

THE CINEMA MUSEUM, MAXEVILL, FRANCE

The physical and physiological principles of photography and cinema

Etienne Bolmont and Francis Colson

Part 1 Basic Information

Institutions involved

I.U.F.M. de Lorraine, rue Paul Richard, 54320 Maxéville, France. Contact persons: tel +33 3 83 17 68 68, Etienne Bolmont, etienne.bolmont@lorraine.iufm.fr, Francis Colson, colsonf@club-internet.fr. The *I.U.F.M.* de Lorraine is a training institution linked with the Universities of Nancy and Metz. Its mission is to train primary and secondary school teachers, both prior to and during service, in all subjects and in educational research.

Musée du Cinéma et de la Photographie, 10 rue Georges Rémy, 54210 Saint Nicolas de Port, France. tel. +33 3 83 45 18 32. museecinemaphoto@free.fr. This small museum documents the history of the image, photography and cinema. Photographs and video recordings are allowed.

Four classes under the coordination of Anne-Marie Leygonie, pedagogical counselor to the district of Essey; Anne-Marie.Leygonie@ac-nancy-metz.fr:

- *Ecole de Lenoncourt*: Ecole primaire, 13 place Mairie, 54110, Lenoncourt, France. Contact Person: Alain Barthes, ecole.lenoncourt@wanadoo.fr.
- *Ecole de Sorneville*: Ecole primaire 24, Grande Rue, 54280, Sorneville, France. Contact Person: Bernard Pecqueux, ecolesorneville@wanadoo.fr.
- *Ecole d'Application' d'Essey* : Ecole d'application, 6 rue Roger Bérin, 54270, Essey les Nancy, France. Contact Persons: Michel Manonviller, m.manonviller@ac-nancy-metz.fr, and Gilles Sapirstein, gilles.sapirstein@ac-nancy-metz.fr

Aims

Our purpose was to develop the students' understanding of the physical and physiological principles of photography and cinema. The schools proposed two projects that fell under the same theme and as such, complemented one another. The schools of Lenoncourt and Sorneville proposed to study how a picture forms in a camera, while the School of Essey suggested a project on the creation of a moving picture from fixed images.

Materials

In the classroom or in the museum:

- New or old cameras brought by the pupils and the teacher in the classroom or accessible in the museum. Material for a pinhole camera: cardboard, scissors, queen cell punch or tacks, tracing paper. Bromide paper and photo developing products.
- A super-height projector or viewer. Zoetropes and other optical toys (to be handled) that give prominence to retinal persistence. Material for building folioscopes, zoetropes, thaumatropes, phenakistiscopes...

Part 2 Description of the project

Preparation of the visit

1st project

teacher	pupils
Launch the project with a discussion: How does an image form in a camera?	Draw pictures to express their initial ideas about how an image forms in a camera.
Direct the construction of a pinhole camera.	Build the object.
Refer to the object in order to confirm or contest the students' initial ideas.	Use the camera and observe the effect (picture inversion on tracing paper).
Explain that the purpose of the museum visit is to observe early cameras working on the same principle.	

2nd project

Presenting a warm-up activity: analysing how a super-height viewer works.	Object observation, describing the produced effect.
Seeking first explanations.	Questions and answers on film structure and on movement effects. Writing in order to identify misconceptions and concentrate on new problems.
Confronting answers.	Arguing and defending the various points of view.
Justifying a visit to the museum.	What do we want to discover in the museum? Essential objects for technical understanding, with a respect of chronology in presentation.

Visit to the museum (2 hours)

Organisation

Preliminary visit and discussion with a museum educator in order to gain confidence with the resources and to define the visit aims with reference to the educational project.

Contents / activities. Visit to the areas of the museum where the most pertinent objects are exposed: old cameras, box cameras, optical toys, first movie projectors.

The museum collections contain many other interesting objects but without specific link with the project. The visit may allow their discovery, which could contribute to arouse new questions and would strengthen the cultural dimension of the visit. Children observe, handle if possible, and document any comments.

Follow-up work (in the museum and/or in classroom)

Scientific/technological approach adopted

- Activities and visit synthesis. Constructions and experiences: improving the pinhole camera with a "photogrammes" lens or sunprints with cyanotype paper.
- Work on retinal persistence, experiences and constructions: thaumatropes... conclusion.

Interdisciplinary aspects

- Technology: constructions, objects analysis, use of audiovisual material.
- Oral and written expression: reports, explanations, movie screenplay.
- Sciences: eyesight, retinal persistence, optical illusions, properties of photographic paper.
- Geometry: symmetry.
- History: history of inventions.

Conclusions

For the creation of movies three things need to be invented:

- Photography: camera and developing techniques (project 1).
- Moving objects films: obtained by the creation of fixed photos sequences on a clear support (project 2).
- Projection of these pictures (project 2).

Evaluation of pupils

- Organising a visit report, in order to publish it in the school diary.
- Dialogue between classes.

Obstacles

- Limited consideration of school requests by the museum staff.
- Some objects in the museum don't work.
- Limited access to objects.

Facilitators, innovative aspects

- Great variety of objects allowing synthesis.
- Old objects are more within the reach of pupils than new ones.

Appendix

- Materials.
- Activity sheets.
- Pictures.
- Report of pupils' reactions after the visit.