

CHAPTER SEVEN

ACTIVITIES IN THE MUSEUM VAN DE SPEELKAART IN THE CONTEXT OF THE FLEMISH CURRICULUM FOR ELEMENTARY SCHOOL

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7.1 Introduction

Taking as a basis the Flemish curricula for elementary school and their aims towards the education of pupils between six and twelve years old, we propose five activities to carry out in the Museum van de Speelkaart (Museum of playing cards). However, these activities can be the ground/the stimulus for the development of work by teachers and/or museum educators in any science museum. The aim of this chapter is to propose a methodology of work and an understanding of the ways in which a museum can be used as a multidisciplinary resource.

7.2 Science in the Flemish elementary school curriculum: *'Orientation in the world'*

The Flemish government works with a decretal list of goals that have to be reached by the end of elementary school. On the achievement of these goals depend both school subsidies and certification. *'Orientation in the world'* is one of the *foci* of the goals. Reality – the world – is subdivided in different domains: subsistence, society, techniques, nature, time, space, music, etc. An introduction to scientific education is mostly found in the domains of geography, biology and technology. Pupils' work within scientific education aims to encourage them to:

- a) experiment with materials, classify them and identify changes;
- b) research physical phenomena, and test their own predictions;
- c) use their knowledge of materials and their knowledge of construction, preparation and principles of movement when they make a construction or preparation;
- d) carry out personally a simple visual plan;
- e) use their knowledge and skills to prepare, take down or build a construction;
- f) appreciate the positive results of technical evolution;
- g) examine and decide which objects are applications of levers, pulleys, lenses, gearwheels, bearings, etc.;
- h) decide and report which source of energy is used for production, for transport; make connections, make systems work, for communication;
- i) experience and report in which way and what materials objects of different types are made of;
- j) evaluate a found solution;

- k) observe in an accurate way using all their senses;
- l) use sources of information in an accurate way;
- m) compare their own method with those of others and make judgements;
- n) order, analyse and classify information;
- o) order according to one criterion which they choose;
- p) categorise on the basis of common characteristics or properties;
- q) report an observation they made during a demonstration, a guided walk, an experiment using words, drawings, math tables, graphics, etc.

7.3 Aims and objectives of the curriculum

Apart from the general aims set by the Flemish government – which every school is required to meet – additional curricula are devised by the different school networks, the objectives of which often vary. With regards to science education in particular, independent (catholic) schools, communal schools and official (governmental) schools set their own goals, but those do not present strong differences.

Pupils are introduced to the scientific approach within *nature and geography*. They experiment with materials from their own world; research natural phenomena; learn and understand materials and the physical aspects of their environment. This is the basis for studying physical conditions, colour, solvability, pressure, inflammability of common materials, as well as learning to examine physical phenomena and to test their own predictions.

On the other hand, in *technology*, pupils learn about elementary technical principles (such as strength, equilibrium, etc.). They use these insights to perform simple technical acts, such as put things into motion or deconstruct them. They study constructions, objects or products made of certain (raw) materials; learn the relationship between energy and production, or the use of certain instruments for improving human skills, the improvement of instruments themselves on the basis of scientific and technical principles. Process is important in this case: experience the problem, formulate a solution, devise a solution and execute, experiment the product and evaluate.

7.4 The Museum van de Speelkaart

The Museum van de Speelkaart hosts a rich collection of printing-presses which show the evolution of printing techniques from the invention of printing in the 15th century to the 20th century. The Museum also has a great variety of finishing-machines used in printing, and one of the richest collections of playing cards in the world.

The Museum offers many stimuli for discovery learning and work by the pupils, such as the steam-engine still operating in a specially build ‘steamhouse’ or the playing cards collection. Schools can combine a visit to the collections with activities in the workshop or to the auditorium of the Museum equipped with all kinds of multimedia-tools.

The Museum provides trained museum educators who help pupils during the visit, but the presence of the teachers is requested in all cases. Teachers have also the possibility to attend a day-long in-service training course which is devised by the Museum in cooperation with the teacher training department of the Hogeschool Kempen. When teachers apply for a visit they are strongly invited to attend the training course, focusing on creative tools, using the workshop, preparing the visit, follow-up work, integration of contents etc.

Apart from the educators, the Museum has a reliable team of old factory workers who are available for guidance and extra information on the exhibits. The presence of those specialists evokes the feeling of a “living museum” since most of them worked in the very important printing industry of the town. In certain domains these guides give extra value to a Museum visit for a school. They are not only technicians but also witnesses of the past in a fast-changing industry.

The Museum, in cooperation with the teacher training department of KHK-HGT devises educational material in museum-boxes, which is sent to schools offering the possibility to bring the Museum into the class.

7.5 Activities in the Museum van de Speelkaart

Visits to the Museum and activities therein are a challenging way for developing science teaching. They aim not only to keep the pupils busy through a ‘hands-on’ approach; but also to turn the ‘brain on’. The ‘confrontation’ with the exhibits should be part of a wider learning process.

The activities proposed below, although focusing on technical and scientific topics, should be made part of multidisciplinary teaching projects in primary school. In other words, on the basis of science and technology-oriented issues, pupils could also work on history, biology, geography, mathematics, and all kinds of creative activities.

On the other hand, the following activities should not be bound to be carried out only at the Museum van de Speelkaart.¹⁶ Teachers should make creative use of the guidelines and where needed use other museum as resources.

7.5.1 Motion

The activity *aims* to:

- a) help understand and emphasise that these exhibits are applications of levers, pulleys, wheels, gearwheels, bearings;
 - b) offer examples of applications of levers, gearwheels, pulleys etc. in children’s everyday life;
 - c) make use of a lever, pulley, gearwheel, a bike, etc. to improve pupils’ own skills;
 - d) establish and report that wood, coal, gas, oil are fuels that can be transformed into energy;
 - e) stimulate research in various sources on topics such as early inventors like Leonardo, Gutenberg and James Watt.
- *Exhibits to use*: Printing press and steam engine;
 - *Applications* in children’s environment: bicycle, all kind of transport, mixer, etc.;
 - *History*: printing press (15th century), Leonardo (15th c., 16th c), steam engine (16th c).

In the Museum van de Speelkaart machines can be found in the Museum workshop and explored by the children, who can also build their own ‘creative’ machines, using for example old materials. The Museum workshop offers the opportunity to work using a variety of materials and facilities not found in the majority of schools. Pupils can also

¹⁶ These activities have been carried out with a number of elementary classes as research in the context of the European project during the first phase of the project (2002).

use commercial building kits (different brands are for sale) and try to make their own machines 'move'.

Follow-up work and development of a report can be made in class after the Museum visit.

7.5.2 Pressure

The activity *aims* to:

- a) stimulate experience and illustrate that technical skills and form of the body are the base of well-known instruments;
 - b) show how man refined his body as an instrument by inventing and using new machines;
 - c) report how physical phenomena can be registered and measured;
 - d) bring various inventions on the time-scale.
- *Exhibits*: Various presses, such as an old screw-press used for wine and paper-making, and/or a press with knee-joint;
 - *Applications* (of pressure and its enforcement): all kinds of printings, a balance, fingerprints, the print of lipstick on a face, stamping (imprints), etc. All these applications can be explored in the Museum workshop using the material in the pressure-exploring box. A very interesting exploration can be done on the 'mirror'-effect in the printing process;
 - *History*: Using illustrations of old presses (wine, paper, printing, etc.) discussion can be made about the time scale.

7.5.3 Colours

The activity *aims* to:

- a) carry out simple experiments on light and colours in graduate phases: formulate a question, make predictions, plan and execute an experiment with one variable factor, report the observations and establishments, interpret results and formulise a conclusion;
 - b) observe the exhibits focusing on techniques and materials used in pieces of art and craftsmanship.
- *Exhibits*: Examples of coloured and black and white printings, playing cards, a movie showing a card-trick with coloured cards, etc.;
 - *Applications*: All kinds of colour printings, colour TV, coloured film, etc. In the Museum workshop pupils can carry out experiments using an overhead projector, coloured filters, rasters, dark and light (Braille replacing colours). They can also experiment by *making* colours and *mixing* colours;
 - *Follow-up work*: After the visit the pupils can create and paint their own playing card using only the basic colours. Very nice effects can be obtained with ceramic tiles as a printing-tool and different pigments.

7.5.4 Materials

The activity *aims* to:

- a) stimulate experience and research on materials used for making an artefact;

- b) show that both materials and suitable connections are important for the strength and the use of a construction;
 - c) make distinctions between natural and artificial materials.
- *Exhibits:* Various sets of cards, presses, engines. A great variety of materials: steel, iron, wood, paper, cardboard, textile, leather, ivory, bark, rubbish, plastic, glass, etc.
 - *Applications:* Each material has its own applications depending on function, strength, cost, beauty; and a suitable way for being connected to other materials: glueing, screwing, nailing, etc. In the Museum workshop children experiment with the techniques and the materials found in the exhibition rooms. Pupils judge the properties of the materials and the suitable connections.
 - *Follow-up work:* Construction of an exhibit using cards, PVC-bottles, matches, straws, metal, etc.

7.5.5 Observation and perception: “Real or unreal”

The activity *aims* to help pupils:

- a) observe in an accurate way;
 - b) ask clear questions;
 - c) make conclusions after a series of hypotheses and their confirmation;
 - d) experience that truth is not the same as perception;
 - e) experience and express how artists solve problems in creative and original ways.
- *Exhibits:* various tricks with playing cards, shown in a movie. Special cards for magicians, etc.;
 - *Applications:* It is possible for people to observe things that are not real. Our ‘perception’ depends on customs, psychology, preference, brains, movement, diversion, even gender;
 - *Follow-up work:* learn different tricks with cards. Some of them can be based on diversion, fast movements, psychology, etc. Pupils can do a magical show with these tricks.