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The programme of educational activities implemented as part of the project “Maritime Cultural Heritage of Poland and Norway. Exchange of experience and best practice. The project of preservation and promotion of material and non-material cultural heritage related to the boatbuilding industry”.

Introduction. The programme of educational activities aimed at children and youth at the National Maritime Museum in Gdańsk in boatbuilding and rope making has been based on the experience of our museum staff obtained during two fourteen-day training workshops which took place in Hardanger Fartøyvernssenter in Norheimsund in October and November 2013. The knowledge gained there has been consolidated and transformed into a series of concrete educational proposals. It occurred following bilateral consultations, and above all during the working visit of the Norwegian delegation to the National Maritime Museum undertaken in March 2014. The agreed upon proposals make up the core of the educational programme, which will commence in the form of a series of lessons and museum workshops in Autumn 2014 at the two branches of the NMM – the Maritime Culture Centre in Gdańsk and the Vistula Lagoon Museum in Kąty Rybackie.

Gaining experience. As part of the project “Maritime Cultural Heritage of Poland and Norway...” the staff of NMM attended fourteen-day training workshops in boat building and rope making at the Centre for Preservation and Conservation of Historic Vessels (Hardanger Fartøyvernssenter) in Norheimsund (ca.70 km from Bergen). This facility was established in 1984 as a division of Hardanger and Voss Museum. Its main objective is to conserve and renovate wooden historic vessels as well as building and fitting out new boats using traditional boatbuilding and rope making technologies. The first training course focussed on rope making – its history, development and its application in modern times. On a practical level, the course participants became acquainted with the basic techniques of preparing the



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rigging for a boat several meters long; they learned how to recognize the different kinds of raw materials for the manufacture of ropes and how to twist together a three-strand rope of approx. 80 metres. Working in a special ropewalk the team of NMM staff made approximately 240 metres of hemp rope of varying diameters. The second training course focussed on boat building. The training consisted of workshops (among others) devoted to: drills used in traditional boatbuilding, wood drilling techniques as well as methods of selecting trees growing in the forest, in terms of their suitability for subsequent manufacture of various boat parts. The ultimate goal of the training was to learn the traditional techniques used in building a 5-metre boat powered by sail and oar, of the Strandebarm type, typical of the Hardanger province. The staff members of NMM had an opportunity to work in a professionally equipped boat building workshop, learning how to shape the keel correctly and how to join the stem and stern posts to it using traditional boat building tools. Both of these training courses in Norway have been very well prepared and technical supervision was provided by experts from the Hardanger Fartøyvernssenter in Norheimsund.

An innovative concept of museum education. The contemporary museum is no longer only a temple of knowledge with hundreds of exhibits on display, to be passively admired through the thick glass of display cabinets. It has become a place of recreation and entertainment, an attractive destination to spend one's leisure time. It is also a modern education centre – a space where learners have an opportunity to experience (touch) living history and reconstruct it by means of various interactive techniques. Until recently the principal didactic function of museums consisted of educating society using exhibits and museum collections. Contemporary museum education goes much further – learning and instruction take place which also utilize additional knowledge acquired by the educator, who then conveys it in an attractive, often unusual way. The educational role of contemporary museums should therefore concentrate on generating incentives for interaction with the space or exhibit. The educator's primary concern should be maintaining high levels of learner interest in the topic during the lessons or museum workshops, since each child is a unique individual with individual expectations. Hence knowledge transfer should be varied and diversified, combining lectures (presentations) with practical activities carried out independently by lesson participants. This combination is a determining factor in the appeal of museum education programmes.



The educational programme in boatbuilding and rope making at the National Maritime Museum in Gdańsk – main objectives. The museum lessons and workshops developed as part of the project “Maritime Cultural Heritage of Poland and Norway are aimed at learners at the primary school and junior high school level, who are 10 to 16 years old. The lessons comprise of two main units or themes: boatbuilding and rope making. Both will be held simultaneously at two venues of the NMM - the Maritime Culture Centre in Gdańsk and the Vistula Lagoon Museum in Kały Rybackie. Educational facilities available at each venue and the content of their exhibitions determine their specific character and require the preparation of a separate schedule of classes to be conducted there. The prepared classes will take the form of lessons (Gdańsk) or museum workshops (Kały Rybackie). In both cases the emphasis will be on interactive methods of knowledge transfer. With this goal in mind traditional lecture format (multimedia presentations) will be used, as well as worksheets for independent work and “hands-on” manual activities of all sorts, which focus on the use of tools and materials specific to each theme. Classes will be held in the cycle format (during the school year) in the mornings and will last from 90 minutes (Gdańsk) to 150 minutes (Kały Rybackie). All the staff conducting the classes received their training in Norway and all have appropriate knowledge in their area of interest.

MUSEUM LESSONS AT THE MARITIME CULTURE CENTRE IN GDAŃSK

Lesson No.1- The secrets of the boat builder's workshop

Age group – primary school (grades 4-6), junior high school

Lesson duration – 90 minutes

Maximum group size – 30

Class venue – the lesson takes place in a multimedia-equipped classroom (computer, projector, screen), with a large space for teaching aids to be laid out (tools and boatbuilding materials). At the end of class, participants are shown the “Boats of Peoples from around the World” exhibition.

Classroom layout – on the floor (covered with plastic foil) an old sail has been laid out



A group of learners are seated. The educator begins the lesson, conducting it according to the lesson plan below:

Part I – introduction

- 1) Welcome. A few words about the Polish-Norwegian project (Norwegian achievements in the context of maintaining boat-building traditions)
- 2) Who is a boat builder? Associations that the profession boat builder brings to mind. Learners attempt to define the category of the boatbuilding craft.
- 3) Boat builder's workplace – is it only the workshop? The educator presents photos of large shipyards that build sea-going ships and of the interior of a boat building workshop, and also of tree felling work in a forest.
- 4) When did this profession originate – in the past or present-day?
- 5) Educator asks the learners whether they know of any other ancient occupations, which are worthwhile preserving for posterity? Next he asks which olden day profession they would choose for themselves? (for example blacksmith, shoemaker, chimney sweep, cooper, boat builder, rope maker).

Part II – boat building materials

- 1) Which materials can be used for boat/ship building? Learners mention some examples of materials and discuss with the educator which of them is the essential material used in traditional boat building.
- 2) Why use wood? The advantages and disadvantages of this material.
- 3) Which tree species are you familiar with? After listening to the learners' replies, the educator lists the tree species used in boat building and shows that in both countries (Poland and Norway) the same wood species are utilised.
- 4) How to identify tree species? Appearance (bark, branches, leaves), colour and smell. Educator introduces pictures of various species of trees growing in the forest – the students learn to identify them.



Exercise. The educator divides the class into teams consisting of several members. On the floor there are specimen of various wood species (eg. birch, pine, beech, oak, fir, willow). Each team gets one specimen and must collect the remaining specimens of the same species.

- 5) Anatomy of a tree – with the aid of photographs and drawings the educator discusses utilization of various tree species as well as fragments of trees (crooked timber) for different boat building purposes (eg. an oak wood keel, pine or oak hull planks, naturally curved oak wood rowlocks, fir mast, teak decking on the larger sailboats).
- 6) How to estimate the age of a tree? Dendrochronology – the educator introduces the method of dating wood.

The second most accurate way to estimate tree age is to count the annual growth rings.

Exercise Learners count the growth rings in a horizontal cross section cut through the trunk of a tree – they identify the older and the younger tree.

Junior high school learners – the educator distributes specimens of various tree species to each team. Learners are given tracing paper and pencils. The tracing paper is placed over the cross section of the tree and a rubbing of the tree rings is made using a pencil. Learners count the rings and estimate the age of the tree.

- 7) The educator checks the completed exercise.

Part III – Boat Builder's tools.

- 1) The educator presents photographs of boat building workshops and boat builders at work.

Exercise. The worksheet contains contemporary and traditional boat building tools – learners must select the traditional tools.



- 2) The educator checks and discusses the completed exercise.

Exercise. Each team receives various boat building tools (for ex.: plane, drill, hammer, clamp, peg, rivet) and must decide what are they used for in boat building. After a moment for reflection the educator arranges photographs on the floor showing various boat building tasks and each team chooses a photograph which matches their tool.

- 3) The educator checks and discusses the completed exercise.

Part IV – boat building methods.

- 1) Learning the essential terms of boat construction. The educator presents a drawing or a photograph which illustrates the boat building process where the most important elements have been marked with arrows (keel, stem and stern posts, planks, frames).
- 2) Educator introduces the most frequently encountered challenges in the context of boat building and discusses methods of problem solving (eg. keel shaping, fitting the stem and stern posts, bending the planks, drilling holes, joining the planks, fitting the frames).
- 3) What does a boat builder need a building pattern for? Its function is discussed here.

Part V – traditional uses of boats.

- 1) Learners are asked to consider, whether boats that have been built using the traditional methods are still being sold and used worldwide? Why is this the case – what do you think?
- 2) What are (or were) the traditional boat uses? Learners consider the question and give their answers; this is followed by the educator presenting photographs of the diverse functions of traditional craft (fishing, transport, sport and other uses).



- 3) Educator takes the learners to see the “Boats of Peoples from around the World” exhibition, with its selection of several dozen traditional boats from around the world.

Exercise. Learners have to complete a table with the most important characteristics of selected boats – material, propulsion type, country of origin, uses.

- 4) The educator checks and discusses the completed exercise.
- 5) Conclusions, closing of class.
- 6)

Lesson No.2 - *In a ropewalk*

Age group – primary school (grades 4-6), junior high school

Lesson duration – 60 minutes

Maximum group size – 30

Class venue – the first part of the lesson takes place in a multimedia-equipped classroom (computer, projector, screen), with a large space for teaching aids to be laid out (rope making materials). Following this the learners proceed to the conservation laboratory, where a rope making machine has been set up. At the end of class participants attend the “Boats of Peoples around the World” exhibition.

A group of learners gets seated. The educator begins the lesson, conducting it according to the lesson plan below:

Part I –

- 1) Introduction – the educator proves that rope making knowledge developed alongside the invention of the first tools.
- 2) A short story (presentation of drawings and photographs) of how people discovered that plant or animal fibres twisted together yield a bundle that can withstand a great load.



- 3) What were the first ropes used for? Learners take a moment to consider the question and give their answers. Then the educator talks about building homesteads, simple machines and great sailing ships.
- 4) The educator points out that the traditional rope making knowledge has never vanished and it is still used at present, although rope made of natural materials (such as hemp, flax, jute) is often hard to find.
- 5) Ropes in our environment – learners reflect and provide examples of contemporary rope uses. The educator presents photographs and discusses specific examples (eg. the netting used in a soccer goal, electrical cables).
- 6) Materials used in rope making – learners take a moment to think and then list the materials that can be used for rope making.

Exercise. The educator divides the class into teams consisting of several members, then he distributes samples of selected materials used in rope making (eg. dried plants, strips of bark, flax, synthetic materials).Learners identify and name the individual materials.

- 7) The educator checks and discusses the completed exercise.
- 8) Traditional methods of rope making – the educator presents drawings and photographs and discusses the most important stages of the rope maker’s work in the ropewalk – he also mentions the most important types of rope and the different rope construction patterns.

Part II

- 1) The educator takes the learners to the conservation laboratory, where a rope making machine has been set up.
- 2) Learners familiarize themselves with the construction of the rope making machine and with the equipment in the ropewalk where the rope will be twisted.



- 3) Learners, while listening to the educator's instructions, produce unassisted, a section of rope several meters long out of shoemaker's twine or cotton fibres. The rope is given to the teacher as a souvenir of the rope making workshop at the museum.

Part III

- 1) The educator and the learners attend the exhibition "Boats of Peoples from around the World". The educator draws attention to various kinds of rope and discusses them. At the exhibition following the summaries, the class is concluded.
- 2) The educator says goodbye and invites the learners to see the exhibition on their own (under the teacher's supervision).

MUSEUM WORKSHOPS AT THE VISTULA LAGOON MUSEUM IN KAŁY RYBACKIE

Due to the fact that the entire staff of the Vistula Lagoon Museum will be involved in the workshops, the venue shall remain closed to the other visitors for the duration. Workshops must be booked in advance.

Workshop No.1 – *Open air boat building- and rope making workshop* (boat building- and rope making workshop with elements of rowing)

Age group- primary school (grades 4-6), junior high school

Workshop duration – 150 minutes

Maximum group size – 30

Venue – the workshop takes place outdoors (the square in front of the museum)

Learners arrive with minimum 3 minders (1 minder per 10 persons). The session begins in the square at the meeting place, where the participants are introduced to the educators and informed of the course outline (safety rules). Educators divide the class into four teams of several members each. Each group takes turns participating in the various boat building, rope making and rowing activities, taking place at separate workstations. The ultimate goal is to



demonstrate the links that exist between the different stations, ie. between the activities that are being carried out there. The workstations have to be carefully positioned and properly equipped with appropriate tools and materials.

Each team of learners visits the following workstations:

Workstation No.1 – materials used in rope making.

The educator shows various rope samples and discusses the raw materials for rope making. Following this he introduces the rope making history and its links with boat building. Learners are given special aprons to wear and attempt to twist single hemp fibres together. They practice twisting single fibres together using “ladders” (*a piece of wood in a cross shape transl note*) or a stick left over from the fibre combing, they twist rope together out of bast fibres (lime bark). The last activity is learning the basic sailing knots.

Workstation No.2 – the ropewalk.

The learners become familiar with the equipment in the ropewalk (rope making machine is discussed). They discover why the ropewalk has to be so long, they learn the terms for the individual parts of the rope, then under the educator’s supervision they begin to twist together a rope that is several metres long – they learn among other things how to finish off the rope correctly.

Workstation No.3 - boat building.

This station includes a “keel –stem and stern posts” simulation as well as two boat building workbenches (of the *forsete* type). The tools that are provided include: planes, drawknives, clamps, drills, scribes, boat building hammers, pliers and rivets. The educator shows samples of various wood species used in boat building, and then he discusses the different stages of boat building. Following this he takes his place at the workbench and demonstrates selected boat building techniques – the learners imitate his work. The examples of activities that could be used: planing the surfaces of boards, laying and joining planks using rivets, drilling holes in wood using traditional drills).

Workstation No.4 – learning how to row.



The learners launch the boat supervised by the educator, learn to put on life jackets and the correct way of boarding the boat and taking their seats on the thwarts. Then they place the oars in the rowlocks, practice the rowing techniques and the manoeuvring of the boat in the harbour basin.

The session concludes at the meeting place. Following the summaries and conclusions of the educators and the participants voicing their opinions, the last feature of the workshop is a communal campfire with grilled sausages.

Workshop No.2 – *Drill that plank, thread that twine through the paddle* (boat building and-rope making workshop)

Age group - primary school (grades 4-6), junior high school

Workshop duration – 120 minutes

Maximum group size – 30

Venue – the sessions take place in the exhibition halls, in the boat building workshop and in the ropewalk.

The group of learners arrives with minimum 3 minders (1 minder per 10 persons). The educators welcome the workshop participants and take them on a guided tour of the exhibitions of the Vistula Lagoon Museum (approx.15 minutes). Then the class is divided into two groups. One of them goes to the boat building workshop, the other one – to the ropewalk. After approx.60 minutes groups swop places.

The boat building workstation

Sessions take place in small teams at specially prepared tables and boat building benches. The educator introduces the topic to the workshop participants: shows them the samples and discusses the wood species used in boat building, he identifies and describes the traditional boat building tools used during the workshop (such as drills, clamps, planes, hammers, saws) and reminds participants to observe the safety rules (the participants put on the work gloves). The educator names and explains the different boat building tasks, which is followed by the participants executing them on their own.



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The examples of boat building exercises: making holes using chisels, planing boards, bending boards, cutting wood, joining planks with nails, rivets and wooden pegs.

Rope making workstation

The educator discusses the safety rules that are mandatory during this part of the workshop (he talks about the sharp tools among other things, and the operating of the rope making machine). Then he introduces and describes the work of a rope maker – he shows the basic tools and raw materials used in rope making (eg.hemp fibres, coconut and banana fibres, horsehair, lime bark).The educator explains the different stages of rope making in a ropewalk, and then assigns the tasks and sets the rope making machine in operation. The workshop participants make a rope of approx. 10 metres in length, which they may take with them as a souvenir.

Examples of exercises that may be conducted in the ropewalk include: unwinding the lengths of yarn from the spools, winding the yarn onto bobbins and rope making machine, rope twisting, tensioning the twisted fibres, installing the crank, using the paddle, plaiting the ends of the rope, swinging the rope in order to eliminate kinking, coiling the rope.

To conclude the session participants learn the basic sailing knots.



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