OUTLiNES Outdoor Learning in Elementary Schools
From Grassroot to Curriculum in Teacher Education

Guidelines to Subject Courses, July 2009

Education and Culture
Partners:
National Center for Outdoor Education (NCU), Linköping University, Sweden
Riga Teacher Training and Educational Management Academy, Latvia
Høgskolen i Hedmark, Norway
Estonian School Forests, Estonia
Tallinn University, Estonia
Charles University in Prague, The Czech Republic
VIA University College, Denmark (project management)
These guidelines is a part of the Comenius project “OUTLiNES – Outdoor Learning in Elementary Schools – from Grassroot to Curriculum in Teacher Education” as granted by the European commission.

The purpose of these guidelines is to be an inspiration and an aid for those lecturers around the world that will integrate and use outdoor learning as a part of their teacher education programme.

Recent investigations show that teachers use the same methods and tasks in their daily work as they themselves encountered during their teacher training programmes. This emphasises the importance of not only words and theories, but also practical tasks and hands on experiences during the teacher training programme. In these guidelines, you will find both theoretical evidence and practical descriptions on how outdoor learning can be a part of your teacher training programme.

Supplementary to these Subject-oriented guidelines, there is Foundation Course guidelines which focus especially on outdoor learning as a way of learning in teacher education, related matters and theories. It can be downloaded free at www.outdooreducation.dk

These guidelines is written by the participants of the project in 6 different countries, that is PhD Associate professor Arne Nikolajsen Jordet and assistant professor Morten Bjørnebye, Norway, PhD Dusan Bartunek and Marie Hronzova, Czech republic, Senior lecturer Eva Kätting and Carina Brage, Sweden, Senior lecturer Kirsten Bak Andersen and Karen Barfod, Denmark, Senior lecturer Sanita Madalane, Inga Berzina, Laimrota Kriumane and Ilga Reiznice, Latvia, Professor Leida Talts and Eha Jakobsen, Estonia, and collected and edited by senior lecturer Karen Barfod, Denmark.

We hope that this will encourage lecturers around the world to raise and open the door of learning wide into the landscape – and show our students how to use the real world and landscape as a learning resource for the young children in elementary schools.

March 2009, the authors
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Chapter 1:
Outdoor Learning in Elementary Schools – from Grassroot to Curriculum in Teacher Education
Karen Barfod, Senior lecturer and vocational project coordinator, DK

The aim of this project is to introduce a subject-oriented methodology in teachers’ basic education, to increase the students’ – future teachers – basic competences in outdoor learning methodology, that is, to transfer the traditional teacher training practice from in-service training to systemic basic education.

Outdoor learning is not a permanent curricular component in basic training of elementary school teachers, but is learned through sporadic in-service training or just by practice by teachers in Europe. The ongoing practice in outdoor learning tends to focus on environmental, personal, social and health aspects in the pupils general education. The academic dimension is often lacking, and outdoor learning is often used in subjects logically related to the outdoor space, e.g. science, woodwork, physical education.

In this project we widen the perspective of outdoor learning in elementary schools to the following subjects: music, mathematics, science, art and handcraft, physical education and language.

Subject-oriented methodology
Education defined by the location of the education not only specifies where the learning should take place, but also its theme. The physical natural and cultural landscape provides the contents of learning and has an effect on the teacher’s choice of methods. But in connection to this, tendencies in modern testing of knowledge in elementary school focus on subjects and factual forms of knowledge.

We do work now as teacher trainers in the exciting field between subject-focused, testable knowledge and the obvious learning advantage in outdoor learning.

This project tries to combine subjects, outdoor learning methodologies and the structural everyday life at the teachers training education.

The partnership
The partnership of the six teacher training institutions involved in this project reflects in itself the reality of outdoor education at the teacher training institutions. The criteria for the partnership composition have been to involve all levels of institutional rooting of the outdoor learning practise among the partners and countries. From the most advanced institutions in Europe, with long and continuing traditions for outdoor learning and even some subject oriented activities, over institutions with less but expanding traditions to institutions where outdoor learning is almost or completely absent but with expressions of interest for integrating the area in their curriculum.

One very central project goal is to demonstrate how institutions with almost no experiences and institutions with heavy experiences both can participate in the development and test stages and integrate the new courses in their study programmes.

In short the aims of the project will point in two directions. The development and dissemination of intensive courses in general outdoor learning methodology and subject oriented intensive courses for teacher students, and the cross-national exchange and development of the partner institutions. This network should be extended beyond the partner institutions.

Project aims
- To increase teachers’ basic competences in outdoor learning methodology
- To transfer the traditional teacher training practice in outdoor learning from in-service training to systematic basic teacher education
- To expand the outdoor learning focus from environmental, personal and health perspectives toward curricular perspectives by introducing a subject-oriented methodology in teachers’ basic education

Project outputs and perspectives
- One intensive foundation course in general outdoor learning methodology
- Six subject-oriented intensive courses representing the main areas in the elementary school curriculum
- Course manuals, handbooks and project website

Long-term perspectives
- Courses and methodologies in study programmes
- In-service training of teachers
- Widen the cooperation with universities in Europe

1 Lars Owe Dahlgren & Anders Szczepanski: Outdoor Education – literary education and sensory experience, Linköping University, Kinda Education Centre, no 1, 1998
2 Erik Mygind et al: Udeundervisning i folkeskolen, Museum Tusculanum 2005
• Widen the cooperation with universities outside Europe

Target groups
• Teacher students and lecturers in participating institutions
• Potentially all teacher students and lecturers in European teacher training institutions

Main activities
• Establishing development groups of lecturers and experts
• Development, test-runs, evaluations, refinements and dissemination of innovative standard courses
• Test runs in cross-national and national groups of teacher students
• Final open conference as input for final evaluation and launch of dissemination plan

Project lifetime – in Short:

Establishing partnership 2006
Developing 2 kinds of courses in Outdoor learning for teacher students: Foundation Course and Subject Courses 2007
Testing Courses with students in own language
Evaluation of testrun 1 and refinement of the courses
Testing Courses with international students in English
Evaluation of testrun 2 and refinement of Course planning 2008
Writing Guidelines and reports
Final Conference and dissemination
Final Evaluations 2009
Chapter 2:
The Subject-Related Guidelines
Each partner institution has developed one or more subject-related courses on outdoor learning.

In these guidelines you will find descriptions of these courses and the experiences the lecturers has got during the process of developing the courses.

By agreement among the participating lecturers, the guidelines of the subject courses consist of:

- A short introduction of the purpose of this booklet (to help teacher education lecturers when they want to develop outdoor education as a part of teacher education).
- An article about the subject seen in the light of learning theories and outdoor education.
- Best practice examples – these could be the same as the ones in the guidelines for the Foundation course, but they can also be more briefly described activities. As many as possible.
- Examples of a week schedule of the subject course.
- List of literature and links.
Chapter 2: The Subject-Related Guidelines

Art and Handcraft
Denmark

2.1. Subject oriented course, Art and Handcraft (3 ECTS)
Lector in Art, Kirsten Bak Andersen, Nr. Nissum, Denmark, kba@viauc.dk

Introduction
“Subject orientated course in Art and Handcraft” is part of the Comenius programme “OUTLiNES – Outdoor Learning in Elementary Schools – from Grassroot to Curriculum in Teacher Education”, and gives 3 ECTS.

The course aims to give the students knowledge in and experience with planning, carrying out and evaluating outdoor art and handcraft activities. The course is based on the interaction between practical outdoor activities and didactic theory, where the students will be challenged to reflect on the intersection and relationship between their own experiences, the art and handcraft aims and didactic theory. In the schools in Denmark art and handcraft are separated in two different subjects, but in this “outdoor learning programme” the two subjects are united in one.

Course objectives
The students are to develop didactical knowledge in planning, carrying out, evaluate and develop art and handcraft activities outdoors, in all the major target areas of the elementary level. The students are to experience and develop knowledge in the use of different types of outdoor learning environments in order to stimulate motivation and endurance in art and handcraft activities, as well as stimulate the development of art and handcraft concepts, and the ability to see the practical relevance of the art and handcraft activities. The students are to gain knowledge about how professional art and handcraft and cultural aspects may influence the teaching, with a special focus on how children’s culture of play can be integrated into the activities. The students will gain insight into the selection and adaptation of outdoor learning activities to pupils with varying needs. To face the challenge of generally weakened health and physical condition of pupils in today’s elementary schools, the students are to gain knowledge in how one might combine physical and cognitive art and handcraft activities.
After completing the art and handcraft course the students will have:

- Relevant knowledge of the landscape and cityscape as a source of inspiration for art and handcraft.
- Knowledge of relevant, professional art and handcraft and their relationship.
- Different experiences of skills relevant for outdoor learning, art and handcraft.
- Experiences and knowledge of visual communication, imagination and creativity.
- Developed the ability to reflect on relevant didactical theory and their leadership in outdoor educational context.

Main areas
1. The outdoor space
2. Use of body, senses, experience
3. Communication and interaction
4. Inspiration, methodical perspectives, developing concepts
5. Leadership in outdoor learning
6. Organization for outdoor learning

2.1.1. A model for the outdoor-based subject Art and Handcraft

The outdoor room, landscape and cityscape:

- The students should experience and gain knowledge on how different rooms and places can be used as a source of inspiration, starting point and setting for carrying-out and performing art and handcraft.
- Campsite, natural playground, the schoolyard, arenas in the urban room, private and official places, different institutions.
Chapter 2: The Subject-Related Guidelines

The use of body, senses, experience:
- The student should go through primary experiences, and it is important to move, to touch the real thing and to look around at the topical and relevant places.
- The word *experience* should be used in two different ways: to make someone curious about something and how to reflect on different experiences or perceptions.
- The student should give themselves a challenge; practical skills and performing art.

Communication and interaction:
- The student should try and develop knowledge on how art and handcraft and especially relation-aesthetic can be used as a source of inspiration as a didactic theory.
- The student should try and develop knowledge about outdoor teaching in art and handcraft.

Inspiration, methodical perspectives, developing concepts:
- The students should have experiences with and knowledge about what methodical approaches the outdoor-based art and handcraft skills.
- The student should have experiences with plenary activities, group activities and individual activities.
- The student should have experiences with and knowledge about different didactic methods like: practical tasks, problem-based ("open") tasks versus recipe based ("closed") approaches, drama and role playing, natural- and cultural path with connected stations, play, lecture, dialog, storytelling, exhibition, concerts and shows.
Leadership in outdoor learning:
- The students are to experience and gain knowledge on different ways in which to instruct and organise the pupils in outdoor art and handcraft activities.
- The students ought to have knowledge about and command of the basic skills in outdoor life, what is demanded of teacher and pupils to use nature or culture places as a classroom and how to move safe in nature and at the street, how to visit relevant official or private firms or institutions.

Organization for outdoor learning:
- The students should have experiences with and knowledge about planning sessions with pupils, pupils who are going to use different art and handcraft tools outdoor.
- The students should have experiences with and knowledge about how to cooperate with different culture institutions and public officials and other relevant people.
- The students should have experiences with and knowledge about: how to plan transport safely, organization of “take away” food, pupils clothing and equipment, group mentality.
Art and Handcraft
In art classes in Denmark we normally work outside at the playground or other places in the neighbourhood nearly half part of the time. Two or three times a year we visit different art museums. We quite often go through primary experiences and perceptions, and it is important to touch the real thing and to look around at the topical and relevant place before production, reception and reflection.
## 2.1.2. Outdoor learning 1 week, subject course: Art and Handcraft.

The organization was based on the major art and handcraft topics in the national Danish curriculum for the elementary level. The second test run should be organized after the timetable below:

<table>
<thead>
<tr>
<th>Time</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Art and Handcraft?</td>
<td>handcraft</td>
<td>Introduction to the pupils/</td>
<td>. Groups work Planning a session for school practice</td>
<td>. City-ex eval</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Practice – exercise A)</td>
<td>Mogens Olling</td>
<td>school practice day 5.</td>
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<tr>
<td></td>
<td>How to make your own camera. How to use digital camera.</td>
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</tr>
<tr>
<td>09:50–11:55</td>
<td>1) pattern - marks/traces-symbol Practice - exercise B) with clay and sand.</td>
<td>Practice - exercise C) Landscape • land art • drawing • mobile garden</td>
<td>Land art and wood figures as a part of land art projects</td>
<td>5) Cityscape Holstebro</td>
<td></td>
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</tr>
<tr>
<td>11:55–12:30</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
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<tr>
<td>12:30–14:00</td>
<td>Theory – link to exercise 1) Mobil gardens.</td>
<td>Landscape Wood figures as part of the land art projects</td>
<td>Land art</td>
<td>Trace, marks and pattern in the city. • Visiting the police station • Visiting a relevant outdoor space</td>
<td>Visit a school. Carry out a session with children or other students.</td>
<td></td>
</tr>
<tr>
<td>14:00–16:00</td>
<td>2) Art history Landscape and cityscape as material, and subject and symbol</td>
<td>Land art, Preview, reflection, evaluation.</td>
<td>Cityscape (Digital photo and drawing)</td>
<td>Evaluation</td>
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</tr>
<tr>
<td>16:00–18:00</td>
<td>Trip to local place.</td>
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<tr>
<td>18:00–19:00</td>
<td>Dinner is a part of the lessons.</td>
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<tr>
<td>19:00–21:00</td>
<td>Dinner, party</td>
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</tbody>
</table>

The photos on the following pages show our experiences from Art and Handcraft test run 1. Different places were used: a village, the coast (Thyborøn) and cityscape (Holstebro) in Denmark. We tried to use different materials, skills and techniques. In the end of the week the student planned a session for 6–7 year old pupils.
Chapter 2: The Subject-Related Guidelines

Make your own camera out of two wine boxes

Handcraft, woodwork, figures for land art

Land art in the wood
Mobile garden

Cityscape life, traces and marks

Printing and photography at the police station
Chapter 2: The Subject-Related Guidelines

Local TV station (or go to the cinema)

Drawing and Print/birds

School practice; carry out a session with children visiting the North Sea Aquarium in Thyborøn. Drawing and printing at the place
2.1.3. **Best practice: Well-known skills and techniques in outdoor learning**

1. Make a boat out of newspaper and place it on the grass outside when we leave the class. (Land art). How you place the ships can make different stories, or you can tell the story by H. C. Andersen about the soldier in the paper ship in full sail in a dirty gutter.

2. Play string games (cat’s cradle) in a large scale, using a 30-metre rope. This requires at least eight people. It is ok to ask people around you for help. (social relation-art)

3. Every day people in India make patterns in front of the front door. It brings the family a nice day. As art we can use the idea as street art to underline how we can read and understand our culture and patterns at the street. Use dry sand instead of chalk and draw nice and beautiful patterns on pavement. Use a twist of paper to hold the sand.

4. Clay figures. Press the clay against a tree, and you will get a pattern. The pattern should be the beginning of your creation of an imaginary animal. It is up to you what kind of animal it is. What it looks like tells you something about where it lives. Perhaps it is slow walking because of the small legs or because of a big stomach. It is your decision. Finally, place the animals outside and take a photo. (Narrative art)
References

Andersen, Henrik Scheel og Lauersen, O: “Hvad hånden former”
Andersen, Henrik Scheel og Lauersen, O: “Billedkunst – metode, kronologi, tema”
Andersen, Kirsten Bak: 1. kap. 1 i “Billeder og multimeder” red. af Mie Buhl, udgivet af DLF
Bourriaud, Nicolas: “Relationel æstetik”
Buhl, Mie m.fl.: “Visuel kultur som ny pædagogisk faglighed”, i Visuel kultur, unge pæd. Nr. 7/8 2003
Bugge, Ingeborg: “Panorama. landskaber i kunsten fra middelalderen til vor tid” m.fl. (Systime 2005)
Henningsen, Lars: “Fisken i hængekøjen” (teksthæfte til video af samme navn, om animation af tegninger)
Nielsen, Rolf: “landart”, i tidsskriftet Magasinet Kunst nr. 4, 2007
Ringsted, Suzanne og Froda, Jesper “Plant et værksted” (kap. 1, 2, 4, 7, 19, 20)
Sandbye, Mette: “Mikropolitik” artikel i Week-endavisen 23.–31. marts 2005
Støttrup, Anne, Petersen og Hauge “Rundt om mennesket – billedarbejde med børn” (AV-form)
Sørensen, Birgitte Holm og Flensborg, Inge Lise. “Billeder på begyndertrinnet” DLF
Sørensen, Birgitte Holm og Flensborg, Inge Lise “Hvorfor tematiske billedarbejder” i Temaer i Billedpædagogik kap. 1 og andre kapitler (1997)
Billedpædagogisk Tidsskrift, udgivet af Danmarks Billedkunstlærere.
Edlev, Thomas Lasse: “Natur og miljø i pædagogisk arbejde” (Munksgaard DK 2004)
Wohlgemuth, Ole: “Håndbog i naturpædagogik” (forlaget politisk revy 2004)

Danish artists
Jørn Rønnov, John Olsen, Bjørn Nørgaard, Bosch og Fjord, artillery – Grete Aagaard, Tanja Nellemann Poulsen, Katya Sander, Jonas Palms, Thomas Elsted, Berit Dröse, Marie Melchiorsens

International artists
Minerva Cuevas (Mexico) - Parastou Forouhar (Iran/DK) - Eric R. Fajardo (Panama/DK) - Parastou Forouhar (Iran/DK) - working with Phylis Kiehl (D) - Ilona Huss Walin (S) - Maria Eichhorn (D) - Lawrence Weiner (USA) - Robert Smithson (USA) - Walter De Maria - Cristo - Lois and Franziska Weinberger (mobile garden)
Mathematics
Norway

2.2. Subject oriented course, Mathematics (3 ECTS)
Morten Bjørnebye, Morten.Bjornebye@hihm.no
Tor Solbakken, Tor.Solbakken@hihm.no
Hedmark University College, Norway

Introduction
“Subject orientated course in mathematics” is part of the Comenius programme “OUTLiNES – Outdoor Learning in Elementary Schools – from Grassroot to Teacher Education”, and gives 3 ECTS credits. The course aims to give the students knowledge in and experience with planning, carrying out and evaluating outdoor mathematics activities. The course is based on the interaction between practical outdoor activities and didactic theory, where the students will be challenged to reflect on the intersection and relationship between their own experiences, the mathematical aims and didactic theory.

Course objectives
The students are to develop didactical knowledge in planning, carrying out, evaluating and developing mathematics activities outdoors, in all the major target areas of the elementary level. The students are to experience and develop knowledge in the use of different types of outdoor learning environments in order to stimulate motivation and endurance in mathematical activities, as well as stimulate the development of mathematical concepts, and the ability to see the practical relevance of the mathematical activities. The students are to gain knowledge about how cultural aspects may influence outdoor mathematical teaching, with a special focus on how children’s culture of play and games can be integrated into mathematical activities. The students will gain insight into the selection and adaptation of outdoor learning activities to pupils with varying needs. To face the challenge of the generally weakened health and physical condition of pupils in the elementary school of today, the students are to gain knowledge in how one might combine physical and cognitive mathematical activities.

The course objectives can be summarised in the following points. The students will:
• Gain new perspectives on the target areas for the elementary level, and gain knowledge of methodical approaches to outdoor-based mathematical teaching.
• Gain knowledge on principal didactical theory and the frames of reference for planning, executing and evaluating outdoor-based mathematical activities in target areas for the elementary level.
• Gain knowledge of different ways in which outdoor-based mathematical activities can contribute to stimulating children with different needs in developing mathematical concepts as well as a positive attitude to mathematics.

Main areas
The course is organized in five main areas:
1. Mathematics and didactics theory.
4. Mathematics, the senses and communication.
5. Methodology for an outdoor-based mathematical teaching.
These five main areas must be viewed as a whole, as they will overlap and complement each other.

Together, the main areas will provide a model for planning, executing and evaluating an outdoor-based mathematical teaching. The students will gain knowledge in these five main parts through encounters with the following mathematical topics: sets, numbers, numerals, numeral systems, arithmetic, measuring and units, geometry, algebra and functions. The didactics theory and the mathematical topics will comprise the basis of the model. There are specific learning objectives for each main area.

Mathematics and didactics theory
- MI-theory (Multiple Intelligences) and outdoor teaching in mathematics.
- Outdoor mathematical teaching, language and the development of mathematical concepts.
- Motivation and outdoor teaching in mathematics.

Aims of competence
- The students are to experience and develop knowledge on how MI-theory, motivation theory and Vygotsky’s theories may be used as a didactical framework on which to explain and justify an outdoor-based mathematical teaching, and how these theories may be used to develop, plan, execute and evaluate such teaching.
- The students are to gain experience with and develop knowledge on the potential that outdoor-based mathematics activities have in regard to stimulating learning and the development of concepts in the following mathematical topics; sets, numbers, numerals, numeral systems, arithmetic, measuring and units, geometry, algebra and functions.

Mathematics, body and movement
- Embodiment of mathematical concepts.
- Movement and internalization of basic arithmetical units.
- Play, games, drama and role-playing in outdoor mathematical activities.
- Physical activities and mathematics.

Aims of competence
- The students are to experience and gain knowledge on different ways in which the human body can be used to express mathematical concepts.
- The students are to experience and gain knowledge on the role that bodily movement can play as an aid in the process of reasoning in mathematical problem solving.
- The students are to experience and gain knowledge on the influence that movement and physical activities may have in the process of developing mathematical concepts.
- The students are to experience and gain knowledge on the role that play, games and drama may have in the development of mathematical concepts.
Mathematics in culture and society
- Mathematics and the children’s culture of play.
- Outdoor learning environments as a flexible arena for mathematical activities.
- Interdisciplinary activities including mathematics.
- A theme or a topic as a starting point for mathematical activities.

Aims of competence
- The students are to experience and gain knowledge on how the schoolyard, the urban scene and the forest can be used as flexible learning environments in mathematics.
- The students are to experience and gain knowledge on integrating play in mathematical activities.
- The students are to experience and gain knowledge on using a specific topic as a starting point for mathematical activities, and furthermore how pupils can work in an interdisciplinary fashion in outdoor-based mathematical activities.

Mathematics, the senses and communication
- Stimulation and manipulation of senses in the development of mathematical concepts.
- Communicating mathematical concepts.
- The role of log writing in the development of mathematical concepts.
- Articulation of bodily expressions of mathematical concepts.
- Personal monologue as a tool to further the development of mathematical concepts.

Aims of competence
- The students are to experience and gain knowledge on the role of communication in the development of mathematical concepts.
- The students are to experience and gain knowledge on different ways of stimulating and manipulating the senses in the development of mathematical concepts.
- The students are to experience and gain knowledge on different methods of communicating mathematical concepts, for instance through non-verbal communication involving the use of the human body.
- The students are to experience and gain knowledge on the role of the linguistic aspect of communication in the development of mathematical concepts and a mathematical language.

Methodology
- To express and meet mathematical concepts in different sizes, i.e. in a micro and macro format.
- Diagnostic teaching in different mathematical subjects.
- Mathematical instruction and the organisation of groups in outdoor-based mathematical activities. Group-based activities, individual activities and instructed activities.
- Play, relay-games and competitions in outdoor-based mathematical activities.
- Organisation of drama and role-playing activities.
- A mathematical concept as a starting point for development of activities in macro format.

Aims of competence
- The students are to experience and gain knowledge on outdoor-based diagnostic teaching in the following topics: numbers, numeral systems, arithmetic, measuring and units, geometry, algebra and functions.
- The students are to experience and gain knowledge on different ways in which the pupils can meet the same mathematical concept at different scales, e.g. in micro and macro scales.
- The students are to experience and gain knowledge on different ways in which to instruct and organise the pupils in outdoor mathematical activities.
- The students are to experience and gain knowledge on the organisation of play, relay activities and competitions in outdoor mathematical teaching.
- The students are to experience and gain knowledge on how to organise drama and role-playing games in outdoor mathematical activities.
- The students are to experience and gain knowledge on different ways in which the pupils can be introduced to and work with practical tasks in outdoor mathematical activities.

Evaluation – ECTS allocation
## Organization of the Mathematics Course

The organization is based on the major mathematical topics in the national curriculum for the elementary level, and can be organized according to the timetable below:

<table>
<thead>
<tr>
<th>Time</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00–12:00</td>
<td>Course introduction</td>
<td>Activities outdoors: Arithmetic</td>
<td>Activities outdoors: Geometry, measuring and units of measurement</td>
<td>Activities outdoors: Problem solving, algebra and functions</td>
<td>Visit a school. Carry out a session with children/other students.</td>
</tr>
<tr>
<td></td>
<td>Presentation MI theory – mathematics and outdoor learning</td>
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<td></td>
</tr>
<tr>
<td>12:00–13:00</td>
<td>Lunch</td>
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</tbody>
</table>

## Literature


Didactic article on mathematics:
Outdoor learning in mathematics – physical embodiment of mathematical concepts

Introduction
This paper discusses the relationship between movement and the development of mathematical concepts in the context of activities outside the classroom. Examples of different means of bodily expression of mathematical concepts are presented, and the potential such an approach may have in mathematical learning are discussed. The question of whether bodily activity can contribute to an increase in both motivation and learning of mathematics is raised. The connection between what is going on inside and outside the classroom is a major challenge in outdoor education. By working with the same mathematical concept in similar activities but in different scales and formats, this paper argues for a reinforcement of the relation between the two arenas for learning.

Outdoor learning in mathematics
Jordet [8] defines outdoor learning as a working method which implies frequent activity in the local environment. The pupils can get personal and specific experience in the face of reality, and through reflection, discussion and interaction get their views and conceptions confirmed or adjusted. Jordet emphasises that outdoor and indoor activities have a close relationship. The evaluation of the former national curriculum in Norway (Reform 97) indicates that the presentation of new mathematical concepts generally has a vague connection to the outside the classroom [1]. Outdoor learning in mathematics is a way of working with intrinsic value that can take place in the children’s’ natural environment of play, and furthermore may complement and give impulses to the education that take place in the classroom.

Bodily ways of expressing mathematical concepts
Using the body to communicate and express ideas and concepts has not been a priority in our culture, and thus has had little attention in the teaching of mathematics. Dewey however underlines the importance of using every part of oneself in learning activities, both physically and mentally: “It would be impossible to state adequately the evil results which have flowed from this dualism of mind and body, much less to exaggerate them. Some of the more striking effects may, however, be enumerated … In part bodily activity becomes an intruder. Having nothing, so it is thought, to do with mental activity, it becomes a distraction, an evil to be contended with.” [2, p. 141] Based on the evaluation of the former national curriculum in Norway it is reasonable to ask the question whether the teaching in general lacks a comprehensive view of knowledge, as the imparting of knowledge seems to be the central approach to learning [1]. Norway is among the OECD countries who score the lowest in the two categories discipline in class and motivation connected to interest in mathematics [11]. For a possible explanation of the problems with the working environment, we find support in Dewey, who claims that “The chief source of the ‘problem of discipline’ in schools is that the teacher has often to spend the larger part of the time in suppressing the bodily activities which take the mind away from its material … The nervous strain and fatigue which result with both teacher and pupil are a necessary consequence of the abnormality of the situation in which bodily activity is divorced from the perception of meaning … The neglected body, having no organized fruitful channels of activity, breaks forth, without knowing why or how, into meaningless boisterousness, or settles into equally meaningless fooling; both very different from the normal play of children.” [2, p. 141] Although physical activity has been more emphasised in the Norwegian school, this type of activity is separated from the subject matter [10]. This implies worry for the pupils learning as the activities lack focus on the mathematical aims [9]. A consequence and a challenge is to enhance the relationship between doing and learning, so bodily experience and mental cognition correspond and support each other. Dewey [2] claims that such a cognitive collaboration implies a more comprehensive and functional development of concepts. In this picture Howard Gardner’s [5] multiple intelligence theory (MI-theory) will be a contribution to a holistic approach and view of learning and development of concepts. The MI-theory includes the following eight intelligences: linguistic, logical-mathematical, spatial, bodily-kinaesthetic, musical, naturalistic, interpersonal and intrapersonal. In a context of outdoor learning it is natural to emphasise the bodily-kinaesthetic intelligence, which according to Gardner [5] means a potential to use the whole body or part of the body to solve problems or to create products. As Dewey [2] does, Gardner believes that mental and physical activities are closely connected. Movement and physical activity is primary associated with the bodily-kinaesthetic intelligence, but the other intelligences are also stimulated and hence influence and make a contribution in the process of expressing the mathematical concept. Based on using the body to solve problems or to create products, we find it reasonable, in a context of learning and teaching to distinguish between two forms of stimulation of the bodily-kinaesthetic intelligence in mathematical activity:

1. Bodily movement as a motivating element of mathematical activity.
2. Body and movement as a support for solving mathematical problems or expressing mathematical concepts.

In the first category, the bodily movement plays a motivating role of the activity. The physical aspects are not directly attached to the expression of the mathematical concept in the mind, but work as a stimulus to think and act mathematically. Mathematical activities under this category could just as well have been taken place in a different context without active
use of the body. The point is that movement motivates and stimulates pupils to display sustainability so that they can acquire the concepts in focus. One example is a relay where the pupils run to a die, toss it and bring back a number to the team. The first team to reach the sum 30 wins the relay. Other examples in this category are various types of activities that can take place outside the classroom, for instance passing a ball or throwing a pinecone or a snowball. The pass or the throw is subjected to certain mathematical rules, such as to doubling or adding four to the value of the ball, or to making the sum equal to ten (the ten friend). To stimulate automation of the arithmetic units the pupils may try to answer before they receive the object.

In the other category, the physical movement is totally or partly attached to the process of solving mathematical problems or of expressing mathematical concepts. By integrating the movement with the expression of a concept or letting the body work as a support in the process of mathematical reasoning, simple and complex knowledge, facts and concepts can be taught. Solving procedures and expression of mathematical concepts may be an integrated part of the pupil's body language.

The physical element may be a support in the reasoning process in mathematical tasks involving percentages. For example, given that the pair of reference 60% corresponds to €120, the task may be to find out what 100% amounts to (see Figure 3). The total length of the six cobblestones corresponds to 100%, and the reasoning with the body as a support may be as follows: Half of 60% is 30%, and half of €120 is €60. A third of 30% is 10%, and a third of €60 is €20. Ten times as much as 10% is 100%, and ten times as much as €20 is €200. Thus, 100% equals €200.

In a regular pentagon, the pupils may work physically with tasks involving different mathematical topics, for example fractions, percentages and decimal numbers, and experience that 1/5, 20% and 0.2 imply the same bodily movement. Other examples are running fractions or geometric shapes in regular polygons, walking at the speed of 2 feet/second or tossing a die and running to the number that adds to ten in a number line. The bodily-based ways of expressing mathematical concepts and procedures can serve as basis for further reflection and abstraction.

Both approaches to stimulating the bodily-kinaesthetic intelligence can make important contributions to mathematical education. The motivating approach may create positive feelings and enthusiasm about mathematics, and increase both endurance and focus on learning. The primary contribution of the concept-orientated perspective is to develop the pupil’s mathematical body language for conceptual understanding as the physical movements mirror the structure of the concept in the mind, but this approach also combines the pleasure of movement and mathematical learning. Furthermore, this method will benefit pupils with a holistic learning style. According to Dunn and Griggs [3] 88% of the youngest pupils, with boys as the larger part, have a holistic learning style. Distinctive features of holistic pupils are a need for short and varied tasks, a preference for tactile and kinaesthetic materials, and furthermore that they work best when the motivation has an external source. The activities listed above may appear as external motivation and thus appeal to the group of pupils with a holistic learning style. Holistic pupils work better when they understand the meaning of the concept before they start working with the details. In a relay the meaning consists of the rules and conventions of the game, something the pupils will understand rather quickly, while the details consist of mathematical challenges and tasks.

The process from bodily knowledge to explicit mathematical knowledge

A key aspect of bodily activity is to raise “silent knowledge” up to explicit expressions and conscious concepts.

A way to promote abstraction is to combine different ways of expressing the same mathematical concept. A relay where the pupils toss a die and run to the “ten friend”, i.e. a number such that the sum equals ten, is one example (Figure 4). The reaction time is the period from when the dice stops rolling to when the pupil identifies the ten friend of the die.
and starts running. A quick reaction time depends on whether the ten friends are internalized, and will give an advantage in the relay. Unsure pupils may guess or count the number up to ten, but they will quickly realize that counting strategies work slowly. A need to automate the arithmetic units and the ten friends in particular will evolve. When the pupils run to the ten friends they are to articulate (shout out) what they are expressing physically, and thus connect bodily experiences and visual impressions with linguistic expressions. This articulation is a contribution to mediated learning in the sense that peers are modeling thinking and learning strategies. In addition, the articulation may develop linguistic awareness and conciseness of the concept of ten friends. Thinking aloud in combination with bodily means of expression and visual impression may contribute to an internalisation of the ten-friends. Such an approach is in accordance with Vygotsky’s [15] theory of the development from outer to inner verbal control. To make use of bodily expression for further abstraction and development, the reflection must be an integrated part or take place immediately after the activity. For example writing down and drawing the mathematical aims of the experiences in a logbook, and noting difficult ten friends. Notes can also be used as a basis for setting new goals of learning and, furthermore, serve as a diagnostic tool for the teacher. The activity attaches social, physical, mathematical-logical, verbal and spatial experiences to the process of learning. The varied ways of representing knowledge and the different forms of expressing knowledge may contribute to a growth of the pupil’s number sense and in particular to the development of a solid concept of ten-friends.

Mathematical activities in two different scales or formats
With the ambition of strengthening the relationship between movement and learning, we will argue for a combination of similar mathematical activities in two different formats, a small and a large one. We ask the question how the same mathematical concept may be challenged in corresponding activities, but at two different scales. What may the pupils express physically with large movements, and what may they do tacitly with small movements? In an inflated format, the mathematical terms will appear in a new perspective. The pupils get the opportunity to use the body to participate in the expression of the concept, and thereby associate and mirror the concept and the activity to the movement of the body. As activities in a large format suits best for outdoor learning, activities in a smaller format works best when carried out in a classroom. While working with the same concept in different formats, the relation between the bodily and mental processes may be reinforced. Below, we will present some examples of mathematical activities in micro and macro format.

Counting is a basic competence in mathematics. In a large format the pupils may step 1, 2, 3, …,9, 8, 7, …,1 as quick as possible (see Figure 5). Through a physical pattern of movement, the pupils will be challenged to express the numbers from 1 to 9 in both ascending and descending order. The same activity can be transformed into a smaller format by drawing the matrix on a sheet of paper, and letting one or two fingers replace the legs. The pupil may use the motivation acquired in the schoolyard for further reflection and abstraction so that written symbol will also be a part of the concept of counting. In an expanded matrix, the pupils may confront other aspects of numbers such as prime, even and odd numbers.

In the Norwegian national curriculum under the main target area numbers, one of the aims of competence after the pupils have finished the second year of school is to assemble and split up groups of ten [13]. How can pupils work towards such a goal
in similar activities, but in two different formats? In a simple addition matrix (see Figure 6) the pupils may step the ten friends’ 1+9, 2+8, 3+7, 4+6 and 5+5 as quick as possible. To reinforce the relation between the mathematical language and the bodily experiences they perceive, the pupils are to articulate the ten friends. This type of activity is self-motivating and the pupils work with the activity until the coordination between bodily and linguistic expression corresponds with the mathematical idea. In a smaller scale a ten-friends matrix may be drawn on a sheet of paper. The index finger replaces the legs, and timekeeping and the hunt for a personal record serve as an outer motivation.

Mathematical activities in a large format integrated with the pupil’s culture of play

Below, we wish to argue for and give examples of how activities in a large format and physical stimulation can be related to the pupils’ culture of play and development of mathematical concepts.

The report “Culture for learning” from the Norwegian parliament emphasizes that an extended school day will provide better time for physical activities, and the report outlines an integrated thinking in the sense that physical activity may be included as a part of the ordinary work with the subjects [14]. The school is a central arena to promote good health, and in an active school day, outdoor learning and physical education will be key contributors [7]. Mygind’s study [12] shows that outdoor teaching allows room for variation, and that the level of physical activity is twice as high compared to an ordinary day at school. Moreover, the pupils experienced that outdoor teaching gave better opportunities to participate in fellowship compared to the classroom. This is in accordance to the aims for learning poster of the national curriculum in Norway, which proclaims that school is to promote adjusted personalized and varied ways of working, and furthermore ensure that the physical and psychosocial work and learning environment promotes good health, well-being and learning [13]. In a school context the events that really mean something for most pupils take place during the breaks in the schoolyard. From such a perspective, the motivation to develop a concept or to work with a skill in a small format may depend on whether a similar activity in a larger format is a part of the pupils’ culture of play. If the pupils experience excitement, joy and positive interaction in a ten-friend relay, a need to internalize the arithmetic units will develop. The pupils can realize that hard work in a smaller format increases the ability of success in the relays. Dunn [4] argues that most children learn more easily when the teaching is of interest, but holistic pupils have an additional need for activities that are related to their lives and include active involvement. Linking mathematical activities to the pupil’s playgrounds and natural learning areas may contribute to mathematical thinking and reflect in voluntary activities. An elementary teacher has the following solution on how to integrate physical activity and learning with the children’s culture of play:

“We have a so-called ‘Physical bank’ where the pupils themselves select the physical activity of the day. ... i.e. to step ten friends, bounce a ball in a position matrix, multiplication relay etc. This implies contribution by the pupils in the planning of the lesson as well as physical activity and learning through stimulation of the bodily intelligence among others! PS: we started with this type of participation in the start of the first term of the third grade.”

A “bank of physical activities” can connect learning and physical activities together with participation by the pupils in their own learning process. Furthermore, the fact that the pupils gain experience in using the body to learn mathematics in play, games and relays, may from a metacognitive perspective be a useful ballast in terms of getting experience in how to use body and movement as a strategy for learning. Frequently physical activity integrates mathematical thinking with the pupil’s culture of play. If they continue with the activity in their breaks or in their free time, the teacher has achieved something important: the pupils do the activity for the sake of the joy of movement, the excitement and the social aspects of play, and at the same time they develop mathematical concepts, and potentially also include scientific concepts.

Summary

It may seem obvious, but the body can be connected to emotions, attitudes, experience, logic, mathematical reasoning, patterns, numbers, space and form. In addition to a potential for learning, the body has an advantage in its availability, as Dewey points out: “For the pupil has a body, and brings it to school along with his mind. And the body is, of necessity, a wellspring of energy; it has to do something. But its activities, not being utilized in occupation with things which yield significant results, have to be frowned upon.” [2, p. 141]. Mathematics take place in and describe three-dimensional space, although teaching has traditionally focused on how to mediate a two-dimensional reality reproduced in a textbook [1]. Any teacher of mathematics should help ensure that pupils develop positive attitudes, but international studies tell us that the working environment is negatively influenced by uninterested pupils with a weak work ethic [6, 9]. Can poor mathematical results and lack of discipline be related to a teaching practice that doesn’t utilize the potential in the children’s natural motivation for movement? Holistic pupils need other learning environments than the classroom, and have a learning style that often includes active use of the body with a preference for variation and external motivation [4]. Teaching out of the classroom gives room for variation through the combination of movement, physical activity and learning mathematics. Through motivating and speedy relays, the pupils may use the body to explore space and “run” to knowledge of sets, ten friends, percentages, fractions, positional notation and time. A link between mathematical activities and children’s culture of play can connect mathematical concepts to matters important to the children and thus serve as bridge-builder between
the school and the pupil’s everyday lives. Body language is to a certain extent universal, and can break down cultural and linguistic barriers. Pupils are usually concerned with what is happening at the moment. To preserve experiences, teachers should organize short and goal-directed activities that include writing down impressions and reflecting upon them as an integrated part. The “bodily mind” can thus be developed further to include more abstract aspects of the mathematical concept. Activities in a large and small format give an overall stimulation of the bodily-kinaesthetic intelligence, and thus develop the pupil’s repertoire of movement and bodily expressions to include mathematical concepts. The body provides direct feedback on the understanding of mathematical concepts, and forms a basis for reflection based on concrete and personal experiences. The pupil’s language (bodily language included) may serve as a foundation for the development of more formal aspects of the mathematical system, symbols and language.

A consequence of activities that stimulate various intelligences is that they provide different ways of expressing a concept. From a perspective of multiple intelligences the challenge consist of building bridges between different categories of intelligences and ways of expressing a concept in the mind. Such an understanding of intelligences is in accordance with Vygotsky’s theories in the sense that both the expressions of the concept and the multiple intelligences work in interdisciplinary ways. The result is solid and flexible concepts that can be applied and expressed in a number of ways. Knowledge attached to the body is long-lasting and will be a part of the pupil’s mathematical competence. Feedback from pupils and students tells us that physical mathematics and activities in different formats and sizes are both motivating and a goal-directed way of learning. Above, we have discussed how body and movement may contribute to a more realistic, motivating, lasting and effective teaching of mathematics.

References

Music
Latvia

USE YOUR HANDS
Making musical instruments

USE YOUR HEART
Making music using self-made instruments

USE YOUR HEAD
Study playing music instruments, rhythm, improvisation etc.

COMBINE 3 H!
Head (knowledge about cultural traditions of your country) + hands (e.g. making masks and music instruments) + heart (making music, playing games)

BECOME A TEACHER
Organising outdoor lessons for pupils
2.3. Subject oriented course, Music (3 ECTS)
Inga Berzina, Sanita Madalane, Laimrota Kriumane
Riga Teacher Training and Educational Management Academy

Introduction
“Subject oriented course in music” is part of the Comenius programme “OUTLiNES – Outdoor Learning in Elementary Schools – from Grassroot to Teacher Education”, and gives 3 ECTS credits. The course aims to give students knowledge in and experience with planning, carrying out and evaluating outdoor music activities. The course is based on the interaction between practical outdoor activities and didactic theory, where the students will be challenged to reflect on the intersection and relationship between their own experiences, musical aims and didactic theory.

Course objectives
The students are to develop didactical knowledge in planning, carrying out, evaluating and developing musical education activities outdoors, in all the major target areas of the elementary level.

The students are to experience and develop knowledge in the use of different types of outdoor learning environments (nature, cultural institutions, etc.) in order to develop their motivation to get to know traditional culture and folklore, as well as stimulate the development of improvisation skills in music, and the ability to see the practical relevance of the musical activities in the development of a well-balanced personality. In this course the whole body and all senses are used to gain a better balance of the body and mind.

Musical education can be taught through authentic experiences where participants will acquire a wide range of knowledge and skills appropriate for children and young people to develop their musical abilities in different types of landscape. The students will gain insight into the selection and adaptation of outdoor learning exercises and activities for pupils with varying needs.

Content
The whole course is oriented toward children’s and young people’s musical development put into an outdoor educational perspective. The participants will, through their own experiences, acquire knowledge of the opportunities for children and young people to develop their musical abilities, skills and health outdoors.

The participants will be instructed in methodology of leadership for learning outdoors and be acquainted with safety rules. Instruction is given in the form of lectures, seminars and study visits. The lessons take place in different outdoor environments – cultural institutions, nature an others. The course includes theoretical and practical lessons, discussion and reflection, work with literary sources as well as practical work with children. Course assignments are carried out as group or individual work.

Music and didactics theory
Teaching is a changing profession. The public wants teachers to change, administrators are endlessly exhorting teachers to change, and the government is constantly imposing changes on teachers. The work of teachers is already changing owing to the dramatic changes in the world in which they work (Milliken, 2004, p. 9).

Nowadays the teacher’s role is to help pupils explore their own questions actively and promote the critical thinking skills on which they will have to rely throughout their lives.

A child’s ability to use cognitive skills in solving a problem will determine his or her success. Research skills and the ability to notice and solve problems creatively are in high demand in a changeable socio-economic environment and the conditions in job market.

In the teaching–learning process the balance between skills, acquisition of knowledge and the student’s freedom to ask, experiment and express his/her thoughts and ideas should be encouraged. Unfortunately the interest in thought, the desire to investigate and discover, may be suppressed due to negative experiences in the process of learning if the environment is not stimulating. Very often children’s natural questions of “how?” and “why?”, which stimulate thinking, combining and creating are replaced with such routine questions as “What is the formula for...?” or “When/where did it happen...?” at school. These questions centre of facts that are memorized and, in the course of time, forgotten. Tasks that stimulate students to delve into questions which are personally significant to them, and which would develop their skills, are seldom offered.
Outdoor environments provide teachers with the opportunity to organise pupils’ work as problem-based learning that harnesses children’s tendency toward independence, helps to direct their thirst for knowledge and activity in useful cognitive work and facilitates development of critical judgement and creative attitude towards work itself (Zelmenis, 1991).

E. Maslo (2003) considers that “Such learning stresses the developing potential of the study process, because it arises from the independent value of research activity.”

Problem based learning promotes:
- development of the ability to think fast and to behave,
- development of the ability to identify the essential,
- development of the ability to discern patterns,
- the skill of widening one’s knowledge continuously,
- independence in accepting decisions,
- the skill of working in a group,
- the skill to analyse and evaluate the accomplished work (Špona, 2006, 165).

The main content of the music course’s didactics is use of the body and senses for learning and health aspects. Music is a joyful experience where children express themselves freely. This applies to a group of toddlers shaking maracas to a wild Latin rhythm, a circle of drummers keeping the beat, or jovial waltzers allowing the melody to guide their movements in a free dance. It includes ethnographic study, world music study from former times to pop and jazz. Outdoor learning stimulates creation, improvisation and communication in music.

There are two fundamentally different ways of knowing and understanding that interact to construct our mental life. “First there is the application of the rational mind: we use the logical, deductive mode of comprehension, which is careful, analytic, reflective, and frequently deliberate. Alongside, there is another way of knowing by applying the emotional mind, which is powerful, impulsive, intuitive, holistic and fast – and often illogical.” (Day, 2005) The harmony between these two – head and heart operating together, one informing other – is the goal teacher should focus on. Music is the subject that aims to create a balance between person’s mind and emotions into the mostly rationally based study content at school.

Positive emotional relationships with students are also likely to reduce the incidence of behavioural problems and increase student’s motivation to learn.

Are we paying proper attention to students’ emotions in our pedagogical work? Does our educational environment support, neglect or interfere with caring relationships with all students?

Emotions serve as a fuel for cognitive development and as a currency that ensures social relationships, states LaFréne (2004). Goleman (2001) reveals the meaning of emotions in the spheres of life which are traditionally considered to be priorities of intellectual development. He indicates that there are two moral virtues that a modern person has to have, emotional self-control and empathy.

Abdulin (2005) describes empathy as sincerity, sympathy and the ability to share emotional experience and contact with other people. He insists that empathy is an individual ability which can be developed in the music acquisition process or through activities connected with music. Empathy can be developed with a help of a dialogue which is characteristic of the art of music.

Music teachers need emotional responsiveness as musicality indicators and empathy in the pedagogical process. When giving a concert, the music teacher plays the role of choir conductor, singer or concertmaster; he is a musician who needs emotional characteristics that help in the creative process. During music lessons or choir rehearsals music teacher is first and foremost a teacher who shows emotions to his pupils, maybe even more that any other subject teacher.

Different kind of outdoor activities in the music subject – such as participating in festivals or competitions, giving concerts in churches, concert halls or open-air stages – help the teacher to enrich and widen the emotional experience of the pupils.

The “student-centred” and “action/activity-oriented” concepts of the reform pedagogy of the first three decades of the 20th century are topical and significant at present in Latvian music pedagogy in the context of youth musical activities.
## One week schedule, subject oriented course in music

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<td>09:00</td>
<td>Trip to the Memorial house of Latvian composer Emilis Melngailis in the countryside.</td>
<td>Preparing the scenario for St. Martin’s Day Celebration</td>
<td>Visit to Latvian Ethnographic Open Air Museum <a href="http://www.muzejs.lv/">http://www.muzejs.lv/</a></td>
<td>Visit to Museum of Latvian writer Krisjanis Barons, father of Latvian folk songs.</td>
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<tr>
<td>11:00</td>
<td>Visit to memorial house of Emilis Melngailis</td>
<td>Making musical instruments at memorial house of Latvian composer Emilis Melngailis.</td>
<td>Lunch</td>
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<td>12:00</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch (Picnic)</td>
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<td>15:00</td>
<td>Return to Riga</td>
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<td>19:00</td>
<td>Concert: “Aida” at Liela Gilde Concert Hall</td>
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Chapter 2: The Subject-Related Guidelines

2.3.1. Acquisition of the elements of traditional culture in the contemporary school
Ilga Reizniece, Riga Teacher Training and Educational Management Academy, Jurmala Alternative school

Short description
Implementation and activation of the elements of folklore and traditional culture in contemporary school.

Target group
Pupils aged 11–12 years. The activity takes place in a space large enough for playing games.

Aim
To arouse children’s interest in folklore – folk music and folk traditions, to present, to try out and to master them:
• To demonstrate the role of the seasons, defining rhythm and order, in the life of our ancestors.
• To clarify the importance of festivities in the course of this cycle.
• To train children’s perception of music, text, development of coordination and rhythm.
• To enable them to express themselves in such a traditional and creative manner, obtaining joy and experience of celebrating holidays.

Subjects
Music, rhythm, mother tongue, ethics, art, sports

Materials
• Music playback system, CDs with traditional music and folk music (in particular, Easter songs).
• Pagan Yearbook (in Latvian Pagānu gadagrāmata), Cross Dance (in Latvian Krusta dancis) by Ugis Praulins.
• Examples of “teasing songs” (spontaneous mutual singing in order to tease) – music records as well as texts.
• Simple children’s musical instruments.
• Eggs painted by children themselves at home (alternative: the painting of eggs takes place in the class or in some other place: raw eggs, and natural materials for painting, also pot, some cloth, thread etc.).
• A swing, a board for the rolling of eggs, wooden spoons, wooden egg, wooden wheel for the game “Day and Night”, ribbons, pussy willows.

Time
2 hours; one hour in Kr. Barons or museum of musical instruments, one hour in nature.

Preparation and description
The first activity begins with the discussion about the differences between modern and traditional culture, about the role of cycle of seasons and the movements of the sun in a man’s life, about the sense, beauty and possible implementations of the festivities of annual increments nowadays. We also make clear the differences between the ancient, traditional festivities of the start, of spring – Good Friday and Easter. We pay attention to the main symbols on these festivities – the sun, the egg, the swing, the struggle between the day and the night (the day “wins” over the night and becomes longer than it – “bigger” – therefore the name of the holiday is the Great Day and it takes place on the 21st of March – at the time of Spring equinox.)

However, the focus is not on theory (you can read about it more in I. Reiznieces book A Handbook in the Teaching of Folklore and The Book of Seasons by V. Muktupavels, M. Mellena, and E. Spics), but on each pupil’s participation.

We learn some songs, games, and teasing songs:
(to copy from I. Reiznieces book)

Songs by choice:

Teasing songs:
“Brāļi, brāļi, Liela diena” / “Brothers, Brothers, Great Day” (p. 107), “lešūpoja, ilējoja” / “Swinging, Singing” (p.108)

Games:
“Bagātais un nobadziņš”/ “The Rich Man and the Poor Man” (pp.109, 110), “Si, si, Sietiņ”/ “Si Si, Sieve” (p.107), “Ai, saulīte, mēnestiņis” / “Ah, Sun, Moon” (p.103)
Description of the game “Day and Night”:
The participants are divided into 2 equal teams, one team being day, the other night. One is the leader. The leader has a disc in his hands. One side of the disc is black, the other is white. The leader stands in the middle, between the teams. Beforehand it is decided how far the teams will run when it is necessary (not farther than 30–40 meters). The leader throws the disc into the air. If the black side of the disc is seen, the leader shouts: “Night!” and the night team runs away. The day team tries to catch them, and each caught person becomes a member of the day team. If the white side of the disc is seen, the teams’ roles are reversed. The game goes on until all the members of one of the teams are caught.

If there is time left, we listen also to previously mentioned songs.

The second activity is the celebration of the festivity and it takes place in a suitable place – somewhere outside, where there is swing and enough space for games. Each child arrives with painted eggs in a joyful mood and ready to act. First of all Easter, the sun and swing are being sung about, the swinging takes place – everybody swings and the games take place.

Then the games with eggs follow, finishing with the rolling of eggs. If there are many children, they can be divided in two groups: while one group tosses the eggs, the other rolls them.
2.3.2. The language of music as a game of rhythm improvisation for the development of students’ creativity

Inga Berzina, Riga Teacher Training and Educational Management Academy

Description
Vocal imitation of percussion instruments and improvisation.

Target group
Students aged 14–16. The activity takes place in a room big enough to stand in a circle and see another student doing a solo in the middle.

Subject aims
To develop the feel of rhythm and improvisational skills as a means of promoting creativity.

Integrated subjects
Music, rhythm.

Necessary materials
- Whiteboard
- Percussion instruments (various)

Time
1 hour
Preparation and description of the activity
The activity begins with a discussion about the meaning of rhythm in music and its many manifestations. Then follows a description of percussion instruments – the drum set, in which each component plays its particular role. The teacher draws a drum set on the board, explaining each component’s name and assigning to each a mnemonic which imitates the percussion instrument’s characteristic sound.

Example:
The bass drum is imitated by the mnemonic DN, the hi-hat with the mnemonic T, the snare drum with KA, and the cymbals with TSH (see Figure 1).

![Figure 1. Drum rhythm etude](image)

The teacher gives a simple example, showing how a series of syllables forms a rhythmic phrase.

To make the sequence of syllables easier to remember, each syllable is associated with a hand or foot movement.

Example:
DN (bass drum) – a tap of the left foot on the floor,
T (hi-hat) – the right hand taps the right leg,
TSH (cymbals) – a movement of the right hand away from oneself, etc.

When the students have learned the example rhythms, some students are selected to be soloists and are asked to stand in the centre of the circle. Each soloist is allowed to choose a simple, previously prepared percussion instrument and to perform a rhythm solo accompanied by the other students. To reduce confusion, at first all of the students may try a solo together with the soloists. The soloists are changed from time to time, so that all of the students can test their improvisational skills.

During the next part of the activity, the students are divided into two groups, and the teacher invents mnemonic games, in which each group is “given” a rhythmical phrase, where each phrase complements the other. At first the tempo is slow, but gradually it is made faster. The phrases are changed from simple ones at first to increasingly complicated ones.

Afterwards, the students are divided into pairs, and each pair tries to perform a rhythmic dialogue according to the principle – each person performs 2 measures, alternating, trying to complete astute rhythmic phrases and to improvise (see Fig. 2).
2.3.3. **Rhythmic telephone game**

*Inga Berzina, Riga Teacher Training and Educational Management Academy*

**Description of the activity**
Create a rhythm, imitate it making his/her own variation.

**Target group**
Students aged 7 - ....

**The Aim of the Activity**
To develop the sense of rhythm, creativity, collaboration skills.

**Integrated subjects**
Music, rhythmics.

**Duration of the activity**
20 minutes (depending on number of students)

**Preparation and description of the activity**
First, one person invents a short idea with rhythm and syllables only. The person next to him or her then repeats the idea, but makes a slight variation. The third person then uses the second person’s idea as the bases and makes a slight variation. Continue around the circle similarly so that the idea continues to transform. Each person should base their idea on what they have heard just before them and the ideas should always remain about the same length.

A variation is to have each pupil choose the person who is to go next by pointing at him/her. This way, the idea moves randomly around the circle.

**Keywords**
Rhythm, game, collaboration.

**Author**
Inga Berzina, Institution: Riga Teacher Training and Educational Management Academy, E-mail: berzinga@gmail.com
2.3.4. Visiting nearby environment exploring objects of Culture (churches, monuments, architectural elements etc.)
Sanita Madalāne, Riga Teacher Training and Educational Management Academy

Description of the activity
Students work with map, exploring the churches (or other objects) in the city, filling in the tasks given.

Target group
Students starting from age 12 - ...

The Aim of the Activity
To develop the skills of observation, work with map, exploring objects.

Integrated subjects
Arts, history, architecture, math, geography

Necessary materials:
- A map
- Work sheet with tasks
- Pencils
- A watch
- Photo camera

Duration of the activity
2 hour

Preparation and description of the activity:
1. Students are devided in pairs. They receive the map with objects marked into - to be found in nearby surrounding (churches in this case). The route is given from the starting point. They have to find these churches, take a picture of them, find out the name, confession they belong to, anno, describe the style of architecture or other information.
2. Students prepare presenations at home using materials from internet to supplement the facts they found during the 1st part of activity.
3. Students present the results in the classroom developing discussions related to information found. There could be an exibition of photographs organised.

Keywords
Work with map, exploring the nearby environment, research, work with sources of information, preparing a presentation, collaboration.

Author
Sanita Madalāne, Institution: Riga Teacher Training and Educational Management Academy, E-mail: sanita.madalane@rpiva.lv

2.3.5. Visiting nearby environment exploring objects of nature
Sanita Madalāne, Riga Teacher Training and Educational Management Academy

Description of the activity
Students exploring the nearby environment (wood, park, seaside etc.).

Target group
Students starting from age 5 - ...
Chapter 2: The Subject-Related Guidelines

The Aim of the Activity
To excite curiosity, to develop the skills of observation, exploring objects.

Integrated subjects
Natural sciences.

Necessary materials:
- A basket or plastic bag,
- Work sheet with tasks,
- Gloves

Duration of the activity
60 minutes

Preparation and description of the activity:
4. Students are divided in pairs. They receive the work-sheet with objects to be found in nearby surrounding (wood, park, seaside etc.).

To find a:
1. A feather
2. A seed blown by the wind
3. 50 of something
4. A leaf of a maple
5. A leaf that is chewed (Not by you J)
6. A thorn
7. A bone
8. A piece of skin
9. One animal or a bug
10. Something that has round shape
11. Something that has a shape of triangle
12. Something that is wooly, fluffy
13. Something that is sharp
14. Something soft
15. Something that is completely straight
16. Something beautiful
17. Something white
18. Something that creates a sound
19. Something that reminds you yourself
20. Sun trap – something that catches the warmth and sunshine
21. Something cold
22. 5 things that we could call as garbage made by a man
23. Something that is unnecessary in the nature
24. Something very important in the nature
25. A wide smile

5. Students present objects found and give argumentation of their choice.
6. This is the time to develop discussions related to each specific theme of the study subject (what the mechanism for „sun-trap”, protecting environment, etc.)

Keywords
Exploring the nearby environment, research, collaboration, argumentation.

Author
Sanita Madalāne, Institution: Riga Teacher Training and Educational Management Academy, E-mail: sanita.madalane@rpiva.lv
2.3.6. The blues lyrics game
Inga Berzina, Riga Teacher Training and Educational Management Academy

Description of the activity
Create your own lyrics in form of blues and sing it.

Target group
Students aged 14 - 16.

The Aim of the Activity
To introduce to blues form in music and to develop the skills to poetize lyrics in blues form.

Integrated subjects
Music, literature.

Necessary materials:
- Piano, guitar or some other instrument to make some simple accompaniment;
- Sound system to listen for examples of blues music (e.g. records of B.B.King, B. Smyth);
- Literature sources about history of blues.
- You can use already created CDs with accompaniments of blues.

Duration of the activity
40 minutes

Preparation and description of the activity
The lyrics to blues tunes are usually in an AAB form. First, there is a statement which spans four bars, and then there is an exact repetition of the statement for the next four bars. Then a final line which relates to the first in some way by explaining it, completing it, answering it or commenting on it. The third line also rhymes with the first two:

\[\text{e.g.} \]
\[
\begin{align*}
\text{Well my baby got up and walked right out the door} \\
\text{Well my baby got up and walked right out the door} \\
\text{And that's for sure I won't see him no more.}
\end{align*}
\]

In this game students make up a melody and lyrics on the spot.

A variation is to have the class members take a moment to conceive and write out their lyrics before singing them.

Keywords
Poetizing lyrics in form of blues, singing blues.

Author
Inga Berzina, Institution: Riga Teacher Training and Educational Management Academy, E-mail: berzinga@gmail.com

2.3.7. Musical alphabet game
Inga Berzina, Riga Teacher Training and Educational Management Academy

Description of the activity
Create your own lyrics in form of blues and sing it.

Target group
Students aged 6 - 8.
The Aim of the Activity
Create your own unique pattern of rhythm or / and motive of melody using one letter of alphabet or one word.

Integrated subjects
Music, rhythm, language (alphabet).

Duration of the activity
20 minutes

Preparation and description of the activity
In this exercise, the class simply improvises on the letters of the alphabet. This game works well with designated leader to move things along (give a pulse).
The leader’s first task is to improvise something with the letter “A”. The leader may use “A” over and over again in a rhythmic way, or he/she might make a simple repetitive melody out of it. Or they might make some kind of improvisation on a word that starts with “A”, such as “apple”.
Once everyone has joined in with their unique contribution and the letter “A” has been well established for a few minutes, the leader starts on a new idea with a letter “B”.
One tip about this game: it takes time to get through the whole alphabet! Don’t dwell too long on any one letter.

Keywords
Music, rhythm, alphabet, improvisation.

Author
Inga Berzina, Institution: Riga Teacher Training and Educational Management Academy, E-mail: berzinga@gmail.com

2.3.8. Feel the metro-rhythm using body
Inga Berzin and Sanita Madalane, Riga Teacher Training and Educational Management Academy

Description of the activity
Students develop their skills to perform music in different meters taking part in bodily activities.

Target group
Pupils aged 9 -11 years old.

Subject aim
To develop students skills to perform music in different meters (duple time - 2/4, triple time - 3/4, 3/8 and compound time) taking part in rhythmical activities.

Integrated subjects
Music, rhythms.

Necessary materials
Songs, rhythm canons, a whistle.

Time
2 hours.

Preparation and description of the activity
Class together with a teacher repeats some folk or popular songs with different meters (duple time - 2/4, triple time - 3/4, 3/8 and compound time). See examples of songs.

When the songs have been acquired, students are asked to walk in a circle while singing. Students have to feel the difference between walking and singing on 2/4 and 3/4. And this is more difficult to walk while singing the song of compound time.
ADDITIONAL EXERCISE to strengthen the skills. Students are divided in 3 groups and given cards with a rhythm exercise (3 types of rhythm sections – 2/4, 3/4, and compound timing). Students practice their lines in groups and then they come together standing in a circle. Teacher gives the beat. First students clap the canon, and then they do the rhythm by stomping. Groups change their lines in the canon.

Next step is to add on walk the signal of sound (clapping of hands and whistle). Students are standing in a queue. Teacher gives the beat. Students sing the song and walk. Teacher gives a signal to turn to right (with clapping) or left (with a whistle) while singing. That makes lesson more sprightly and interesting.

Keywords
Metro-rhythm, rhythm sections, meters (duple time, triple time, compound time), feeling the meter.

Authors
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References
2.4. Subject oriented course, Language (3 ECTS)

Carina Brage, carina.brage@calluna.se, Eva Kätting, eva.katting@liu.se
National Center for Outdoor Education (NCU), Linköping University, Sweden

Introduction

“Subject orientated course in language” is part of the Comenius programme “OUTLiNES – Outdoor Learning in Elementary Schools – from Grassroot to Teacher Education”, and gives 3 ECTS credits.

The course aims to give students knowledge in and experience with planning, carrying out and evaluating outdoor language activities. The course is based on the interaction between practical outdoor activities and didactic theory, where the students will be challenged to reflect on the intersection and relationship between their own experiences, language aims and didactic theory.

Course objectives

The students are to develop didactical knowledge in planning, carrying out, evaluating and developing language activities outdoors, in all the major target areas of the elementary level. The students are to experience and develop knowledge in the use of different types of outdoor learning environments in order to stimulate motivation and endurance in language activities, as well as stimulate the development of language skills, and the ability to see the practical relevance of the language and linguistic activities. In this course the whole body and all senses are used to gain a better understanding and sustainable knowledge. Language can be taught through authentic experiences where participants will acquire knowledge of the opportunities for children and young people to develop their language by meeting landscape and literature. The students will gain insight into the selection and adaptation of outdoor learning activities to pupils with varying needs. To face the challenge of generally weakened health and physical condition of pupils in today’s elementary schools, the students are to gain knowledge in how one might combine physical and cognitive language activities.
After completing the course the students will have:
• Basic knowledge of the landscape as a source of inspiration and knowledge and as a literary scene.
• Developed the ability to reflect over their leadership in outdoor educational contexts.
• Insight into and knowledge of the opportunities offered by the landscape with respect to children’s and young people’s language learning, language development and creativity.

Contents and forms of instructions
Children’s and young people’s language development is put into an outdoor educational perspective. The participants will, through their own experiences, acquire knowledge of the opportunities for children and young people to develop their language by meeting landscape and literature. The importance of leadership for learning outdoors is illustrated.

Instruction is given in the form of lectures, seminars and study visits. The bulk of the education is carried out in different outdoor environments. We use the landscape as well as rural areas. Course assignments are carried out as group or individual work.

Contents of the course
• Theoretical orientation of language learning outdoors.
• Working with literature, through drama and group activities.
• Exploring and describing the environment.
• Creating and writing poems and other texts connected to the nature and the environment.
• Reflecting over literature, activities, knowledge and learning.

Language and didactics theory
The main content of the language didactic theory is the use of the body and senses for learning and health aspects.

By using all senses children and students get the opportunity to improve learning and increase the complexity of the language.

In order to increase the need for pupils to communicate we use the outdoor environment and the landscape to create authentic communication situations.

Natural movements in the outdoor environment help to improve health and stimulate learning for children and students as well as the teachers.

The theoretical framework is based on:
• John Dewey – learning by doing
• Ellen Key
• Erik Mygind
• Anders Szczepanski

John Dewey wrote that learning in school should go hand in hand with learning outside of school. Learning indoors and out should work together. Dewey was a leader of the pragmatist movement, and held that ideas which worked in practice were a correct model of the world. He is the best-known representative of the pragmatist movement, and brought it widespread recognition. Dewey strongly emphasises the importance of the school being connected with reality, rather than acting as an isolated cell.

Ellen Key felt it was important to interact with children on their own terms. Harmonic development requires an individual approach and good adult role models. A focus on the present is important, and Key wrote that schools kill children’s interest by keeping them indoors. She also wrote that every school of the future should be surrounded by a large garden.
In his study of the Rødkilde Project, Erik Mygind found that children used a more complex language in outdoor teaching situations compared to indoor lessons.

In the model of learning below, Anders Szczepanski shows that learning outdoors depends on a complex interaction between the learning environment, social interactions in large and small groups, personal and social development and how we feel in the learning environment. Health encompasses all and is crucial for our wellbeing and potential willingness to learn. If both the body and the mind are healthy the individual’s learning ability, memory capacity, motivation and interest increase. A methodology that clearly presents a variety of sensory impressions improves memory retention.

Anders Szczepanski presents his view of outdoor education in the following figure, which can be seen as a model of outdoor learning, both in language and in other subjects:

![Figure 7: Model of learning (Szczepanski, 2005).](image-url)
**Competence goals**

According to the Swedish National Agency for Education’s syllabus for Swedish as a second language, the school in its teaching of Swedish should aim to ensure that pupils:

- understand their education forms a whole, and can acquire new concepts, understand context and apply their communicative skills in different subjects and areas of knowledge of relevance to their study orientation,
- understand the importance of language for identity, and develop the ability to understand themselves and others in a cultural and historical context,
- continue to develop their reading skills, so that their ability to interpret, critically examine and analyse different types of texts, both written and also picture-based, corresponds to the demands which exist in a complex society with a high volume of information,
- develop their imagination and desire to learn by reading literature in different forms from different periods and cultures, and be encouraged to explore literature and pictorial media, as a source of knowledge and joy,
- in a dialogue with others express their thoughts, feelings and views, and reflect over existential and ethical issues, and deepen their understanding of people in different living conditions and from different cultures,
- develop their ability to understand spoken and written Norwegian and Danish, and become familiar with the literature, languages and language situation in the whole of the Nordic area, including minority languages in Sweden.

The course Creative Writing provides the conditions to develop in co-operation with others and individually the ability to communicate in writing personal experiences and ideas. The study of style and the theory of narrative technique together with model examples provides the basic knowledge for experimenting with different genres, styles, stylistic devices and narrative techniques. The course contributes an insight into the process of what creativity in literature means – from the conception of an original idea to a finished text. Creative Writing is an optional course.

**Evaluation – ECTS credit allocation**


**Organization of the language course**

The organization is based on the major language topics in the national curriculum for the elementary level, and can be scheduled as follows:

<table>
<thead>
<tr>
<th>Time</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>09.00–12.00</td>
<td>Course introduction Key, Dewey; Outdoor education and language teaching</td>
<td>Language and learning outdoors</td>
<td>Language and learning based on the writing of Astrid Lindgren</td>
<td>Visit a school Carry out a session with children or other students</td>
<td>Group reflection and individual reflection</td>
</tr>
<tr>
<td>12.00–13.00</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
</tr>
<tr>
<td>13.00–16.00</td>
<td>Reflection Assignment Presentation</td>
<td>Language and learning outdoors</td>
<td>Language and learning based on the writing of Astrid Lindgren</td>
<td>Reflection Planning a session</td>
<td>Evaluation individual and in groups</td>
</tr>
<tr>
<td>16.00–17.00</td>
<td>Break</td>
<td></td>
<td>Reflection Assignment Presentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.00–18.00</td>
<td>Dinner</td>
<td>Dinner</td>
<td>Dinner</td>
<td>Dinner</td>
<td>Dinner</td>
</tr>
</tbody>
</table>
Day 1
Lecture. Introduction to theories of outdoor education and language education. Why, how and when can you work outside with language, a didactical perspective of language teaching.

Day 2
Working with language outdoors. Working with vocabulary. Can you name all the things around you? Finding words for what you see, hear and feel. We use our senses and put words to our feelings. We compose Haiku poems describing our own feelings and experiences. Writing poems for your favourite tree in groups. Group presentations.

Day 3
This is a full day of working with literature, mainly Astrid Lindgren’s Ronia the Robber’s Daughter. To gain a deeper insight into the texts we use different methods such as drama, walk and talk, and “meeting” different characters from the books. We try to find scenes in a nearby park or a forest that are suitable for illustrating the content of the book in order to create an authentic milieu.

In the language subject, language and literature are taught together, which is illustrated in the tasks we use. In the afternoon we introduce the assignment task.

Day 4
School visits. Before lunch the students get time to plan a session.

Observing children and their teachers outdoors. Carrying out the session, planned before lunch, with children or students. Both observation and session shall be documented and presented for the other students in the group.

Day 5
Group reflections and individual reflections on the week.

Time to complete assignment.

Evaluation individually and in groups.
Outdoor education, language and landscape
Carina Brage, National Center for Outdoor Education (NCU), Linköping University, Sweden

Outdoor education, language and landscape is a course where the landscape and environs are used to teach language. In outdoor educational work the whole body and all senses are used to gain a better understanding and, it is hoped, sustainable knowledge. Language can be taught in many ways and in various locations. We wish to present it out of doors, near the school; outdoor education does not require a forest.

None of the activities requires a lot of material. They can all easily be carried out during a lesson or part of a lesson. The students get to move around, which provides a benefit to physical health as a bonus. The exercises below also cover other school subjects.

2.4.1. WEIGHT AND SIZE

<table>
<thead>
<tr>
<th>Elements:</th>
<th>comparison – light/heavy, long/short, large/small, thin/thick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment:</td>
<td>forest or other place with materials</td>
</tr>
<tr>
<td>Materials:</td>
<td>stones, pinecones, sticks, leaves etc.</td>
</tr>
<tr>
<td>Time:</td>
<td>ten minutes</td>
</tr>
</tbody>
</table>

Introduction
This exercise can be used to divide a class into smaller groups, while also focusing on language and grammar. It can also be done as a stand-alone exercise. In that case, more time can be spent reflecting over the chosen categories or how one sees colour, shape size etc.

Instructions
Each participant fetches an object, for instance a leaf. When they have returned, a theme is selected. It could be the weight, length, shape or colour of the objects.

The participants should ask questions in order to compare the objects and form a line based on the selected theme.

Keep in mind
Practise questions and comparative forms of adjectives before carrying out this exercise. It is also possible to do it in the native language first, which can be hard enough. This way, the pupils know what to do when it’s time to try it in the language being taught.

Variations
- Everyone fetches an arbitrary number of stones. Form a line ordered by the number of stones each pupil picked up. If some pupils have the same number of stones, order them by the estimated total size or mass of the stones.
- If everyone fetches an arbitrary object, they can try forming groups based on which objects they have. Old/new, small/large, hard/soft, dark/light etc.
- If the exercise is not used to divide the pupils into groups it can be a good idea to have a notebook handy and write down some of the comparative forms and words used.

2.4.2. WORD RELAY

<table>
<thead>
<tr>
<th>Elements:</th>
<th>practicing words and names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials:</td>
<td>optionally a list of words or word cards</td>
</tr>
<tr>
<td>Time:</td>
<td>ten minutes</td>
</tr>
</tbody>
</table>

Introduction
This is a good exercise for a new group, as it can be used to practice names and vocabulary simultaneously.

Instructions
Stand in a ring. Select a "catcher", who stands in the middle. The teacher begins by saying a word and a name in one language. The person named must say the word in the other language before the catcher reaches them, otherwise they become the catcher. If they succeed in translating the word, they are given a new word by the teacher, and must then say the word out loud and choose a name.
Variations
Hand out word cards, at least two per pupil, each containing a word in both languages. The pupils can choose their own words, preferably words that are topical or have been used recently.

To reduce the time spent thinking up a new word, the group can count down from five. A pupil who is caught, or can’t think of a word to pass on, changes places with the catcher.

2.4.3. WORD CHAIN

**Elements:** practicing spelling and exercising vocabulary  
**Materials:** possibly notebooks  
**Time:** five minutes

**Introduction**
A classic word chain which requires quite a lot of attention, and also requires thinking about how words are spelled!

**Instructions**
Stand in a ring. The teacher begins by saying a word, any word. The next person in the ring must think of a word which begins with the same letter the first word ended in, and so on.

**Keep in mind**
Decide in advance how picky to be about spelling. How should spelling mistakes be pointed out?

**Variations**
When everyone has said a word, bring out notebooks and write down the whole chain. Everyone should stay in the same place, so it’s easier to remember all the words. Then compare your results and see if you all remembered the same words. If so, why? What strategies do we use to remember words?

2.4.4. DRAW AND TELL

**Elements:** describing and understanding  
**Materials:** pen, notebook, drawing paper, writing surface  
**Time:** twenty minutes

**Introduction**
A much-appreciated exercise which demonstrates the importance of communicating clearly.

**Instructions**
Sit back to back and draw something you see. Describe the picture in as much detail as possible while your partner draws what you describe. Then compare the pictures. What similarities and differences are there, and what caused them?

**Keep in mind**
You don’t have to be good at drawing! The important thing is to express and describe what you’ve done as well as possible.

**Variations**
It is of course possible to simply describe what you see for the other to draw. However, the discussion of interpretations and communication benefits if both draw.

**References**
Mygind  
2.5. Subject oriented course, Physical Education and Sports (2 ECTS)

Marie Hronzova, Charles University of Prague, the Czech Republic. hronzova@volny.cz

Introduction

This course is set for students of pedagogy specializing in teaching at elementary schools and nursery schools. Its focus is on the interaction between the outdoor environment and children’s physical activities. The course gives students instructions and directions on how to apply theoretical, didactical and methodical knowledge and practical motor skills to outdoor classes.

Course objectives

The students are to develop didactical knowledge in planning, carrying out, evaluating and developing physical education activities outdoors, in all the major target areas of the elementary level. The students are to experience and develop knowledge in the use of different types of outdoor learning environments in order to stimulate motivation and endurance in physical exercises and sports, as well as to stimulate the development of locomotor and manipulative skills, and the ability to see the practical relevance of physical activities. In this course the whole body and all senses are used to gain a better balance of the body and mind. Physical education can be taught through authentic experiences where participants will acquire a wide range of knowledge and skills convenient for children and young people to develop their physical abilities in different types of landscape. The students will gain insight into the selection and adaptation of outdoor learning exercises and activities to pupils with varying needs. To face the challenge of the generally weakened health and physical condition of pupils in the elementary school of today, the students are to gain knowledge in how one might combine physical exercises with cognitive activities of other school subjects.
Content
The whole course is oriented in children’s and young people’s physical development put into an outdoor educational perspective. The participants will, through their own experiences, acquire knowledge of the opportunities for children and young people to develop their physical abilities, skills and health outdoors.

The participants will be instructed in methodology of leadership for learning outdoors and acquainted with safety rules. Instruction is given in the form of lectures, seminars and study visits. The lessons take place in different outdoor environments. The course will include theoretical and practical lessons, discussion and reflection, work with literary sources as well as practical work with children. Various types of exercises and activities will be practised:

- Walking, Nordic walking, hiking, climbing, running, skipping, hammer throwing, cycling, swimming, diving, canoeing, rowing, yachting, fishing, skiing, skating, hunting, orientation games (night orientation), hurdle tracks, survival games, dancing, yoga, tai-chi, softball, frisbee.
- Using of natural tools and materials (stones, cones, sticks, natural barriers, hurdles).
- Physical work as the best type of exercise.

All above-mentioned activities are incorporated into games and combined with cognitive activities and with knowledge and skills of other school subjects.

Physical education in the light of learning theories
Physical education is a natural fit and probably the most convenient subject for outdoor education. Outdoor exercises support natural movements and activities. They follow the nature of motor development and also develop the reciprocal motor patterns.

- Locomotion and movements originated from the developmental phases: turning and rolling over, crawling, creeping, walking, running, skipping and jumping.
- Supporting and extending of all basic motor skills: speed (velocity), power, strength, endurance, deftness (dexterity), elasticity and mobility (range of joint motion), balance.

The combination of physical and mental exercises practised outdoors were used e.g. in China 2500 BC in kung fu exercises, and in Japan in yoga exercises.

Since ancient times, almost all learning theories have included ideas about the importance of balancing body and mind. The best-known quotation of Hippocrates, “anima sana in corpore sano,” has appeared in many later learning theories. Exercise in the open air was considered a natural part of everyday activities.

Jan Amos Komenský (Comenius) used this idea many times in his didactical theories. Some renaissance philosophers (such as J. J. Rousseau) also incorporated outdoor exercises into their learning theories.

Nowadays there are very popular outdoor sports and outdoor exercises as a reaction on the indoor way of life. Outdoor exercises became a part of health programmes and have been slowly penetrating into physical education at school. Various types of environment are used for exercises from the therapeutic, developmental or preventative point of view. In some countries (including the Czech Republic) swimming lessons are involved in curriculum.

Dahlgren and Szczepanski also mention physical education aspects in outdoor education in a health perspective.

Health benefits of physical education:
- Outdoor environment supports proprioception (e.g. barefoot walking).
- Being outdoors has a positive influence on the skeleton development (bone density) and general hardening.
- Prevention and treatment of some impairments:
  - cardiovascular – by means of endurance activities
  - respiratory – water games and exercises, breathing exercises, stay in the fresh air
  - digestive (obesity) – weight-bearing relief activities
  - neurological – natural locomotor patterns and reciprocal exercises, coordination and motor control exercises
  - locomotor – balancing of muscles by means of stretching and strengthening exercises
  - sensory deprivation – balanced utilization of all senses
From the point of view of other school subjects, outdoor exercises help to develop cognitive functions (solving problems in games).

From the point of view of children’s social and emotional life, outdoor exercises and sports help to prevent drug abuse, violence (communicative and cooperative activities, team games), avoid anxiety about unknown environments (surfaces, obstacles, natural barriers).

For adapted sports and PE outdoor environments enable children with specific impairment (e.g. mental retardation, behavioural or emotional disorders) to be engaged in physical exercises. These theories and methodologies have been described by Auxter, Pyfer, Huettig and others.

Example schedule

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Morning</th>
<th>Afternoon</th>
<th>Evening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival</td>
<td>Students get acquainted with the surroundings. Theory &amp; practice: how to use elements of the countryside or landscape to improve body and mind. Orientation games. Reflection on the first day. Discussion on the given tasks and theme.</td>
<td></td>
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<tr>
<td>Accommodation</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Day 2</th>
<th>Yoga exercises</th>
<th>Natural exercises</th>
<th>Night orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afternoon</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Evening</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Day 3</th>
<th>Folk and country dances: Roots and traditions. Connecting rhythm, movement and music (singing), breathing control. Tasks for the evening.</th>
<th>Manipulative skills and exercises Exercising with natural tools; lifting, throwing, and carrying objects. Work as physical exercise: cutting, sawing, constructing. Preparing the camping ground.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td></td>
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<tr>
<td>Afternoon</td>
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<td>Evening</td>
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<td>Morning</td>
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<td>Evening</td>
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<tbody>
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<td>Morning</td>
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<td>Afternoon</td>
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<tr>
<td>Evening</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Day 5</th>
<th>Planning the trip Route planning, orientation using maps, scale, contour lines, landmarks. Time, weather, distance, number and physical condition of participants.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td></td>
</tr>
<tr>
<td>Afternoon</td>
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</tr>
<tr>
<td>Evening</td>
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</tbody>
</table>
Chapter 2: The Subject-Related Guidelines

### Day 1
**Aims**
The aim is to make students acquainted with basic methods and techniques in outdoor teaching and to make them familiar with the neighbourhood.

**Objectives**
- To explore the surroundings by means of various games.
- To develop orientation in harmony with locomotor and cognitive abilities.
- To learn how to use elements of the countryside or landscape for improving body and mind.

**Requirements (equipment, tools)**
Sports clothes and running shoes.

### Day 2
**Aims**
- In the morning class, the aim is the introduction of students into the system and methodology of body and mind exercises for children.
- In the afternoon class, the aim is the acquisition of a store of natural exercises.
- In the evening the aim is the introduction to a new learning space – the countryside at night.

**Objectives**
- Practising body and mind exercises suitable for children.
- Learning and practising yoga exercises and sequences for children.
- Distinguishing between concentration and relaxation.
- Practising a wide range of natural exercises.
- Learning about developmental stages and the connection with natural exercises.
- Getting acquainted with elementary orientation and orientation by night.
- Applying knowledge of astronomy to a real situation.

**Requirements**
Loose sports clothes, sports shoes, hand torch, star chart.

### Day 3
**Aims**
- In the morning class, the aim is connecting elements of music, rhythm and sport and introducing national folk dances.
- In the afternoon class, the aim is the acquisition of manipulative skills with natural tools.
- In the evening class, the aim is the confrontation of students with nature, staying overnight in the open air.

**Objectives**
- To learn some national songs, rhymes and dances.
- To develop motor control, breathing and body posture by means of dancing and singing.
- To find and use suitable natural objects (tools) for exercises.
- To develop manipulative skills by means of building and setting a campfire.
- To experience sleeping in the open air.

<table>
<thead>
<tr>
<th>Day 6</th>
<th>Morning</th>
<th>Afternoon</th>
<th>Evening</th>
</tr>
</thead>
<tbody>
<tr>
<td>All-day trip (on bicycles) Exploring the South of Bohemia: countryside, architecture and landscape, history (Castle Rabí). Development of physical abilities – endurance. (Students prepared for the trip the evening before.)</td>
<td>Feedback Summarizing experiences, discussion. Suggestions for the next day's programme.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 7</td>
<td>Children's Olympic Games Students organize sports and games for local children.</td>
<td>Evaluation of the course Formal and informal revision, summary, conclusions, suggestions. Free group activities.</td>
<td>Going home party</td>
</tr>
</tbody>
</table>
Requirements
A sleeping bag, matches, water, an axe, saw, hammer, (scythe).

Day 4
Aims

• In the morning class, the aim is teaching the students how to use bikes and cycling in teaching of various school subjects.
• In the afternoon class, the aim is to make students familiar with principles and basic elements of climbing.
• The main aim of the evening class is the connection of language skills and facts from sports history as a teaching method.

Objectives

• To use riding bicycles for teaching driving rules.
• To explore the surroundings.
• To learn important skills (mending tyres) and knowledge (cycling technique).
• To learn and practise basic skills with ropes for improving coordination.
• To combine mental and voluntary capacity with physical skills and abilities.
• To develop language skills by means of story telling.
• To learn some facts from sports history.

Requirements
Sports clothes and shoes for climbing and cycling, helmet, glasses, gloves.

Day 5
Aims

• The aim of the morning class is introduction to elementary modifications of some outdoor (ball) games.
• The aim of the afternoon class is to make students acquainted with water sports and exercises in water convenient for children.
• The aim of the evening class is an arrangement, organization and preparation of a school trip.

Objectives

• To learn basic game exercises, rules, tactics and strategy of particular games.
• To modify outdoor games for children.
• To learn basic rules, techniques and methods of water sports.
• To learn and practise life rescue procedure, first aid.
• To practise elementary skills – paddling, rowing.
• To practise and extend the supply of games and exercises in water.
• To use water environment for the development of strength and widening the range of motion.
• To learn how to use some facts from aquatics in the teaching of science.
• To prepare and organise an all-day cycling trip.

Requirements
Swimsuit, shoes for movement in water and inside the boat, shoes and dress for outdoor games, balls and equipment.

Day 6
Aims

• The main aim is the realization of a half-day cycling trip.
• The aim of the evening class is the arrangement of the next day sports event.

Objectives

• To prepare and organise a cycling all-day trip according to conditions of the day.
• To improve endurance of participants.
• To apply learnt knowledge and skills on a real situation.
• To see and visit interesting sights.
• To ensure safety on the roads, to follow traffic rules.

Requirements
Sports clothes and shoes for cycling, a small backpack, helmet, glasses, gloves, map, first aid kit, raincoat, bottle for drink.
Day 7

Aims

• The aim of the morning class is the realization of a sports event and presentation of students teaching skills.
• The aim of the afternoon class is the evaluation of the course.

Objectives

• To prepare and realize a sports event or to perform a part of a teaching unit of PE outdoors.
• To ensure the feedback by means of individual presentations.
• To combine discussion with practical illustration and farewell activities.
• Students are to evaluate the course and give suggestions for future.

Requirements

Equipment according to individual requirements and preparation for the event – students’ performance.

2.5.1 TEACHING BASIC MOTOR SKILLS BY MEANS OF NATURAL EXERCISES

Marie Hronzova, Charles University of Prague, the Czech Republic

Short description

This activity illustrates and teaches how to use natural exercises outdoors and how to use them for the development of basic motor abilities.

Subject aims

The main aim is development of basic motor abilities of children, such as speed and quickness, power and strength, mobility and dexterity, endurance and persistence in an outdoor environment.

These activities and exercises use sensory perception and proprioception in a natural environment. The exercise uses natural devices, tools and requisites (grass, trees, stones, logs) for body exercise and activities.

The task is to build up a large store of outdoor locomotor activities and manipulative skills and teach children to utilize them quite naturally.

Preparations

Students: should wear suitable dress and shoes for safe and comfortable movement
Teacher: should choose and get acquainted with the place (safe and stimulating)

Time

About 1.5 hours

Description

Children are encouraged to explore the surroundings – counting and touching trees, pace measuring and estimating of distances, looking for stones and collecting them, picking up interesting leaves and branches.

Running – various types of running or gait, running between trees and around them, along the paths.
Running

1. as fast as possible
2. as far as possible

Jumping – jumping, hopping or skipping over stones and logs, brooks or streams, among them, around them, in created pictures.
Jumping

1. long jump
2. high jump
3. multiple jumps

Throwing - throwing various objects (cones, stones, branches) long throw, target throw.

Climbing - overcoming low and high vertical and horizontal barriers – logs, beams, big stones, benches, guard stones, fences, hedges, walls, rocks, and trees.
**Background**
Children can choose their own objective or way according to their abilities. They learn to estimate their potential and capacity. 

Children develop their motor abilities:
- **Speed and endurance** in running
- **Bounce power and elasticity** in jumping
- **Whip power and strength in throwing**
- **Mobility, dexterity and elasticity** in climbing

**Keywords**
Basic motor abilities, natural exercises, locomotor activities

**Written by**
Marie Hronzova - Charles University of Prague, the Czech Republic - E-mail: hronzova@volny.cz

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**2.5.2 AWAKENING – YOGA AND BREATHING EXERCISES AS A PART OF PHYSICAL AND MENTAL BALANCE**

*Marie Hronzova, Charles University of Prague, the Czech Republic*

**Short description**
This lesson involves some examples of yoga exercises convenient for children in the open air. It uses nature for performing these activities.

**Subject aims**
The main aim is to achieve stronger body and mind and make the mind and body relax by means of physical and breathing exercises.

This exercise takes advantage of basic principles of yoga exercises for strengthening and stretching of the body.

It involves sensory perception and physical exercises, as well as self-control and body awareness.

**Preparation**
Students: should wear suitable loose dress for safe and comfortable movement.
Teacher: should plan with regard to daylight hours, weather conditions and surrounding activities or lessons.

**Time**
About 1.5 hours

**Description**
Choose a suitable place to exercise together with the children. The place should inspire them and enable them to relax. To aid concentration, the children should have a good view of the landscape.

*Breathing exercises* – three-part breathing, belly breathing, breathing positions, body posture.

*Imitating exercises* – imitating animals and nature – expression, games, storytelling.

*Simple yoga poses* – cat and cow, rabbit, surfer, rainbow, tree, etc. – combined with simple songs and rhymes

*Fun postures* - exercising children’s imagination, group games.

*Balance exercises* – focusing on concentration.

*Postures and sequences* – building strength and flexibility.

*Sun salutation* (Moon salutation) – and their variations.

*Relaxation* – connected with visualization, listening to sounds of nature, smelling the fresh air.

**Background**
Improve health, mental, emotional and physical well-being.
Increase focus, concentration, memory and learning.
Help to reduce stress and anxiety.
Increase motivation and confidence.
Help the hyperactive and attention-deficit children.

Keywords
Yoga, breathing exercises, postures, asanas, sequences

Written by
Marie Hronzova - Charles University of Prague, the Czech Republic - E-mail: hronzova@volny.cz

References

Outdoor Education
Comenius. Didactica Magna

Reference

Teaching for Understanding by Newton (198 p)
Education for Sustainability by Huckle (236 p)

Environmental
Earth in Mind by Orr

Reference

Ecological Literacy by Orr (210 p)

Didactic

Leadership
Ogilvie, K. Leading and Managing Groups in the Outdoors. (1993) Sheffield Hallam University, UK. ISBN 1-898555-00-1
2.6. Subject oriented course, Science (3 ECTS)

Eha Jakobson, ehajakobson@yahoo.com, Teacher, Unipiha, Primary School in Estonia
Mikk Sarv, mikk@ilm.ee, Estonian Society for School Forests
Leida Talts, talts@tlu.ee, University of Tallinn, Estonia

Introduction

This subject-oriented course in natural sciences is a part of the Comenius project OUTLiNES – “Outdoor Learning in Elementary Schools – from Grassroot to Curriculum in Teacher Education” and gives 3 ECTS.

The course aims to give students knowledge in and experience with planning, carrying out and evaluating outdoor natural science activities, and knowledge of didactic theory, where the students will be challenged to reflect on the intersection and relationship between their own experiences, the science aims and didactic theory.

Course objectives

The students are to develop didactical knowledge in planning, carrying out, evaluating and developing science activities outdoors, in all the major target areas of the elementary level. The students are to experience and develop knowledge in the use of different types of outdoor learning environments in order to stimulate motivation and endurance in science activities, as well as stimulate the development of science concepts, and the ability to see the practical relevance of the science as a subject. In this course, the whole body and all senses are used to develop a better understanding and a sustainable approach. During the course, the students become familiar with the most common biological species (plants, animals, mushrooms) and their way of life. The students learn to classify objects as living or non-living, to carry out nature observations and become familiar with different forms of landscape and natural environments and develop a sense of
place. The students learn to integrate science with music, art, handicraft and local culture. The students will gain insight into the selection and adaptation of outdoor learning activities for pupils with varying needs.

**Main areas**

**Contents of the activity**
The contents of the activity correspond to the curriculum for Estonian elementary schools.

1. **Human senses and discovery.** Living and non-living. Things and materials. Liquids and solids.
3. **Natural phenomena.** Warm and cold weather. Causes and changes in weather (air temperature, air motion and water circulation).
4. **The meadow as a living environment.** Living conditions and interaction between organisms and meadow. The most common plants and animals.
5. **Forests and swamps as living environments.** Oligo-mesotrophic boreal forests, mesotrophic boreal forests and boreo-nemoral forest, their biological, economical and social characteristics. Swamps (bogs, marshes) as bodies of water. Living conditions in swamp.
6. **Nature as a resource for music, art and handicraft.**
7. **Nature as a part of local culture and social life.**

**Methodology and evaluation**
The following study methodologies will be used: observation, describing and analysing natural phenomena, group and individual work, practicing food preparation and camping; games; art and handicraft workshops.

**There are two kinds of evaluation:**
- Diversely reflecting the activities and study results using a log, role play, group reflection and all five senses (each group is given the task of reflecting on certain activities through sight, hearing, smelling, touching, tasting)
- Written report, group assignment. Pass/fail.

**Study outcomes**
The student:
- Is able to recognize the most common biological species.
- Can group and describe the objects of living nature in a certain region.
- Has an overview of manifestations of life of organisms and their diversity.
- Can conduct nature observations.
- Can use plans and maps.
- Can use information technology to teach natural sciences.
- Knows different ways of identifying the cardinal points and is able to use them.
- Understands the principles of nature conservation and environmental sensitivity.
- Can survive in outdoor conditions and values a sustainable lifestyle.
- Can reflect his or her action in various ways.
- Can use natural materials for artwork and handicraft.
- Is able to see connections between landscape, culture and social life.
- Is able to carry out natural science lessons outdoors as an assisting teacher.
Didactic theory for natural sciences
The theoretical framework has its roots in history of Estonian pedagogy. The one of the most outstanding person in this field was Johannes Käis (1885–1950), influenced by the progressive pedagogical ideas on the first third of 20th century (John Dewey, Ellen Key, Helen Parkhurst, Kerschensteiner). He adapted the new ideas for Estonian school system and created the modern curriculum for elementary school. He was a scientist by training and his first concern was how to teach natural science. He believed that pupils could learn nature in authentic conditions, in the context of different environments and landscapes.

“The only real means to achieve a close connection with living nature in Natural Science lessons are excursions to the forest, to the field, to the sea shore, to a meadow glistening with colourful flowers, to sand dunes leading their proper life.... Every teacher of Natural Science has to be a natural supporter of excursions as a part of teaching his subject and he is obliged to use every possible means to carry out excursions.” (1914)

“This thus we spontaneously notice the first flowers springing in the forest or on the meadow, we hear the first birds singing, we notice the changing of seasons, but unfortunately we do it more or less accidentally. A few days later we have forgotten all about it. But mark all these events in your observation diary and thus they have become interesting material both pedagogically and scientifically.” (1923)

Käis believed that carrying out observations in the immediate vicinity was teachers’ task in the near future:

“In achieving this objective they are lead by two paths: independent observations in and examination of the environment close to the school and educational trips.”

The outdoor education promoted by Johannes Käis focuses on natural science, but he also considered it in a wider perspective.

The following things can be taught and developed through natural science (outdoor education) lessons:

- civics
- social values
- moral values
- observational ability
- intellectual processes
- determination
- intellectual sentiments
- physical education
- understanding the achievements of the cultural life of mankind
- understanding the requirements of the social health service

(Käis, 1996)

The second backbone of our theoretical framework is the constructive pedagogy where the pupils construct their view of the world based on personal experience, reconstructing and deconstructing viewpoints, in order to gain new understandings. The task of teachers is to support and encourage their pupils, to create the conditions and challenges for investigations, questions and studying, to direct to holistic concepts and integrated possibilities which are included to natural science (art, handicraft, narratives, surviving in nature). The 4-H movement (learning by doing through Head, Heart, Hand and Health) highlighted by Anders Szczepanski (Dahlgren & Szczepanski, 1998) gives a meaningful pivot for outdoor learning.
## Organization and content of the science course

<table>
<thead>
<tr>
<th>Time</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00–7:00</td>
<td>Outdoor lesson: bird songs</td>
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<tr>
<td>7:00–8:00</td>
<td>Morning exercises and time for resting</td>
<td>Welcoming the sun and morning exercises</td>
<td>Warming-up games and packing up the camp. Breakfast.</td>
<td>Singing to welcome the new morning and morning exercises</td>
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<tr>
<td>8:00–9:00</td>
<td></td>
<td>Breakfast</td>
<td>Nature protection (lecture)</td>
<td></td>
<td>Breakfast</td>
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<tr>
<td>9:00–12:00</td>
<td>Arriving to Soomaas</td>
<td>The forest as a teacher (lessons in nature)</td>
<td>Visit to a school. Outdoor lessons with teachers.</td>
<td>Excursion to a wooded meadow. Identifying different types of landscape.</td>
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</tr>
<tr>
<td>12:00–13:00</td>
<td>Accommodations</td>
<td>Handicraft lesson – making a shepherd’s horn and a flute</td>
<td>Lunch at school</td>
<td>Continuing the handicraft lesson. Presenting and showing the prepared objects.</td>
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<tr>
<td>13:00–14:00</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Visiting the Heimtali Museum of Local Lore, run by the artist Anu Raud.</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>14:00–15:00</td>
<td>Course introduction. Educational aims and tasks.</td>
<td>Excursion to the river. Body of water as a teacher. Laboratory lesson and drawing lesson.</td>
<td>Identifying plant species in nature</td>
<td>Runic song (ancient folksong) as a teaching aid in nature</td>
<td></td>
</tr>
<tr>
<td>15:00–16:00</td>
<td>The cultural landscape and the meadow as a teacher (outdoors)</td>
<td>GPS and other facilities helping orientating in the nature</td>
<td>Summing up the course. Filling in the initial feedback questionnaires</td>
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<tr>
<td>16:00–17:00</td>
<td>Outdoor games</td>
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<tr>
<td>17:00–18:00</td>
<td>Rest</td>
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<tr>
<td>18:00–19:00</td>
<td>Dinner</td>
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<tr>
<td>19:00–20:00</td>
<td>Reflection and log,</td>
<td>Reflection and log.</td>
<td>Reflection on the day.</td>
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</tbody>
</table>

Bus to Tallinn

Spending the night in the tepee.
Making a shepherd’s horn

A path to marshland (swamp)

Outdoor education course programme for natural sciences
Estonia 12–16 May 2008

**Aims of the course:**

1. Knowledge and skills on applying Outdoor Education pedagogy and didactics in teaching Natural Science subjects in basic school.
2. Forming a responsible attitude towards one’s environment.
3. Valuing healthy lifestyle.
Short description of the learning activities
All learning activities focus on immediately experiencing nature, taking into account the students’ former experiences. Learning natural sciences, the main objects of cognition are the objects, phenomena and processes of nature and their interactions. Practical activities with natural objects carried out by the student are essential. During the course, the student becomes familiar with the most common biological species (plants, animals, and mushrooms) and their way of life. The student learns to group the objects into living nature and non-living nature. The student learns to carry out nature observations and becomes familiar with different forms of landscape and natural environments. The students of teacher training programmes learn to create a study environment that enhances pupils’ active participation.

Study method
The following study methods will be used: observing, describing and analysing natural phenomena, observing and conducting outdoor education lessons with the teacher. Diversely reflecting the activities and study results.

The most important study outcomes
The student:
• is able to recognise the most common biological species;
• can group and describe the objects of living nature and non-living nature in a certain region;
• has an overview of manifestations of life of organisms and their diversity;
• can conduct nature observations;
• can use a plan and a map;
• can use information technology in teaching natural sciences;
• knows different ways of identifying the cardinal points and is able to use them;
• understands the principles of nature protection and environmental control;
• values sustainability;
• is able to carry out a science lesson in the open air with an assisting teacher.

The content of activity
The study week is divided into topics, which are studied through different activities and using different senses (observations, experiments, surveys, describing, analysis, games and other methods).

4. The meadow as a living environment. Living conditions and interactions between organisms on a meadow. The most common plants and animals.
5. The forest and swamp as living environments. Oligo-mesotrophic boreal forests, mesotrophic boreal forests and boreo-nemoral forest, their biological and economical character reference. Swamp as a body of water. Living conditions in a swamp.

The course took place in Soomaa (“land of bogs” in English), a reserve to protect the largest complex of mires, riverine forests and flood-plain meadows in Estonia and present the characteristic local culture of the area passed down through generations. There we find plant communities which have become rare in Estonia: mixed forests of oak, elm, ash, and lime, sedge-dominated grassland communities and regularly flooded swamp forests of red alder. The total area of the national park is 371 km² or 37 100 hectares.
Day 1

Day 2

Day 3

Day 4

Day 5
Didactical context
We should know more about our ancestors’ bond between man and nature in order to learn more about their mutual relationship and hence enrich our children’s disposition.

Our ancestors had a close relationship with nature that was not mediated by televisions, record players, cameras or computers. In order to guarantee our children similarly direct experiences, knowledge and skills, teaching should partly be carried out in the open air.

Integrating teaching with outdoor education
- Work through the topics of the syllabus.
- Choose the topics that can be taught outdoors.
- Familiarise yourself with the subject-based competences and the expected study results
- Consider also the general competences and domain-specific competences of the national curriculum.
- Think through what could you do to achieve all the competences outdoors.

Competence requirements and outdoor education
Children are competent if they have:
- Necessary knowledge
- Practical experiences
- Appropriate (necessary) skills
- Sense of reality
- A conscious attitude towards the surrounding environment
- Proper value judgements, attitudes, and lifestyle

In other words, if they know, comprehend and are able.

Children can acquire all this only in a purely natural environment or through outdoor education.

Outdoor lessons
How do children learn:
- to understand what is present around them?
- to understand how the surrounding environment influences them?
- to understand how they influence the environment around them?
- to know the mutually useful and pleasant effects a man and the nature have?

Children acquire knowledge through experience and experimentation. In all that, the teacher’s attitudes, knowledge, and skills have an important role to play.

An outdoor lesson requires more preparation than a classroom lesson. The aims of the lesson need to be clearly formulated. The aims can also be for example changes in the children’s attitudes.

Example aims
Children:
- Distinguish living nature from non-living nature.
- Are able to describe the barks of a birch and a fir.
- Are able to compare and tell between foliage trees and coniferous trees.
- Are careful when walking by a lake or a river.
- Are able to look for nature’s object by shape and colour.
- Are able to pick and count cones and compare quantities.
- Are able to find objects by characteristics.
- Can name different characteristics of objects and use these to categorise fish, birds, and animals.
- Distinguish decorative plants by their scent.
- Tell the type of tree by touching the bark (fir, pine).
- Are able to start a fire and fulfil fire safety requirements.

The beginning and the end of a lesson are very important and need to be carefully thought out. Tools need to be prepared in advance, so that they are ready to be used when needed. Begin and end the lesson in a place children know well.

Preparing an experiment, we have to know:
- What will we do, examine, and explain?
• What will we measure, compare, observe?
• Which changes might occur?
• Are the changes caused by?
• What can be / what should be the result of the experiment?
• What did we prove / learn?

Getting attention outdoors is more difficult, because there are many distractions. Asking questions is difficult, important, and vital. The questions need to be:
• Sufficiently precise to get an answer based on knowledge.
• Sufficiently general to get a creative and free response.

Students have to learn using all their senses (smelling, tasting, hearing, seeing, touching). Moving around is a useful and helpful factor.

Be flexible. Look for opportunities, and use unexpected changes, phenomena, and objects. Memory and other cognitive processes work more productively in fresh air, and the brain works better and more effectively.

Always perform an analysis after an outdoor lesson focusing on:
• What went well and why;
• What should be different in the future, what should be considered.

Qualities of a good outdoor lesson:
• Children are happy, interested, and cooperative.
• Everybody feels good being outside.
• The activity has a specific aim.
• Study activities are accurately planned.
• Learning can be evaluated and children can give their evaluations.
• Aims are student-centred.
• Study activities guarantee achieving the aims.
• Children’s former knowledge, experiences, and skills are taken into use.
• Children get answers to their questions.
• Children’s abilities and individuality have been accounted for.
• What has been learnt can be used in life right away.
• Associations can be made between established and new knowledge, skills and spheres of life.

Before the lesson, think about:
• The time dedicated for the activities.
• Study materials (textbooks and additional literature, illustrative materials, testing tools, etc.).
• Where and when you use the tools.
• The order of observing, listening and testing activities.
• How you will start and end the lesson.
• How you will revise, reinforce, and use existing knowledge.
• How to explain where, when, and why the given knowledge or skill might be useful.
• How you will get feedback.

After the lesson, consider:
• Did you achieve your aims?
• What disturbed, troubled, failed and why?
• How you managed with the time planned for each activity?
• What went especially well?
• What should be done differently?
• What should be considered in the next lesson?
• Was the outdoor lesson necessary for you or for the children? Or for both?
• What was the spirits of the children like?

When can you take children outdoors to study?
Mostly when the temperature is above 10 °C. If temperature is below zero children should not stand on one place more than 3–5 minutes. This is the time when students learn and experience through moving and acting.

“The whole life is interrelated. Probably everyone has felt that although fruits grown in the greenhouse are nice and red, they lack rich smell and taste. Products grown in other countries, which have been shipped
here to be sold, do not make you feel as cosy and homey as fruit picked on your own fields and forest...
We as humans are not so different from other living creatures - plants, animals, and birds. When we raise our children mainly in closed rooms, the result is the same - children may know quite a bit, but the knowledge lacks taste and is pale.
The more possibilities we have to organise studying in real conditions, using bodily moving and exploring different landscapes, the more profound and diverse are the children’s knowledge. Similarly to plants grown outside, which are more resistant and healthier, also children, who have studied outdoors are calmer, more active, and healthier. The problems destroying the humankind the most in the 21st century – stress and obesity – cannot reach us.”
Mikk Sarv, Vilusi, July 2006

2.6.1. OBSERVING AND IDENTIFYING OF TREES

Subject aims:
- To learn to notice, observe, identify, compare the leaves of trees
- To learn to describe and to write down the collected objects
- To collect material for art lessons

Description of activities

<table>
<thead>
<tr>
<th>Time</th>
<th>Teachers’ activities</th>
<th>Pupils’ activities</th>
<th>Tools/remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before the lesson</td>
<td>To prepare the worksheets; to go through the place of the lesson and prepare the labels for the trees</td>
<td>To recall the names of the trees and bushes</td>
<td>Pencils, writing pad, file for collected leaves, magnifying glass</td>
</tr>
<tr>
<td>0-5 min</td>
<td>Teacher announces the aim of the lessons and delivers the worksheets</td>
<td>Formation of pairs working together; ask questions after reading the worksheet (if there are some)</td>
<td></td>
</tr>
<tr>
<td>5-30</td>
<td>Individual scaffolding, motivating</td>
<td>Dealing with trees and taking notes, discussing.</td>
<td></td>
</tr>
<tr>
<td>31-45</td>
<td>Encourage, summarizing, reflecting</td>
<td>Presenting, reflecting; asking questions, discussions.</td>
<td>To avoid rushing</td>
</tr>
<tr>
<td>45-50</td>
<td></td>
<td>Play: train of trees</td>
<td></td>
</tr>
</tbody>
</table>

The collected leaves will be used as a material for the art lesson.

2.6.2. OWN TREE

All the children choose their *own tree* near the kindergarten/school, which they go to when they wish to tell news or to say something important, to share their delight or simply to be with their tree.

They know the name of their tree, they always recognise the tree among others and they try to find out its approximate age. They measure its circumference, height, and the size of its top.

The friend of a tree knows when it will bud and when it will leaf, what the blossoms, fruit, seeds, and leaves are like, what the bark is like and how it feels to touch it with their eyes closed. They know their tree well; otherwise it would be difficult to be its friend.

They take care of the tree, visit it, share it with birds, bugs, or butterflies and they are not envious, if somebody else also loves the tree.

The “own tree” helps to overcome worries when you hold it, hug it, put your head or cheek against its trunk, when you lean back or sit under it to think.
It clears your sorrow and dark thoughts when you talk to it, caress its branches, leaves, or trunk. By the way: children like climbing trees and trees like it too, when children climb on their branches. Trees want to hear children talking merrily and laughing and they want to feel the touch of their warm hands and bodies.

We only need to look and consider whether it is the right tree, the right time, and the right place for climbing.

2.6.3. WEATHER STONE IN THE SCHOOLYARD

We have a weather stone in our yard.

When the stone is...
- *dry*, then the weather is dry.
- *wet*, then it is rainy.
- *old*, then also the weather is cold.
- *warm*, then it is sunny and warm.
- *rosty*, then it is frosty and the weather has recently changed.
- *snowy*, then it’s winter.

The stone also shows compass points.
- The moss is in the north of the stone.
- The south side of the stone is warmer at noon

Climbing on the stone you may become a king – the king of stone.

A moment with nature in each day
What was the weather like when you came to the kindergarten / school?
- Noting down the outside temperature
- Watching the sunrise
- Observing precipitation, the sky
- Changes in the view and horizon compared to yesterday
Chapter 2: The Subject-Related Guidelines

- Picking little stones, straws, etc.
- Playing in leaves
- Having a snow fight

We walk to a corn field and familiarise ourselves with it and compare rye and wheat.
Go to a potato field or the field of another crop that is grown in furrows, on headland, or in lines.
It is advisable to have an outdoor lesson 1–3 times a week.
Outdoor education week – one week in autumn, winter, spring, and summer for every group/class.
Read folk legends and folk wisdom outside in the open air ("Why do leaves not fall down from the oak?", “Cow milking bird”, riddles, weather forecasts).
Special attention on stories about trees or legends about objects that are under the protection of national heritage (sacrificial stones, tomb sites, strongholds, places associated with the folk hero Kalevipoeg, etc.)
Casting spells by the fire at equinoxes, when meeting or parting, on red-letter days in popular calendar, etc. Make up your own spells!

In spring, “Juba linnukesed” (with movements), in autumn, “Lapsed, tuppa!” (with movements).
The seed of a child of nature – pumpkin seed to be put in the ground on the first day of outdoor education; in autumn children draw a face on a pumpkin and exhibit it.
The seed of luck – chestnut conker in autumn to be put in the pocket at the final event of outdoor education – it will bring luck until the spring arrives.
Learn by heart a poem, a song, numbers from 1 to 10 etc. under your own tree; learn difficult things by the tree!
In the yard, draw on the ground/stone the circle of compass points.
Grow spawn of frogs in a glass jar in a cool place until it turns into tadpoles; later let them back into water, because they can find food there.

Outdoor activities

- Searching activities – find a natural object or a hidden object in nature.
- Observing assignments (colour, size, shape, temperature, location, smell, taste, three states of matter – water, steam, ice – material, texture, sound).
- Taking photos.
- Using riddles to facilitate finding answers from the nature.
- Proverbs, folk wisdom, weather forecasts – their connection with nature.
- Drawing:
  - A picture of nature.
  - A single object.
  - An object with shadows.
- Picnic (gathering material for making a fire, building a fire, lighting the fire, cooking on the fire, putting out the fire, tidying up after the fire).
- Clearing up the surrounding environment.
- Bird watching, listening to birdsong.
- Looking for spring flowers, picking flowers, making a wreath.
- Orientation using compass points.
- Paper chase with ciphers and tasks.
- Treasure hunt (looking for hidden objects/sweets using passwords).
- Building a footbridge.
- Measuring and labelling a location, observing surface areas (are, hectare, kilometre).
- Counting, comparing, grouping, generalising objects (size, shape, colour).
- Measuring and comparing temperature, calculation tasks for comparing results (air/water/ground/soil temperature, temperature in shadow/out of shadow, thermometer with dark and light background).
- Simple herborising and drying of plants and parts of plants.
- Measuring the length of shade at different times.
- Playing in the landscape using natural objects.
- Steeple chasing, completing different tasks.
- Stunt biking, cross-country biking, roller-skating, skateboarding.
- Hikes, educational walks.
- Learning about different plants (competition), games related to plants.
- Longer nature observation – changes in the nature every day after classes (individually or in group).
- Games with moving and singing, listening to music, folkloric children’s games.
- Planting trees/bushes, sowing, digging the ground, furrowing.
- Making a penny whistle, trying a wind spinner.
- Making snow figures, preserving them in the freezer until midsummer day.
- Tasting and gathering birch/maple juice (if children have this possibility at home).
• Learning to know rocks, looking for fossils in limestone.
• Determining compass points by nature (tree tops, moss, sun).
• Forcing branches (bird cherry, white beam).
• Learning to know the blossoms of trees and bushes (flowers and catkins).
• Making a birch whisk.
• Storytelling, describing.
• Using foreign languages in nature activities, discussion in a foreign language.
• Casting spells by the fire.
• Learning the concepts horizon and view (what is on the horizon? What’s in view?)
• Observing clouds, changes in their shape, direction and speed of movement, position in respect to a landmark.
• Making a frottage of a piece of bark, a stone or another natural object.
• Making things using various natural materials, gathering such material.

2.6.4. GAMES

The bird is flying
The leader of the game shouts: “The bird is flying!” and raises his/her hands as wings. Other players must do the same. The leader of the game says the names of birds and among these also the names animals or objects that do not fly. Doing so, s/he always raises his/her “wings”. Those players who make a mistake and raise wings at the wrong time fall out of the game.

Cuckoo
The players stand in a circle, with the “cuckoo” standing inside the circle.
Players start moving clockwise and sing or recite:

“Listen, my bird, the cuckoo is cuckooing!
Listen, my bird, the cuckoo is cuckooing!
It pushes you out if you keep snoozing.”

All players have a nest on the ground – a circle made of string or willow twigs, a little basket or other vessel or a hula-hoop. The “cuckoo” has a ball in his or her hand – the “egg”. When the singing starts, birds leave their nests and walk freely on the playground. After the last words the “birds” quickly return to their “nests”, the “cuckoo” enters somebody else’s nest and puts the egg in it. The player who does not have a nest becomes the new “cuckoo” and takes the ball, and the game begins again.

Earth, water, air, fire
Players toss a ball; when “water” is said, players have to name a fish or another sea animal, a bird, when “air” is said, and an animal when “earth” is said. When “fire” is said, players have to say nothing. Players who make a mistake fall out of the game.

Tree game
The players stand in a circle, passing leaves from different trees around. The leader of the game stands blindfolded in the circle and says: “Stop!” Now the leader opens their eyes and asks the players with leaves, “what kind of a tree are you?” The player who gives the wrong answer becomes the new leader. If there are no wrong answers, the leader chooses a new player to enter the circle.

What kind of wisdom concerning water do you know?
• Why does water sometimes flow? Where does water flow and where not?
• Where does water flow? (From high to low)
• Each body loses as much weight as weighs the water it displaces.
• There are inland waters and seas and oceans, there are swamps as the reservoirs of fresh water, there are glaciers, currents, ...
• There is surface water and ground water.
• There are precipitations.
• There are three forms of water – liquid, solid, gas. We cannot see the gaseous form; fog is not gas. Over boiling water, steam turns into drops of water that we can see.
• Experiment on water vaporising on a plate inside a wet cloth.
• Water circulating in nature.
• Springs, karst related phenomena.
• Using water: watermills, water generators/hydropower plants, heating systems in buildings, cooking, laundry, pools, fishing, water-borne traffic, industries, steam turbine, cattle breeding, irrigated agriculture, ...
Practical outdoor activities with water

- Water games (water fight etc.)
- Feeling the water temperature by hand.
- The concepts cold, lukewarm, warm, hot, and scalding – closed jars filled with water with different temperatures.
- Pouring water into bottles with a wide or narrow opening.
- Measuring the volume of a vessel.
- Guessing the volume of water using many vessels of different sizes, pouring the correct amount of water.
- Freezing water in a plastic bottle in the freezer, expansion of water.
- Making sweet juice cubes in the freezer.

The most common tree in Estonia is pine.
- Draw the fruits and needles of fir, pine and juniper.
- Find out and fill in the gaps:
  The highest tree, a fir is ___ metres high grows in _____________ (where?)
- Find out, what was once built of pine!
- Smell the twigs and wood of pine, fir, and juniper.
- Use cones to make ....
- Count needles on a twig of 5 cm. Compare the results.
- Make an arithmetic expression using cones, where the answer has to be, for example, 7.

To the children about birds

What were children taught?
If a little bird sits on the window in winter you must feed it – otherwise someone in your family will die.

Türi
You don’t have to pick the last of the crops from the field: something should remain for the birds in the sky.

Kaarma
Sparrows may not be chased away or be caught or killed – this immediately leads to failure in sheep breeding.

Kadrina
One should greet returning migratory birds: “Hello, hello, little birds, you’ve come back to us!”

Kadrina

“Hello-hello, little bird, ender of a long journey!” This was said to arriving birds in spring.

Kodavere
Don’t bother a hawk when it is hunting a mouse, a worm, or a rat up in the tree.

Saaremaa

Behaving around a bird’s nest

- Birds’ nests may not be broken. You cannot even go so close that your breath touches the nest – then the bird will leave the nest and the baby birds will die.
- You should not touch the eggs in the nest, or the bird will leave the nest.
- You should not look at the eggs, the baby birds or even the old birds with your teeth showing – otherwise predatory birds will attack the nest.
- When you look at a bird nest, cover your mouth with your hand.
- Looking at a bird’s nest once should be enough for you.
- Two sins will not be forgiven: breaking a nest and ruining young trees.
- Children who find a lot of bird nests are blessed.

When a child got hurt or fell ill, the following spell was cast:

Pain to the crow,
Illness to the magpie,
Other ills to the blackbird,
Our child will be well again.
References

Estonian National Curriculum
Käis, Johannes (1996) Kooliraamat. Tartu, Ilmamaa
Chapter 3:
Evaluations of Test Runs
In this chapter, you will find the compiled evaluations of the test runs that were a part of developing these courses.

Each course had two test runs – one with local students (that is, the course was tested by using the language of both lecturers and students), and an international course, where the course language was English.

Developing the courses led to a lot of experiences that could be helpful to know about when you are going to make your own courses. Examples of the evaluations are therefore presented in this chapter.

Some of the recommendations refer to more local experiences, and some are of more common interest. These are not meant as strict guidelines, but merely to inspiration for you and to make you think over for yourself how to prepare and organize your own courses.

March 2009
Chapter 3: Evaluations of Test Runs

3.2. Introduction

In this report, the results of the evaluations of six national and six international test runs of the Subject Courses in Outdoor learning in the project OUTLiNES are compiled. The six national test runs were carried out during the spring of 2008, where they were evaluated both by the students and the lecturers. The course was refined according to this, and the international test runs took place in autumn 2008.

Working progress
Several steps and refinements have been made during the evolution of the Subject Course during the project period:

First test run
- Subject Course, first test run, daily reflections
- First test run, students’ first evaluation (immediately after the Course)
- First test run, lecturers’ evaluation
- First test run, students’ second evaluation of both courses (after 6–8 weeks)
- Refining the Subject Courses (at the meeting in Norway, may 2008)

Second test run
- Subject Course, second test run, daily reflections
- Second test run, students’ first evaluation
- Second test run, lecturers’ evaluation
- Second test run, students’ second evaluation (after 6–8 weeks)
- Second refinement of the Subject Course

Contents:
- Introduction
- Working progress and process
- Main conclusions, positive and negative (summary)
- Quantitative data
- Qualitative data
3.2. Main conclusions on all evaluation (summary)

The evaluation points out how teaching in different subjects in the outdoors is a successful way of increasing the learning outcome.

Outdoor Education also reduces stress for both students and teachers and improves the ability to focus on the subject.

We found that the reflection connected to every activity is an essential part of the learning and teaching process and has deep impact on the personal learning development.

One important part of the outdoor learning is that the students get the possibility to develop their social skills, which are pointed out in the evaluations.

It is hard to isolate the subject when you work outdoors, so one conclusion is that it would be more productive to work interdisciplinary, and to have a holistic approach.

The recruitment should be more targeted in order to reach the right groups of students.

The course descriptions should be more specific to avoid misunderstandings about the content.

It was a pity that all countries did not have the possibility to send students to the other countries.

Quantitative and qualitative data

The test runs were carried out in six different countries, six test runs for national students in the language of each country, and six test runs for groups of international students, with the course language English.

In all international courses at least four nations were represented.

All courses were evaluated according to the schedule on page 2, and the essential conclusions are presented here.

<table>
<thead>
<tr>
<th>Country</th>
<th>first test run, national students</th>
<th>second test run, international students</th>
<th>Nationality of international students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estonia</td>
<td>12</td>
<td>11</td>
<td>DK, NO, SE, EE, CZ</td>
</tr>
<tr>
<td>Czech Republic</td>
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<td>DK, SE, EE, CZ, NO</td>
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<td>Norway</td>
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<td>SE, DK, EE, CZ</td>
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</tr>
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<td>Denmark</td>
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<td>9</td>
<td>DK, EE, CZ, SE,</td>
</tr>
<tr>
<td>Latvia</td>
<td>18</td>
<td>12</td>
<td>SE, DK, NO, LV</td>
</tr>
<tr>
<td>In all</td>
<td>73</td>
<td>55</td>
<td>Six different countries</td>
</tr>
</tbody>
</table>

Subject course
Numbers from evaluation forms (basic for compiled evaluations) (scale 1 (worst)–5 (best))
Chapter 3: Evaluations of Test Runs

<table>
<thead>
<tr>
<th>Country</th>
<th>1st test run 1st evaluation</th>
<th>n</th>
<th>1st test run 2nd evaluation</th>
<th>n</th>
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<tr>
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<tr>
<td>DK</td>
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<tr>
<td>Mean</td>
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</table>

* Weighted mean: \((4.4 \times 13) + (4.2 \times 10)\) etc/n total
** Due to a misunderstanding, the students attending the Danish courses did not perform the second evaluation of the Subject course.

Lecturers’ comments

“Walking in to field of the unknown make you meet things you did not expect.” (DK)
“Some cases the students answered that it was better than expected and therefore gave it low numbers.” (SE)
“The improvement of the numbers between the first in the second evaluation in CZ might be due to the fact not all the students sent answers for the second evaluation.” (CZ)

Students’ comments

“My subject is not art but now I know a little about art and using art in other subjects in the school.” (DK)
“I think it is useful knowledge, to get practical examples of how you can work with literature – there is more than written revives, and to further into the literature to discuss and work a bit further with important questions.” (SE)
“Honestly I did not now what to expect and that is because everything was so exciting and interesting.” (EE)
“I had no image in my mind of what outdoor studying in math could be like and now I have a lot of ideas.” (NO)
“I would love to have more examples of ‘small’ activities to use in school. Now it was a little bit more of ‘big’ activities.” (LV)
“I expected to get a supply of various activities and body exercises and I really widened the range of skills.” (CZ)

How did you experience the workload of the course as a whole?

<table>
<thead>
<tr>
<th>Country</th>
<th>1st test run 1st evaluation</th>
<th>n</th>
<th>1st test run 2nd evaluation</th>
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</tbody>
</table>

* Weighted mean: \((4.8 \times 13) + (4.3 \times 10)\) etc/n total
** Due to a misunderstanding, the students attending the Danish courses did not perform the second evaluation of the Subject course.

Lecturers’ comments

“It would be a good idea to have a day off between the two courses. It was too intensive for the students to stay in the rhythm of course.” (LV)
“Some of the students needed a cooked meal in the middle of the day.” (DK)
“It is very good if one teacher can follow the group during the whole course.” (DK)
“August or the end of May would be the most appropriate time for this type of course.” (EE)

Students’ comments

“We had enough time for reflection and absorption of the content.” (SE)
“Perhaps having a bit more discussion after the different tasks we were doing.” (CZ)
“Much to do, but it’s good to have lots to do as well.” (NO)
“For me it has been a very physical and mental week. I have learnt a lot about myself and my strengths and weaknesses.” (CZ)
“I would have liked more exercises that forced us to read more and that way also learn more.” (SE)
OUTLiNES – Outdoor Learning in Elementary Schools – from Grassroot to Curriculum in Teacher Education

Timetable

<table>
<thead>
<tr>
<th>Country</th>
<th>1st test run 1st evaluation</th>
<th>n</th>
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<td>4.15*</td>
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<td>3.97*</td>
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</table>

* Weighted mean: (4.8 × 13) + (4.3 × 10)...etc/n total
** Due to a misunderstanding, the students attending the Danish courses did not perform the second evaluation of the Subject course.

Lecturers' comments

“More lecturers should be involved in supervising the course because it is very time consuming.” (CZ)
“That is a good idea to organize the course out of Prague because there are no problems with traffic and transport.” (CZ)
“All the days do not have to have the same length. After days with a heavy workload should be a day less intensive.” (EE)
“A lot of outdoor activities are more exhausting than you might expect.” (SE)
“The students appreciated that we mixed landscape and ‘cityscape’ in one course.” (DK)

Students’ comments

“There were so many activities joined very naturally together, we rested when we learnt and we learned when we rested”, (CZ)

Learning effects

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<tr>
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<th>1st test run 2nd evaluation</th>
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</table>

* Weighted mean: (4.6 × 13) + (4.6 × 10)...etc/n total
** Due to a misunderstanding, the students attending the Danish courses did not perform the second evaluation of the Subject course.

Lecturers comments

“Learning effects are better when students have opportunity to apply their knowledge and skills immediately after finishing the course.” (CZ; LV)
“Learning effects are directly related to expectations.” (EE)
“The theories combined with the practise are essential in outdoor learning. You cannot just talk about it, you have to do it.” (SE)

Students' comments

“It was a very good experience and I think I can use it at school now, there are many good activities. Before the course I did not know about outdoor education at all, so it was very good.” (SE)
“I’ve learned a lot about how to bring math outside, and really look forward to get my classes and bring them outside” (NO)
“It was good for all students that we had got local students at the international course.” (DK)
“To see the nature as a second working place and that you can use it for almost every subject.” (CZ)
“I learned that teacher’s role is to be a mentor who dares to let children try out different things.” (EE)
“Nice that the local rooms were open all days, we could use the rooms and the equipment when we needed and finish what we were doing.” (DK)
Chapter 3: Evaluations of Test Runs

Attachments

Attachment: notes from decisions made in Tallinn about the content of the subject courses
(Carina’s notes)

Notes from meeting in Tallinn, 3rd to 5th of May 2007. Subject group.

This was the first meeting of our group, and a very positive meeting. As we all have different subjects, we decided to write a short summary of each subject and how we intend to work with each subject with students.

We must consider the following so that we each have a similar framework. We shared good examples from our various subjects and discussed their practical implementation.

All students will have a grounding in outdoor learning through the foundation course before week 2 and the subject course.

The students will end each day by writing about their experience of the day’s activities and learning in their reflection books. This will form a basis for discussion at the end of the week.

The students, in groups, are to plan and carry out an activity with a group of children, if possible, or with the other course participants.

Attachment: main conclusions from the first test run (from the minutes of the meeting in Norway)
Sweden, Latvia, the Czech Republic and Tallinn University made presentations on their first test runs of the courses. Experiences were shared, commented and discussed. The conclusions and good ideas were:

- The planning is, overall, good. None of the evaluations have been really negative. On the contrary we have had very positive response on most aspects.
- Good idea to give students a small notebook to write their daily reflections in. Made a big difference to them. They used them.
- In Estonia, groups were created. Every group had to pay specific attention to one of the senses: seeing, hearing, smelling etc. They made group reflections every night.
- Daily reflections upon the experience in the light of one sense, e.g. taste.
- Important to be very explicit when explaining to the students in advance what they need to bring. For
example it is necessary to explain in detail what clothes etc. they will need.

- Important to be very explicit about the purpose of the activities before each activity and during the reflections (why and also how to use this in practice).
- Important to have enough time for reflections (for example to relate the experiences to the curriculum).
- A good idea to use language students from your own institution for translating whenever there is a problem in understanding.
- Latvian evaluation method or help to the form – to let the students make a poster of every day and start the evaluation from these posters.
- Good idea to invite “green” politician as a lecturer.
- The sleepover should not be placed to early or to late in the course. The best days are day 2, 3 or 4. Each student could bring a particular snack from their country to share. This gives an opportunity to discuss different cultures.
- The students had some difficulties understanding and filling out the evaluation forms. They have however already been changed and the group decided that it is now okay. This will be discussed after the international test runs again.
- The Swedish test run did not show great difference in the students first and the second evaluation whereas the Danish one had a lot of differences.
- The students need quite a lot of time to reflect and to evaluate.
- Both Denmark and Sweden experienced that students remarked that the best practise examples seems to be more directed towards young pupils and not the older classes. Maybe we should use more time explaining how to use the examples for younger and elder pupils. Be expressive about how the exercises can be changed and then used in other contexts.
- Reflected log is a good idea – everybody agreed on this.
- Latvia did not have problems recruiting students like the rest of the countries have had. One of the reasons might be that they placed the course as part of the students practice (3 ECTS).
- We need to spend more time explaining what the purpose of the exercise is.
- Discussion of how to do the courses without spending too much money. The budget is so limited for this. Use the nearby environment, the landscape around you. Walk instead of spending money on renting bicycles or a bus.