Design Challenges
An initial design challenge we faced stemmed from the perspectives of the gatekeepers (educators) of the social context (school) in which the program will be implemented. This challenge revolved around the content. Since we recognized the need for the resource to be practical and useful in the classroom, we conducted a survey of teachers throughout the nation. The results demonstrated that the resource must frame visual literacy within traditional disciplines. Thus, our design integrates photographic messages with history. A challenge that persisted with this integrated structure was how to ensure that students grasped both visual literacy skills and historical content. Developing History was not designed to be the sole source of history content, but rather a unique supplement. Through a high level of engagement and carefully selected content in both areas, the design aims to ensure the desired learning outcomes. To address the challenge of ensuring implementation in sixth grade classrooms, the content presented meets both California and National standards in history and art.

A major design challenge we faced was determining how to present the information and address all the learning objectives in an effective manner. To some degree, our design attempts to teach visual literacy for photography, historical content on the Civil Rights Movement, the effects of digital manipulation and persuasion, and the ability to generate effective photographs that convey an intended message. While some goals comprise the realm of ‘enduring understanding’ and others can be categorized as component skills, the challenge of addressing all relevant aspects with the appropriate degree of depth was a struggle.

Determining the overall organization and structure of our complex idea was a design hurdle we overcame with persistent iterations. Initially our design followed a discrete organization in that the formal features were introduced and explored linearly. Photographic images were selected based on their formal features regardless of their place within the historical story. For instance, students would learn about contrast by analyzing a series of disconnected images with the history presented in chunks along the way. While the form seemed completely suitable at first, when we prototyped a few exercises on the computer it became evident that the history content was weak and disjointed.

To solve this problem, we decided to organize the images by historical stories or events. In this way, students would learn the complete story of the Montgomery Bus Boycott, for instance, while learning about contrast. Each tutorial on the formal features presented a specific historical story. Even though we understood that this organization was more complete, we were reluctant to accept it because in our minds, this organization prioritized history over visual literacy. In addition, the tradeoff with this organization was that it limited our choice of images available to teach a formal feature to those related to a specific event. For instance, all the Selma March pictures we chose needed to highlight a certain formal feature. We continued to wrestle: how could we do justice to history while remaining faithful to our primary goal of developing visual literacy skills?

Still not satisfied with this organization system, we explored the possibility of a conceptual organizational framework, closely following a narrative. ARTi, our learning agent, would engage students by requesting their help in compiling a visual narrative
of the Civil Rights Movement. ARTi would progressively present the historical content encouraging students to select images that represent key events and/or feelings. In this way, students would practice their interpretation skills in a problem-based format. ARTi would seize 'teachable moments' and explain how and why the image chosen is not descriptive of the certain event or emotion. Students would then participate in a sequence of interactive tutorials on the formal feature highlighted in the image they chose. This structure succeeds in effectively teaching the formal feature of subject and the introductory history content.