



PRESERVATION EDUCATION CURRICULUM



NORTHEAST
DOCUMENT
CONSERVATION
CENTER

CLASS 3 LESSON PLAN

Structure and Deterioration of Paper-based Materials

Overview

This class introduces basic concepts about the physical nature of paper-based collections. Students will examine the variety of materials found in paper-based collections and consider how these materials are made, how their inherent characteristics contribute to their deterioration, and the role external factors such as environmental conditions play in the deterioration process. Students will be encouraged to view materials not individually, but as parts of composite objects, understanding that it is not only the nature of paper that needs to be examined, but the interaction with other materials such as colorants, leather, photographic imaging materials, and adhesives. The lesson draws parallels between different types of materials, allowing students to discover similarities and differences between various types of objects. By learning to recognize patterns of deterioration and relating damage to types of materials, students should develop a frame of reference to evaluate materials beyond the specific information covered in class.

The lesson is divided into four parts:

Part I: Introduction. This section provides a brief survey of the types of materials likely to be found in libraries and archives, along with an introduction to the types of chemical deterioration that affect collections.

Part II: Component Materials. This section guides students through identification of the individual components of different types of collections. They learn the basic deterioration mechanisms of paper, inks, colorants, adhesives, and skin materials.

Part III: Composite Structures. This section builds on the knowledge students gained about component materials in the previous section. Several types of composite structures found in paper-based collections are discussed. These include bookbindings, photographic prints, and various types of reproductions, in which the component materials interact with each other (and sometimes with other nearby objects), contributing to deterioration of the object.

Part IV: External Factors. This section introduces the effects of climate, light, pollutants, storage, and handling on the deterioration of specific types of collections.

*Please note that photographic prints are covered in this class because they are paper-based materials. Photographic still images on film (e.g., negatives) are addressed in **Class 4: Multi-media Materials**. Cloth case bindings are covered in **Class 8: Treatment Options**, while binding methods are covered in this class.*