

PRESERVATION AND CONSERVATION OF INFORMATION MATERIALS

AIHQ 3212



Lecture 1

Introduction

PRESERVATION

- Denotes all actions relating to the protection, maintenance, restoration of information materials.
- It includes all measures taken to safeguard information materials.
- It is defined as the totality of measures involved in the protection of records and archives and other information materials against any form of damage or destruction.
- It is based on the principle that materials possess a physical form with three parts:
 - A **base** which supports the impressions.
 - **Impression** which has the message.
 - The **message** of information itself.

Examples of Preservation Measures

- Regular cleaning of walls, shelves, surrounding areas and fumigation of documents.
- Regular inspection of buildings, repairs, air conditioning, installation of firefighting equipment and monitoring of electrical equipment.
- User education on proper handling of information resources
- Regular cleaning and dusting information centres and good house keeping practices.

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- Michael cook(1999) asserts that preservation involves the following;

Examination; The preliminary procedure taken to determine the original materials and structure of an item and to determine the extent of its destruction, alteration and loss.

Restoration; The repair of an item when aesthetics and reproduction of the original appearance is more important than the preservation of the integrity of the item.

Maintenance; The daily care of records and archives, particularly in the current and semi-current records environment, when they are housed in offices or record centres: maintenance ensures the general protection

Role of Preservation in Information Management

To apply intervention measures;

- To protect information resources from damage
- To protect information resources from wear and tear.
- To protect information materials from deterioration arising from pollutants and environmental condition
- To slow down the aging process of information resources and prolong their life.

Conservation

- It is the intrusive protection of archival material, by minimal physical and chemical treatments necessary to resist further deterioration, which will not adversely affect the integrity of the original.
- Specific work done to protect information from damage and measure undertaken to repair damage.
- An aspect of the preservation program.

Types of actions in Conservation of Information materials include;

- **Prevention of deterioration** of materials which is called preservation.
- **Repairing damage** which is called restoration.

Restoration

- Refers to curative, rehabilitative measures taken on any information material that has suffered damage or deterioration in order to reinstate or restore its original form or surface.
- Involves direct intervention of repairing documents that has undergone deterioration.

Deterioration

- The process by which information materials lose their value to a point to which they cannot fulfill the functions for which they were intended.
- Loss of quality of documents.
 - wear and tear
 - Fading of documents
 - Plucking of pages
 - Destroyed binding.

Reasons for Conserving Information Materials

- Education and research purposes.
- Evaluation of how far we have gone.
- Posterity and historical agreements.
- Evidential values- any tangible one.
- Information purposes.
- Leisure and entertainment.

Determinants of Conservation of Information Materials

- Value of materials.
- Physical state of materials.
- Finances available and allocated.
- Appropriate tools/equipment.
- Personnel and appropriate skill on the materials.

Evolution of Writing Materials

- The invention of writing marked a major milestone in man's cultural development.
- Many cultures began to evolve from strictly oral traditions to written ones.
- Since the art of writing was discovered, nearly every form of writing material has been used.

Stone

- Stone was mainly used for writing on permanent monuments and public buildings.
- The writing on stone usually requires the use of hammer and chisel
- Stone is one of the oldest forms of writing material.

Metal

- Bronze tablets and copper sheets were used to provide semi-permanence and could be stored more easily than rock.

Wood

- Wood was used for temporary purposes and not many such tablets have survived, as the climate in most countries is not conducive to their preservation.

Wax

- An extremely temporary method of writing was to scratch letters onto wax tablets.
- These were thin wooden boards covered with a fine coating of beeswax.
- The boards could have small holes at one end that permitted a ring to be inserted allowing many sheets to form a flip book.

Ostraca

- Ostraca are broken sherds of pottery that have writing scratched onto them.
- Sherds were a good source of writing material because they were plentiful and easy to use.

Clay Tablets

- The message to be sent was first written while the clay was soft using a thin, sharpened tool to inscribe the letters.
- This tablet was then fired to harden it and make the message permanent.

Papyrus

- Papyrus is the ‘grandfather’ of paper.
- The thick reeds of the papyrus plant were peeled and then cut into flat strips.
- These strips were laid out on boards in a criss-cross weaving pattern and gently beaten with a wooden mallet.
- The result, after drying, was a very strong, flat writing surface that could be rolled up.

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- Not only was it a versatile writing material it was also very light.
 - For storage they were rolled to form scrolls.
 - For practical purposes a long scroll was somewhat inconvenient.
 - To be read, a scroll had to be unrolled as it was read.
 - Because of this awkwardness, scroll length became standardised.

Paper

- Credit for the invention of paper is generally given to the Chinese more than 2000 years ago.
- At first, the Chinese used the hemp plant or the inner bark of the mulberry tree for fiber.
- Later, they found that good papermaking fibers could be obtained by pounding rags, rope, or old fishing nets into a pulp.
- Early Chinese paper was too coarse for use in writing. They used it for wrapping and clothing.

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- Much improvement took place , that is, include thermo mechanical pulping, synthetic wires and felts, twin-wire machines, and the use of computers to control pulping and papermaking operations e.t.c
 - Today paper is the cornerstone of communication

**Paper making,
Types and techniques of paper
making.**

Paper

- Most commonly used material or document in archives, libraries and other information centers.
- Paper probably derived this name from papyrus.
- Early accounts show that records were manufactured from rags, silk, and from rice fibers.
- Paper made from rags resulting from linen and cotton at later days was either hand made or machine made paper

1. Hand –Made Rag Paper

- Was one of the earliest writing materials of all times.
- In this case, The rags were treated in flour mills and later paper mills usually from the banks of rivers.

- The Process involved;

- Sorting rags of different materials and removing dust.
- Soaking and fermentation.
- Separation of fibre and milk pulp through beating
- Dilution of paste into suitable consistency.
- Pouring of paste on a linen fabric stretched on a wooden frame, later replaced by silk threads and then metal mesh.
- Drying, removal from mesh, cutting to size & flattening.
- Result is a hand made rag paper

Characteristics/Advantages of Hand-Made Paper

- **The paper was strong;** This is attributed to the cellulose fibres which are strong and multidirectional hence giving the paper resistance to wear and tear incase of any mishandling.
- **The paper had a lot flexibility and bonding;** This is due to the presence of water which was never removed.
- **The paper had better coloration;** This is because no chemicals were added to bleach the paper hence no acids introduced rather. In this case, only raw materials that were white in colour were being used.
- **Had a smooth surface and good retention capacity;** This is alluded to the sizing that was done.

Disadvantages of Hand made paper

- The paper had a lot of water marks.
- The paper had high lignin content and acidic substance found in cellulose that was not removed during making process.
- The paper had high acidic levels.

2. Machine –Made paper

- Machine –making process involved two main procedures;
 - i. Mechanical process**
 - ii. Chemical process**

i. Mechanical Process

- In this procedure, the machines are used to crash the logs into small fragments known as chips.
- The process involves ;
 - Separation of fibres by physical abrasion- It involves the logs of wood being pushed against large iron or steel beaters.
 - The fibres are then loosely separated, washed and drained in a machine paper called Hollander.

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- Paper making takes place in the Hollander machine and there are endless belts and wire screen where paper forming process takes place.
 - The sizing process takes place and loading of paper is accomplished.

Characteristics of Paper Made from Mechanical Process

- The fibres are fragmented because force is used to separate them.
- Fibres produced are short, broken and unevenly distributed.
- The paper has low whiteness .This whiteness is limited to the colour of wood from which it is made.
- The paper is subject to colouration especially paper from brown wood pulp
- The paper has low strength because the ground wood pulp fiber are relatively short and have a moderate ability to hold to each other.

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- The paper is highly susceptible to deterioration because it contains lignin and other wood impurities which were not removed .
 - Paper produced has a very short life span .e.g paper used by standard, Nation, Wrapping e.t.c

ii. Chemical process

- This process involves the use of chemicals in making paper.
- The process involves;
 - Bringing of woods into the paper industry and baking the logs.
 - The logs are then taken into a chipper (the machine that cuts wood into pieces.)
 - The chips are then put into a series of tanks containing calcium hydroxide, sulphuric acid, chlorine, and sizing agents.
 - This is followed by bleaching, sizing and loading of the paper processes

Advantages of Chemically-Made Paper

- The paper is pure.
- This is because most impurities are dissolved in chemical substances.
- Lignin is also dissolved hence eliminated making the paper less susceptible to deterioration.
- The paper is strong since it has got long strong fibers.

Disadvantages of Chemically-Made Paper

- The paper is exposed to acidic chemicals.
- This is due to the sizing and bleaching agents to which it is exposed.
- Also , while cooking wood, the use of sulphur which reacts with water forms an acid compound.

Other Types of Paper

1. Recycled Paper

- This paper is obtained from wood in the form of recycled paper. Waste paper is crushed in water , bleached then used in making paper.
- Such paper is of poor quality and has very low cellulose content.
- The paper also has short fibers and contains impurities found in wood.

2. Art Paper

- This paper is usually coated with clay and this makes the paper opaque and smooth, making it suitable for printing.
- However the fiber base is of low quality and the additives are soluble in water making repair of such paper difficult.

3. Sulphurised Vegetable paper

- The paper is mainly for Architectural and engineering drawings and plans.
- It is relatively transparent as a result of sulphuric acid added to the pulp.
- The paper is highly hygroscopic and acidic and therefore it is irreversibly deformed in damp conditions.

Strength and Durability of Paper

The strength of paper is determined by the following factors in combination:

- The strength of the individual fibers of the stock and the average length of the fibers.
- The inner fibers bounding ability which is enhanced by beating and refining action.
- The structure and formation of the sheets.

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