ABSTRACT
The interface for digital image selection is not optimized for the goal of selecting a set of images from multiple query results. Task analysis for image selection was conducted through interviews and observations as well as the study of previous research to identify the problem of the current interfaces and requirements for the new interface. This paper suggests an interface which supports three major tasks of image selection, search, view and select, based on the task analysis.

Keywords
Image selection, resources for education, task analysis, user interface

INTRODUCTION
In spite of the availability of digital images for educational purposes, interfaces for digital image selection are not optimized for users such as faculty, students and library staff. Task analysis for image selection in university courses such as Art History and Architecture was conducted to identify 1) existing image (especially slide) selection process, 2) problems with the current interface for digital image selection and 3) requirements for the interface for digital image selection.

METHOD
We interviewed professors and slide library staff who interact with images for educational purposes regularly. In addition, we observed how people select or use images in classrooms and a slide library. Previous research papers on the use of digital images for educational purposes were also referenced as additional resources [1] [2].

TASK ANALYSIS
Our analysis is targeted toward faculty members who use images for instructional purposes regularly. They select images, mostly slides, for classroom presentation, handouts used in lectures and homework assignments, and their own research. A broader target can include students who use images for learning and curator/researcher in libraries and museums.

These users select images in the slide library, from their personal collection of slides or books, or using digital resources available on the web.

Selecting Analog Images
A process of analog image selection at the slide library can be summarized in the following four steps:

1. Locate a specific drawer in the library by identifying the category of the slides the user is looking for
2. Go through slides in the drawer and pick up slides of interest. Use small light tables on top of the drawers to set aside selected slides. (Figure 1)
3. Collect slides from multiple drawers (on the different locations in the library)
4. Decide which slides to select on a large light table or with slide projector

Figure 1. Small light table as a buffer in selecting a set of slides

Users often know the physical location of drawers related to their expertise. So, they directly go to the drawer that is likely to contain slides they need. Each drawer has a label with category information of slides inside. Different colors of labels also provide a guideline on the organization of the library. If they need any assistance in locating slides, they consult with staff at the library who are familiar with the collection and the organization of the library.
Problems with Digital Image Selection

Digital images provide a way to search images by text descriptions assigned to each images. Users consider that the most important advantage of a digital image is its ability to accompany textual information.

While the text search provides a powerful way to find images that is not possible with analog images, the affordances of analog image selection are lost in digital image selection. For example:

- Hard to get an overview of available images or organization of images (in comparison with looking at drawers with color labels in the library)
- Difficult to return to the previous query or images seen before (in comparison with getting back to the particular drawer at the particular location of the library)
- Impossible to combine results from multiple query results (in comparison with collecting slides selected from multiple drawers)

Users’ goal of image selection stays the same. However, they cannot select digital images in the same way as they select analog images such as slides. In addition, the goal is to select a set of images rather than a single image. The interface for digital image selection is not optimized for this goal.

SUGGESTED SOLUTIONS

Task analysis suggests that the affordances of analog image selection should be provided by the interface for digital image selection while taking advantage of digital images. Three major tasks, 1) search for images by text query, 2) view a set of images, and 3) select a set of images for later use, should be supported in the new interface. Each task represents an area of the interface which supports the following functions:

- Search area: Type a query term to conduct a search. Retrieve previous queries by accessing the search navigation path.
- View area: View a set of images returned by a query or retrieved from a previously saved group. Change the arrangement of the images (e.g. changing the order).
- Select area: Set aside images of interest from View area and create groups of these images. Retrieve previously saved groups.

Process of Digital Image Selection

Using the new interface which consists of these three areas for three main tasks, a process of digital image selection can be summarized in the following four steps:

1. Conduct a search by keyword or retrieve previously saved collection of images or query in Search area
2. Select images of interest from View area and set them aside in Select area
3. Conduct additional searches as necessary while keeping the images already stored in Select area
4. Display all selected images in View area and decide which images to select by changing the arrangement of selected images as necessary

The process corresponds to the steps currently taken in selecting slides in the slide library. At the same time, it incorporates the advantage of digital images such as text search and saving a collection of images or a query for later use.

SUMMARY AND FUTURE WORK

The task analysis revealed the gap between the analog and digital image selection processes. The interface for digital image selection, which incorporates the affordances of analog image selection and takes advantage of digital images, was suggested based on the task analysis.

The suggested interface with three areas will be implemented as a web browser based interface. Before the final implementation, its functionality and interface will be refined through experiments with potential users (faculty, students and slide library staff) using various levels of prototypes (paper and computer).

In addition, interviews, surveys and classroom observations will be conducted during the early stage of development specifically to understand the different needs for various disciplines such as Art History and Architecture. Results of this additional analysis will be used to design a set of functions such as changing the view of images in the View area for a particular purpose, for example, side-by-side comparison of two images.

REFERENCES