to quickly lose interest or become distracted or abandon their search for something else that they hope will yield faster results.</p>
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	<p>Some things students wanted to do with items and collections:</p> <ul style="list-style-type: none"> <li>Rate them</li> <li>Favorite them</li> <li>Share them via email, twitter, facebook, or class-based platforms like Google Classroom</li> <li>Compile pictures and videos of things into a common tapestry or visual display (Mash-Up), and edit items to combine them in unique compilations. (Example was to take different parts of different swords and make up your own sword using the handle of one, the blade of another, and the scabbard of another)</li> <li>Modify images by drawing on them, adding graphics or stamps to them, different colors or filters or backgrounds.</li> <li>Change font-styles and sizes and colors of descriptive data and title</li> <li>Have a way to measure items to tell how big they are</li> <li>Modify the settings of the system itself visually...."I want to make the whole site pink for my account."</li> <li>Students wanted to add items to their collections from sources beyond the Smithsonian and add transition slides with information and transition effects between items in their collection for presentation-design purposes.</li> </ul>
Jodi	<p>Requesting an "auto spell" feature like Google has, requested the ability to change parts of the image (add a mustache, change the color of the image); ability to share collection or items out to another app; Knowing actual size of the object; Ability to delete picture from my collection</p>
MaryRose	<ul style="list-style-type: none"> <li>- 2 students were very interested in changing the names of collections, titles of resources, and changing the content</li> <li>- 1 student wanted to be able to use images from other sources</li> <li>- 1 student wanted to be able to change the font and look of the text</li> <li>- 2 students did not like the look of the site and wanted it to be more "kid friendly" in color and design, and gave the example of National Geographic Kids</li> <li>- 3 students commented on the difficulty level of the text content, and had trouble understanding it</li> <li>-2 students said they would not use the site again on their own because it wasn't very "fun" (related to the look of the site and difficulty of the text)</li> </ul>
Darren	<p>Chico County Day, Group 2:</p> <ul style="list-style-type: none"> <li>- difficulty in editing collection once they were created</li> <li>- wants: to draw on images, change the fonts (modify the look and feel of their collections)</li> <li>- wants: add external images to their collections</li> <li>- wants: edit/crop images and combine them with crops from other images</li> <li>- wants (teacher): share collections, export collections</li> </ul> <p>Little Chico Creek:</p> <ul style="list-style-type: none"> <li>- spellcheck and correction</li> <li>- "did you mean" on search</li> <li>- related search results on results page</li> <li>-text too small when typing</li> <li>- create mashups</li> <li>- mini games</li> <li>- game idea: after you make several collections, it makes you guess what collection new objects should go in</li> <li>- filtering by image contents ("animals" "people")</li> <li>- more modern photos, filtering by date</li> <li>- more animal information (possible linkage to Encyclopedia of Life?)</li> <li>- voice search</li> <li>- content linkages (cheetah photo to cheetah webcam)</li> <li>- autocorrect, search suggestions</li> <li>- results based on your previous searches/profile</li> <li>- phone version</li> </ul>

## Observation Notes from Melissa at Chico, CA

Chico, CA data collection for UMD grant

Chico Country Day School 10/8/14 Donna Henderson's class (approx. 30 students)

- 2 students do search for Lincoln during presentation. One kid spelled it wrong, one looking at Lincoln funeral flag
- 1 kid looking at specific objects – going back and forth from search. 9 search lunchbox.
- One girl didn't get results for her own name
- "guys! Look at mummies!"
- Showing each other search results, started a lot of conversation: "ooh look at that football!" "what else should we search?" "you know what will get a lot is Star Wars"
- One girl couldn't find a specific type of artwork (zentangle (sp?)) only showed portraits
- Searches for: doughnuts, clocks, dog, mummies, feathers, pens, cave man, basketball, soccer, art
- No problems navigating, a couple had to try more than one search to find a term that returned results.
- "ooh look at that old-fashioned ad!" "I'm looking for Venn Diagram" (had been learning about them in class)
- Most kids kept searching and looking at results while Brian told them to sort and filter results
- Taking a while for some images to load. Things started loading slowly when they started streaming video. Once one student started looking at video everyone started looking at videos.
- All needed prompting to filter results
- "When I searched for doughnuts, a video came up of a creature with 3 hearts and a doughnut-shaped brain"
- One girl started creating a collection as Brian was showing how.
- Issue with menu hovering over collection object so that she couldn't get to the object to edit it.
- 8 of 9 (I was observing) had collection created when Brian asked, 2 of 9 created more than 1 collection. One boy had 10 things in his collection.
- Lots of students have had experience using the prototype with their 5<sup>th</sup> grade class last year (Ms. Copper's class)

Chico Country Day School 10/8/14 Susie Bower's class (approx. 30 students)

- Searched for: swords, pandas, Charles Lindbergh, chocolate, flint lock muskets, knives, wizard of oz, necklaces, skeletons, Elvis Presley, nail polish, wedding dress, dinosaurs, lion king, the Rocky movie, rainbow
- Pages taking a very long time to load
- One girl found 3d dinosaur which brought her out of the site in a new tab, she needed help finding original site again.
- Kids followed along better in this class with filtering their results, doing it as Brian was doing it.
- Everyone searching and filtering, exploring specific artifacts
- One boy had trouble, one resource said it was added but didn't show up in collection when refreshed collections disappeared.
- Challenges:
  - Pictures took too long to load
  - Sometimes it wouldn't save descriptions (that were edited)
  - Screen didn't show enough
  - Want it to do "what did you mean" (predictive text like google)
  - Couldn't delete from collection
- Want to be able to:
  - Draw on objects
  - Different fonts
  - Put images from google into my collection
  - Build artifacts out of different pieces of things
  - Descriptions hard to understand (maybe have a kid version?, or definitions that pop up?)
  - Teacher: will we be able to share the collections outside of the prototype?

Little Chico Creek School 10/9/14 Mary Edwards' class 25 students

- Students think museum catalog information results don't "count"

- Too exact of a search, needs to be more than black and white
- Searched for: turtles, basketball, ancient artifacts, famous person we don't know about, 1943 penny, \$1000 dollar bill, doughnuts, puppies, video games, Iran, laptops, Leonardo DaVinci, board games, slender man, spiders
- Should have autocorrect
- Search brings up artifacts that aren't directly related but draw interest from students sitting nearby
- One boy explored all different filtering options while Brian was sharing how to filter by images
- Another boy did the same search for swords as Brian
- Not many filtered results but continued searching
- Students continuing to search as Brian shows how to create collection
- Out of 7 kids I'm observing 1 started creating a collection before they were asked to, one needed assistance to figure out how to get to collections objects to edit them.
- Kids very excited to be able to change descriptions
- What would you want to be able to do?
  - Put images together to make one image (collage/mash-up)
  - Mini games or video games on it
  - If you have several collections see that images go with which collection
  - Watch videos on the site
  - Not enough pictures of animals I want to see
  - Lots of old photos, maybe add more modern photos
  - Info on if an animal is extinct or not
  - Microphone to text speech to search
  - Updated info – if the cheetah is alive have it tell me what the cheetah is doing now
  - Suggestion bar/auto correct (these are things others are searching for)
  - Filter for children (naked statues came up that didn't have anything to do with my search.

# Appendix C: Prototype Activity Instructions

## SCLDA - Prototype Activity for Middle Grade Students

I believe the whole activity will take a total of 45 minutes to an hour and we can do in one shot or across two parts on different days.

Introduction:

Kids are introduced to the assignment and the people involved. (Research team member in person AND Online Video Chat with Smithsonian representative if possible)

- Reference Smithsonian Institution so students understand the extent of its role as a museum and research complex by showing them a map of the commonly known museums in and around Washington DC. (Map to be printed or projected: <http://www.si.edu/Content/Pdf/Visit/mallmap.pdf> and site to show a list of the various centers/museums: <http://www.si.edu/Museums>).
- Given time, you can briefly show the various museums from the site or merely enter the term “Smithsonian” into google and browse through the image returns. ([https://www.google.com/search?q=Smithsonian&es\\_sm=91&source=lnms&tbm=isch&a=X&ei=RslrU9nNOtXioATikILoAw&ved=0CAkQ\\_AUoAg&biw=1184&bih=764](https://www.google.com/search?q=Smithsonian&es_sm=91&source=lnms&tbm=isch&a=X&ei=RslrU9nNOtXioATikILoAw&ved=0CAkQ_AUoAg&biw=1184&bih=764))
- Students should be asked how many things they think there are in all of those museums for people to come learn about? Once they’ve generated some responses, you can share this information: *Founded in 1846, the Smithsonian is the world’s largest museum and research complex, consisting of 19 museums and galleries, the National Zoological Park, and nine research facilities. The total number of objects, works of art, and specimens at the Smithsonian is estimated at 137 million.*
- Students are now told: *Approximately 30 million people from around the world visited the Smithsonian in 2013 and over 172 million people have visited its public websites. And since so many people come to their website, the Smithsonian is investigating how to make more of their 137 million things, more easy to find and use specifically for classrooms and teachers and students.*

“That work is what *you* students are going to be helping us with, figuring out how one of our new tools needs to be further developed and designed to help you find all of the cool stuff the Smithsonian has, even though we are not at the Smithsonian!”

*(Laptops should be on students’ desks, logged into the prototype with the anonymous student accounts, but facing AWAY from the students towards the presenter so that no students are prematurely on the site playing with it at all. Facing the presenter allows you to quickly assert that they are not on the site while you do the initial presentation.)*

Part I:

1. Open up the prototype at [www.scems.navnorth.com](http://www.scems.navnorth.com) and have students observe a brief introduction to prototype by conducting a search on Abraham Lincoln as projected on a screen for all students to watch. Browse the returns, and have the students note the incredible number of pictures that dominate the results. Then tell students, what if the Smithsonian has video pieces done of President Lincoln, wouldn’t we like to see those separate from all these pictures? And then show them how to filter the results for Media Type>Video Recordings. You will get 30 returns, and can click on the first one to show

students how it eventually leads to a youtube video. (Be aware that YouTube could be blocked at a school site.) Now do a search for Lunch Boxes, just to show students the diversity of things the Smithsonian has in its collections. Tell students that they can now turn their laptops around to look up their own materials using the tool by following your instructions.

2. Each student will have a laptop at their desk, logged in to the prototype with a generic account like Student 1, Student 2, Student 3 in relation to their actual desks. This way they can save their work they collect, so we can review later, but with no names involved for the students themselves. (30 Anonymous Student Accts. to be set up in advance. Login scheme is email: [student1@student.com](mailto:student1@student.com) / password: student1...email: [student2@student.com](mailto:student2@student.com) / password: student2...etc through 30)
3. I will direct them on how to search and save stuff they find to their own "Collection". As a group, we will all type in Abraham Lincoln as was demonstrated earlier. And we will be selecting two images and a video to save to a collection entitled "Abraham Lincoln". (We can monitor the room and make sure they were all able to do this). Students should do this while following the presenter on the screen for the visual steps to find and then save to a newly named collection of Abraham Lincoln. Observers in the room can assist students where required.
4. Students should be given 5 minutes to find the two images and one video to save to their collection and then indicate their completion by raising their hand up momentarily and then waiting.
5. Once 5 minutes have passed, ask students finished to raise their hands again and notate numbers of those that have not finalized that task for data purposes, and to know where assistance might be necessary for the second task.
6. Depending on the teacher's needs, and the relation of this task to an existing assignment or project the class is already involved in and wanting to merge with this exercise, you can use one or the other of the following tasks and afford students 10 minutes to complete after receiving instructions:
  - a. Task A is simply having students individually pick a topic of their own interest or of a general area in which they've been studying and figure out a few search terms for each and run them in the prototype. (This could lend to topics of which there are few returns, or returns that are not very visually consumable to students, but can be managed with some assistance from the observers on generating search terms that might bear better results)
  - b. Task B is more interwoven to have some intentional results that are structured to be possibly more rich and diverse. This requires advance work with the teacher to create a series of topics aligned to their project, or subjects they have been studying in class. I suggest 4 topics, or a large subject that can be broke into 4 sub-topics. Assign a letter of A, B, C, or D randomly to students or student teams (some teachers might have students in teams of two). Students will be given a random topic or one of the related sub-topics to research. For instance, you might offer them the topics of American Revolution, Space Flight, Women Scientists, and Slavery, or you can take American Revolution and break it down to Famous People of the Revolution, Weapons of the Revolution, Life in the Colonies, Famous Battles and Locations of the War for Independence.
7. Students are to find 3-5 items that they find interesting and relevant to their topic and add them to a collection with the topic title. Again, this should be limited to 10 total minutes.

(This concludes the first part of the student testing, and if at 10 minutes all students are not done, have them indicate who needs more time so you can record the numbers not finished compared to those that have. Provide the students 5 more minutes, and if possible excuse those to break that did finish. Coming back a second day is possible, or at least taking a break prior to starting Part II is advised.)

Part II: (Should take about 15 minutes total)

1. Once students have a single collection of the 3-5 things they found interesting and tied to their topic, they will be asked to use the prototype to type in their own description of each thing they found and why they selected it. By overwriting the general data already provided. (probably one paragraph or so total). The prompt for this should be done first by the presenter using anything, but I like Abraham Lincoln's Wooden Campaign Parade Axe, 1860. (scroll down the images in the search <http://scems.navnorth.com/#search/gallery/Abraham%20Lincoln>). There is ample descriptive data there about this item and how it was used, and why his campaign managers thought it sent a good message to voters. You can amend it and the title and model for students how you are rewriting the description to be easier to understand in your own words.
2. Provide students time to get back into their accounts, access their collections, and then amend the data how they want. This should take about 10 minutes total. Once they are done, they can save and shut their computers lid and we will know they are done.
3. Once done, have a short, whole-class discussion on the process, a simple, what worked well, what didn't. What did you like, what was frustrating? Also, we should give them a simple survey as well with basically the same kind of wide open questions to make sure to get more respondents' ideas. Survey Monkey would work, and we could bring food and do the whole, "Once you are done, you can go to the back of the room, get 2 snacks and the code for the survey then return to your desk and finish the survey." ....or something like that.

\*Kids finishing the tasks exceedingly early can be merely asked to do a search on anything else of interest. This is particularly good for students that were made to search within a defined subject or topic area since it will also show observers the types of things kids want to look up when given access to Smithsonian online assets. Tell them they may make an additional collection as a way to expand their search, and add items to that collection so that we can review them later. (They are browsing the whole Smithsonian, so Space, Native Americans, the name of town or city, a famous artist, or movie, or the term Lunch Boxes, a favorite animal, or a topic they studied at some point this year in a different class, will all yield a bunch of weird results typically.)

\*Kids struggling to move through the activity should be helped directly with search terms, and direct support in selecting something and writing up their own description of the item. This isn't a test of their abilities, it is a test of the tool, so we don't want them struggling as if they are trying to achieve something and being tested as such. Ultimately, we will stop all kids at 30 minutes of search and collecting and writing regardless of where they are and let them all get a snack and finish the survey.

Observers: We want to have an observer for every 5 students independent of the Presenter. So 25 kids would precipitate a team of 6 (1 presenter / 5 observers). The presenter and the teacher should be able to roam all groups and notate observations as well from a more global perspective than the observers.