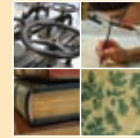




PRESERVATION EDUCATION CURRICULUM



NORTHEAST
DOCUMENT
CONSERVATION
CENTER

CLASS 4 LESSON PLAN

Structure and Deterioration of Multimedia Materials

The Lesson

Part I: Overview of Nonpaper Formats (30 minutes)

- A. Photographic materials: still and motion picture film
- B. Sound recordings: cylinders, discs, metal wire, and magnetic tape
- C. Audio and video magnetic media
- D. Commonalities and differences
- E. Cultural context

Introduce students to the composite nature and structure of each of the nonpaper formats and prepare for them a context in which to discuss the research and social values of these materials and technologies to our cultural heritage. Follow up this introduction with more specific information about each format, organized by technology, chemical and mechanical properties and stability, environmental conditions, use and handling, playback equipment needed, and reformatting options.

Part II: Photographic Film—Still and Motion Picture (45 minutes)

- A. Still Images on Film
 - 1. Technology
 - 2. Chemical properties and stability
 - 3. Mechanical properties and stability
 - 4. Best environment
 - 5. Storage and handling (in brief)
 - 6. Reformatting
- B. Motion Picture Film
 - 1. Technology
 - 2. Chemical properties and stability
 - 3. Mechanical properties and stability
 - 4. Best environment
 - 5. Storage and handling (in brief)
 - 6. Reformatting

Begin with still photography and discuss the history of photographic technology and the assortment of photographic processes that produced a variety of prints and negatives likely to be found in a library or archives. Highlight a few distinctive characteristics of the chemical properties and stability found in one or two process, as well as their mechanical properties and stability, to illustrate their

complex differences. Stress the need of a photograph conservator in order to determine the preservation and conservation needs of these materials. Include information about the best environmental conditions for photographic materials, proper storage and handling techniques, and reformatting options.

Likewise, present students with a brief history of motion picture film technology. Introduce students to the chemical properties and stability common to still photography and contrast their very different mechanical properties and stability. Here, too, note the need for a moving image specialist to identify film types, assess condition, and determine preservation needs. Include care, use, handling, required viewing equipment, and storage of motion picture film, as well as best environmental conditions and reformatting options.

In-Class Activities

- Case Study: The Media Resources Center (MRC), part of the Dellinger Community College Undergraduate Library, serves the instructional and curricular needs of the college's community and the individual study, scholarship, cultural enrichment, and recreation needs of students and faculty. The collection contains more than 12,000 film titles on 16 mm, VHS, and DVD. The MRC also has highlighted collections such as the Finehout Film Collection and the Ellen-Fairbanks D. Bodman Collection of Middle Eastern and Islamic World Films. The staff has already identified 162 deteriorating 16 mm films considered a high priority, as they are heavily used by faculty and students; however, a survey of the entire collection has never been conducted.

What ongoing preservation policies might students recommend to maintain this very important teaching collection? What recommendations would they make for the 162 deteriorating 16 mm films in particular?

- Case Study: The Flagstaff 16 mm Film Collection contains films related to astronaut training, equipment field tests, and geological expeditions. Most of the films in the collection were produced by NASA or the United States Geological Survey Center of Astrogeology Film Documentation Unit (USGS). USGS serves the nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life. USGS has become a world leader in the natural sciences thanks to their scientific excellence and responsiveness to society's needs.

Most of the films in the USGS collection relate to astronaut training and *Apollo* equipment testing done in Flagstaff, Arizona. This deteriorating film contains valuable information unavailable anywhere else. Students should make preservation recommendations to USGS. What formats might they consider other than 16 mm film? What experts might they suggest they contact? What questions should be asked?

Part III: Sound Recordings (30 minutes)

- A. Technology
- B. Chemical properties and stability
- C. Mechanical properties and stability
- D. Best environment
- E. Storage and handling (in brief)
- F. Reformatting

Present the history of sound recording technology and the various formats produced over time. Highlight their chemical and mechanical properties and stability. Storage, use, handling, and required playback equipment are key elements for students to understand, as well as optimum environmental conditions and reformatting options.

In-Class Activity

- **Case Study:** The bibliographer in charge of East European Studies has just accepted a collection of vinyl LP 45s and 78s. During transport the boxes were water damaged and some of the materials contained within also got wet, and there may possibly be mold growth. The bibliographer asks that you review the materials and do what you can to save them. He feels that this worthwhile collection will benefit both the East European Studies and the Music programs. While quickly reviewing the materials, you note that the vinyl records can be salvaged.

What actions might students take to salvage these records? What materials and supplies might they need? What recommendations would they make to the bibliographer about storage and usage of the records? Should a collection policy address this type of situation, and if so, how?

Part IV: Audio and Video Magnetic Media (30 minutes)

- A. Technology
- B. Chemical properties and stability
- C. Mechanical properties and stability
- D. Best environment
- E. Storage and handling (in brief)
- F. Reformatting

Present the emergence of magnetic media recording technology and the various formats produced over its relatively short history. Highlight the chemical and mechanical properties and stability of this media. Storage, use, handling, and required playback equipment are key elements for students to understand, as well as optimum environmental conditions and reformatting options.

In-Class Activities

- **Case Study:** The Stokes Archives contains a collection of three-quarter inch production tapes from a hit television series. The tapes come to the Archives shortly after production, so some are more than 25 years old. Preliminary assessment work has been done with the tapes, and it has been reported that they are starting to fade at the beginnings of the reel, some have splicing issues, and others have more complicated problems. These tapes are cataloged, and researchers, scholars, and students utilize them in a variety of ways. One other copy of the production tapes, in the same format, is stored at the production studio.

Ask students what process they would devise to reach a possible preservation recommendation.

- **Case Study:** The Reverend Doctor Craig Bolton Archives (RDCBA), located at the University of California, Berkeley, contains approximately 500 tapes on 7" and 12" reel-to-reel audiotape of the Rock and Psychedelic (1960–69) bands of San Francisco. This collection documents the rock and psychedelic music movement that began in the Haight-Ashbury district in the 1960s and quickly spread and gained popularity across the United States and the United Kingdom. The collection features the musical ensembles of bands including Jimi Hendrix, Soft Machine, Love, The Byrds, and Jefferson Airplane. Many of the musical works on these recordings have

not been commercially released, and many represent the early efforts of these songwriters and performers who then went on to solid careers. Preservation of the collection would provide access to this material, access that has not been available before.

- What questions should be asked?
- What options should be considered?
- What are the students' final recommendations?

Part V: Optical Media (20 minutes)

- A. Technology
- B. Chemical properties and stability
- C. Mechanical properties and stability
- D. Best environment
- E. Storage and handling (in brief)
- F. Reformatting

Describe optical media technology and the various formats produced to date. Highlight the chemical and mechanical properties and stability of this medium. Students should be introduced to storage, use, handling, and required playback equipment. Optimum environmental conditions and reformatting options are key elements for students to understand.

Suggested Graded Assignments

- Ask students to comment on the Web sites listed in the [Resources](#) for this lesson. How helpful are they? How accurate? How do they compare with one another? What additional information might have been included?
- Divide the class into groups and assign one or more of the case studies presented in this lesson outline. Groups should discuss what steps they would take to address the issues in the case study and present them to the class.
- Arrange for students to visit a library, archives, or museum with multimedia collections, interview a curator there, and produce a written summary. What specific types of collections are held, and what issues and challenges are of greatest concern to the curator?

Suggested Term Projects

- Create a detailed listing of a specific multimedia collection at the student's workplace or a local institution of interest, noting the types of materials included and the general condition of each category of material. Write a paper summarizing the problems seen within the collection. Suggest priorities for preventing additional damage and dealing with damage that has already occurred. Provide suggestions for storage, handling, use, environmental control, and reformatting (if appropriate).

Examples:

1. Photographic negatives and transparencies—note the types of materials included (e.g., glass plate negatives, film negatives, slides)
2. Motion picture film—note the various types included (e.g., 35 mm, 16 mm, 8 mm) in your collection, indicating which were produced commercially (and thus may be duplicated)

elsewhere) and which are unique recordings. For amateur films, make a listing of the events/activities documented to the extent possible.

3. Sound recordings—list the formats that are included (e.g., disc recordings, cylinders, reel-to-reel tapes, cassette tapes, CDs). In most cases, you will want to focus on unique recordings, rather than commercially produced recordings that are duplicated elsewhere. Where possible, include a listing of the events/activities documented in the tapes. If it can be done without damaging them, consider producing a written transcription of the information on the recordings.
4. Videotapes—list the formats included (e.g., VHS, Beta), focusing on unique recordings, not commercially produced tapes that are duplicated elsewhere. To the extent possible, include a listing of the events/activities documented in the tapes.
5. Magnetic disks, CDs, and DVDs—list all magnetic disks, computer CDs, and computer DVDs that contain unique digital data with long-term value. Provide a description of the format, the data contained on the item, and the hardware, operating system, and software required to access the data. Make a plan for periodically copying data with long-term value and migrating it to new formats as needed.