



LOCAL FIELD TEACHING LABORATORIES

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Local field teaching laboratories

-one of the action points for FA4

A key step for FA4 is to

*“ensure more effective field learning in geoscience education in iEarth by establishing **local field laboratories** close to all the iEarth institutions. The aim is that all geoscience programs at the iEarth partner institutions which include a field component use local locations for parts of their field activities”*

From iEarth discussions, April 2022

Summed up are topics touching upon

- Student autonomy
- feeling of competence

From iEarth discussions, April 2022

Benefits of local field laboratories

- lower travel costs
- lower risks connected with long travel or dangerous
- field sites that the university might have to mitigate
- easier logistics because of shorter transport that isn't going across borders or oceans
- lower carbon footprint!!

Mirjam Glessmer summed up on the discussions in her blog:

[How local field laboratories can enhance student learning – first thoughts - Adventures in Oceanography and Teaching \(mirjamglessmer.com\)](https://www.mirjamglessmer.com/2018/05/01/how-local-field-laboratories-can-enhance-student-learning-first-thoughts-adventures-in-oceanography-and-teaching/)



IEARTH REPORT ON LOCAL FIELD TEACHING LABORATORIES

A report with the purpose to define
what
a Local Field Teaching Laboratory is



What are local field teaching laboratories and why does the geoscience discipline need them?

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Purpose

The aim of this report is to improve students' learning by presenting a definition of novelty space.

The report is a contribution to ensure more effective learning in all the iEarth laboratories which include a field component.

Introduction

Traditionally, fieldwork (Cotton, 2010) and there is an opportunity to study concept knowledge

Background and Focus: the full range of natural geoscience education

Many geoscience educators work in the field. A common theme in learning (Falk et al., 2007) "novelty space" all have an extra dimension to it

about that it is important to study during the period 2014; Mal students who are familiar with (Cotton, 2010) are entangled in the idea of fieldwork, especially ethnicity-, religious-

the outdoor experience question: does a skill in the first place? If geoscientists from different cultures to meet the complex diversity of the

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Local?

...in terms of distance from campus and confine it to an area within the neighborhood of the students. Thus, a local site is here defined by being in an environment that is familiar to the students and easily accessible from campus by foot, bike, bus or car making it possible for students to revisit the site by themselves.

Field teaching?

field teaching is defined by engaging students in learning by physically going out into the natural environment, using the human senses and sometimes instrumentation, to interact with the environment

Laboratory?

“A building, part of a building, or other place equipped to conduct scientific experiments, tests, investigations, etc. Or, any place, situation, set of conditions, or the like, conducive to experimentation, investigation and observation”

In iEarth a local field teaching laboratory refers to:

An easily accessible outdoor laboratory where field skills and concept knowledge can be practiced repeatedly during a course or a program.

A local field teaching laboratory is used for day trips or shorter and can refer to one of the two following:

- 1) a local field site
- 2) an outdoor classroom.

In iEarth a local field teaching laboratory refers to:

1) Outdoor classroom

- Instrumentation on campus (i.e. a weather station)
- A simulated field environment like a geoscience garden with boulders, where students can practice interpreting and measuring structures in three dimensions (Benison, 2005; Waldron et al., 2016)
- Several sites on campus which can be combined to an on-campus (self-guided) field trip (Sample-Lord et al., 2019),
- The stone walls houses and churches. These walls can be used to study rock types and observe and measure structures.

2) Local field site

A local field site would ideally represent a land system to allow for learning opportunities for multiple courses, but it can also constitute part/parts of a land system for example a local beach, the river flowing through town, sediment or bedrock outcrops exposing deformation structures or an instrumented site close to town



WHY ARE LOCAL FIELD TEACHING
LABS IMPORTANT? |







WHAT HAPPENS TO US WHEN WE
VISIT NEW ENVIRONMENTS?

THE CONCEPT OF NOVELTY SPACE

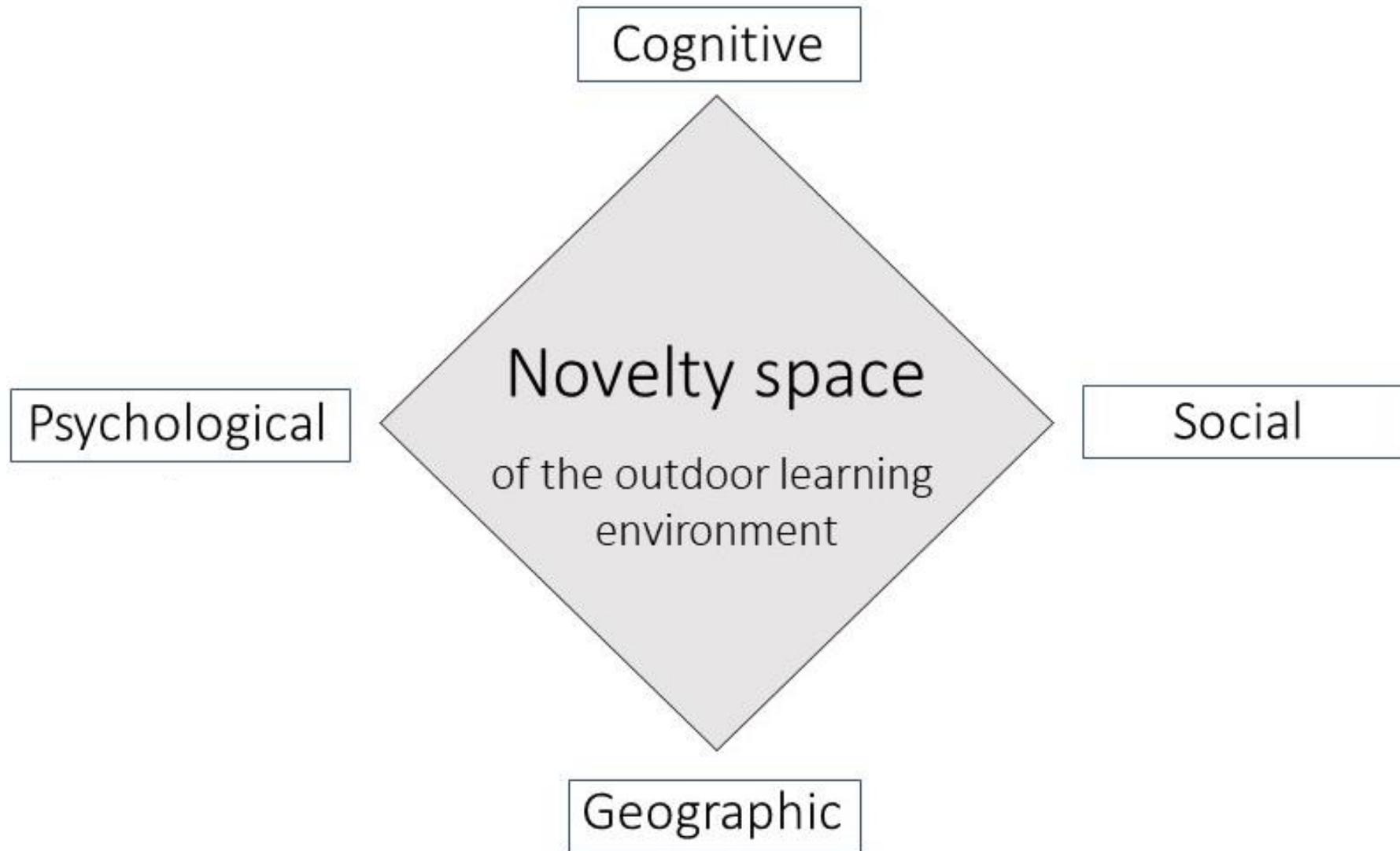
The “novelty effect” of visiting new learning environments and unusual settings may hinder learning (**Falk et al, 1978**).

Orion (1993) identified cognitive, psychological, and geographic dimensions of this ‘novelty space’ all of which may limit student learning,

Elkins and Elkins (2007) added social novelty as an extra dimension to describe the impact of personal relationships during fieldwork

Cognitive, psychological, geographic and social novelty





Social novelty

The social novelty can be reduced indirectly by field preparation sessions focusing on

Expectations and difficulties of groupwork and social expectations of both teachers and students

Cognitive novelty

The cognitive novelty can be reduced directly by several concrete activities:

working with the materials the students will meet in the field

working with simulation of phenomena and processes (laboratory experiments and virtual field guides).

Preparation for fieldwork to reduce novelty space

Geographic novelty

The geographic novelty can be reduced indirectly in the classroom by:

working with maps and digital elevation models of the field area

Looking at slides and films of the field area

Psychological novelty

Psychological novelty arises in the gap between expectations and reality and can be reduced indirectly before going in the field by giving detailed information about the fieldwork, such as:

Purpose of the fieldwork

learning method

length of time

expected weather conditions

expected difficulties

A local field teaching laboratory is:

- an easily accessible outdoor laboratory where field skills and concept knowledge can be practiced repeatedly during a course or a program.
- used for day trips or shorter and can be either a local field site or an outdoor classroom
- can either be used for preparation for fieldwork at more remote sites or as the main field component of a course
- When local field teaching laboratories make up for the full field component of a course, then outdoor classrooms can be used as preparation (of field skills) for fieldwork at a local field site.

Novelty space:

- Students who are familiar with a field area and the rationale for the field trip (who's novelty space has been reduced), perform significantly better than those who are not adequately prepared. Therefore, it is important to plan field preparation with novelty factors in mind. For suggestions for field preparation see Figure 2.

Inclusion:

- Lowering the threshold for participation in fieldwork, by using local field teaching laboratories, will give room for a more diverse crowd of prospective students to be attracted to the discipline