The use of PDA’s at excursions in combination with other ICT equipment.

Subject: Geography
Grade level: Pre-service teacher Education
Anticipated time: 10 lessons
Developer: Associate Professor Klaus Bruun

Abstract

The module focuses on the use of a heritage place (Moens Klint) as a learning arena for the students. As part of the module there is also a focus on ICT as a pedagogical tool used to get information, support the learning and documentation and presentation for the other students.

In the module there is a great emphasis on how the teacher might use PDA’s to support or promote the abovementioned – but the module uses many different ICT equipments in order to make the best integration between the two abovementioned foci.

Zahle College of Education/UCC
Denmark
The use of PDA’s at excursions in combination with other ICT equipment.

**Associate Professor Klaus Bruun, Zahle College of Education/UCC**

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<tr>
<th>Duration</th>
<th>Description</th>
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<tr>
<td>10 lessons</td>
<td>• One lesson to prepare the excursion together with the students in the classroom</td>
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<td>• Seven lessons on excursion taking place at Moens Klint (a UNESCO heritage place) (<a href="http://www.Moensklint.dk">www.Moensklint.dk</a>)</td>
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<td>• Two lessons to be used for evaluation of the excursion and presentations</td>
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<th>Level</th>
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<td>Pre-service (can also be used for in-service) teacher education</td>
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**Pedagogical Framework**

The main purpose with this module is to bring the students into a very different learning arena using the outdoor as an essential part of the teaching and the learning process for as well the individual student as the group activity.

A very important possibility – not described in this module – is to combine two or more subject as focal point in the excursion. Often when you want to analyze processes in nature you are in need of areas of expertise form other subjects as for example Biology and Physics and Chemistry.

The learning is going to take place in authentic surroundings and the pupils are going to discover, recognize and understand the some of the processes, which take place in the nature.

By experiencing this kind of learning arena the students will be able to make a transfer to their own teaching in the schools when they become in-service teachers.

**Background Knowledge**

The students will have to have background knowledge within several areas:

- Curriculum knowledge regarding geological time, erosion processes and the dynamic of landscape.
- Didactical knowledge regarding the use of ICT
- Specific knowledge of Moens Klint
- The handling of ICT equipment

**Materials**

- Acer n35 PDA equipped with a GPS internal unit
- Navman PIN 570 (Personal Interactive Navigation)
- Digital camera (Canon)
- Digital camcorder (Sony DCR HC-17E)
- Projector
- Laptop

**Context**

The involved students study at Zahle College of Education/UCC.

The college is situated in the midst of Copenhagen. The pre-service students are at year three/four of the four year long pre-service education, which end with the degree of Bachelor of Education.

Alongside Geography the students have additional three subjects, which are taught at the schools. They also have didactics, Pedagogic and Psychology.

In the teaching in Geography at the college there are also integrated lessons focusing on Subject Didactic. The same goes for the three other subjects.

Moen Klint is a two hours trip from Copenhagen and the time for transport is NOT included in the lessons.

**Objectives**

The objective of the curriculum (Geography)

Objective for the module

Be able to conduct investigations, measurements and registrations on basis own their own observations and experiences in the nature based and cultural based surroundings

Focus on the geological processes aligned to geological site.
Documentation of unforeseen events and/discoveries.

Be able to use ICT in connection to the search for information, investigations, registrations, working time and presentations.

Use of both PDA’s and GPS for positioning, the geological processes and the documentation.

The groups have to give a presentation –using the collected data and documentation for the rest of the class.

Be able to describe the Geological cycle.

This will most likely – for most of the students – take place in relation to the final evaluation of the module.

There have been short courses with small assignments in the use of PDA. In connection to these the teacher have set up a small information board on the PDA’s with information necessary for the work on the excursion.

The teacher has uploaded maps covering the area for the excursion, the different manuals for the work to take place at the geological site.

Finally, he has prepared room for an evaluation scheme, which at the beginning is available for the pupils, but can be opened by the students on their way back from the excursion and can be filled in by the groups on their way back from site and/or in the afternoon.

Before leaving the teacher has secured that all batteries in all the equipment is fully loaded so activities not are blocked by logistics.

The students are before hand divided into to groups of three, which in one hand is the maximum for using a PDA constructively and at the same time, is the minimum for group work.

Before leaving, the teacher asks the students to find one who is responsible for handle the PDA at the site. The reason is to teach the pupils to have responsibility and to avoid loosing one or more PDA’s.

It is optimal if the PDA has a camera and a GPS because it lowers the number of ICT equipment to be brought to the geological site.

The students have also worked in a small scale with digital camera and digital video. All this is done to secure that most or all of the pupils are confident with the equipment, which is to be used on the excursion.

As mentioned earlier the teacher has prepared information files for the groups and uploaded these on the handheld computer.

The information is designed in a dual way:

- Some of the files are designed for all the groups
- Some of the files are designed specific for the individual group, including special information and a special task for the each group.

An example on an “information file” to be used on the excursion.

“Dear Group
You are now at our location, where you are to learn about some of the goals in the curriculum regarding ICT and geological aspects.

Each group has a PDA with GPS and 3.0 mill pixel camera. As decided earlier one of you who are responsible for the PDA during our stay.

The assignment for today is to focus on some processes in nature, which have a great impact on the landscape and at a larger scale on all the processes, which takes place on surface of Earth.

On this excursion, you will focus on recognising some of the processes, which you can see in this area. You should document your findings with position (use the GPS) and one or more photos of your observation (using the camera or taking samples back home to the school).

The observations should concentrate on:

- Erosion (for help see the special file with text, animation and pictures)
- Chemical weathering (for help see the special file with text, animation and pictures)
- Physical weathering (for help see the special file with text, animation and pictures)

You should try to explain your observation on the PDA and put the writing into the “bag” I have prepared for your group.

The explanations your group offer should furthermore include:

- Geological cycle (for help see the special file with text, animation and pictures)
- Dynamics in nature (for help see the special file with text, animation and pictures)

I hope you all will enjoy this excursion and will get an insight into new aspects in the nature.

Teacher”

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<th>Extensions</th>
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<td>- Orienteering lessons.</td>
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<td>- Develop liaisons with local authorities</td>
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<td>- Locate a school partnership and try the concept in that context working with in-service teachers.</td>
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| **Assessment** | The ability of the students to use ICT and collaborate is to be assessed through the product and the presentation of it for the class, which all the groups have to do back at school.  
  
The erosion and the geological cycle will be assessed through a small paper, which the pupils have to write at their own in class.  
  
The understanding of dynamics in nature will be assessed from the presentation done by the students and their use of ICT-based documentation.  
  
Finally, there is an evaluation of the whole in two lessons back at college. |
|---|---|
| **Bibliography** | • Integrating Handheld Technology with Field Investigation in Introductory Level Geo-Science Courses. Laura A. Guerin. Earth Science, Penn State Delaware County. 25 Yearsly, Mill Road, Media PA 19063. [uxg3@psu.edu](mailto:uxg3@psu.edu)  
  
• Integrating Technology in the Classroom. Competing Visions of Handheld Computer use in the classroom. Wesley A. Fryer. [www.wesfryer.com](http://www.wesfryer.com)  
  
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*ECT-IE. Module 1. Digital Mapping of Our School Environment.*