

# ESTEEM

Research on education in science, technology,  
the environment, engineering and mathematics:

Exploring issues of epistemology and  
methodology

Doctoral research students  
School of Education  
University of Iceland  
Seminar 14th December 2009

MVS Doctoral seminar – open to all –  
Room E301 14th Dec 2009, 10:00-15:00 +

9:45	Coffee/tea – warming up
10:00	Part 1 Introduction (ÓPJ/AM)
10:10-11:30	Six to eight contributions to a debate on the role of ESTEEM in learning to think
11:40-12:10	General discussion and summary (ÓPJ)
	<i>Lunch</i>
13:00-13:10	Part 2 Introduction (AB/AM)
13:10-14:30	Six to eight contributions to a debate on issues of methodology
14:30-15:00	General discussion and summary (AB)
15:00 +	Jólaglögg - profound discussion

# ESTEEM research

- ESTEEM is Education in science, technology, the environment, engineering and maths
  - Many doctoral projects in the School of Education form part of ESTEEM research
- Aim of the seminar is twofold:
  - a) issues of methodology in research projects
  - b) the value of ESTEEM for learning to think

STEM

Science, technology, engineering and mathematics

# Doctoral seminar – Part 1

- What is the role of ESTEEM in learning to think?
- Researchers will consider some of the following questions:
  - *How do children learn? How do children learn to think?*
  - *What affects the ability to learn? What affects the ability to think?*
  - *What kind of thinking does ESTEEM promote?*
  - *What type of knowledge or understanding does our research build on?*

# Doctoral seminar – Part 2

- How do we conduct our research?
- Researchers will consider some of the following questions:
  - *How do we collect, analyse and interpret data?*
  - *How do we decide what data to collect?*
  - *How do we find our research questions?*
  - *Why do we need to collect data?*
  - *Do we need to collect data?*

# Short descriptions of projects 1

- **Almar M. Halldórsson**

- The project aims to build a comprehensive multilevel explanatory model of student performance in reading and math in line with the Educational Effectiveness research paradigm. It uses comparative analysis of longitudinal national and international data from compulsory schools in Iceland on achievement in the last 10 years and background information at student, teacher and school level. A central aim is to allow for valid and reliable *causal* inferences of educational achievement.

- **Auður Pálsdóttir**

The aim of the project is to:

- improve the current understanding of ESD of teachers and school administrators and how they reach these understandings.
- understand approaches to coaching used by school advisors, the reciprocal nature of these and the extent to which these approaches were related to their views of coaching and their views of ESD.
- test and adapt an evaluation tool for schools to identify feasible steps for innovation with regard to ESD in order to support capacity building in self-evaluation.

# Short descriptions of projects 2

- Edda Óskarsdóttir

- The purpose of my research is to get an overview of special needs mathematics in Icelandic compulsory education, how it is organized, who are the teachers and what methods are they using. Also I intend to take a look at progression reports from standardized testing in grades 4 and 7 to find students who have progressed well and find out why.

- Kristján Ketill Stefánsson

- The purpose of my project is to explore the level of science self-efficacy among 11-15 year old learners in Iceland. I am in the first wave of data collection exploring the development of self-efficacy in science in Iceland during adolescence and the possible benefits of *self-regulated learning* during that developmental period.

# Short descriptions of projects 3

- Meyvant Þórólfsson
- A study on the 'transformation' of the science curriculum.
- Design:
  - An analysis of historical documents related to the evolution of the science curriculum
  - Oral history research consisting of interviews with subjects involved in the evolution of the science curriculum
  - Data collection with mixed methods about present curriculum work in science education

- Ingólfur Gíslason
- I want to understand the different meanings mathematics has for people, how people experience it and it's role for themselves and society, and what possibilities there are for the field of mathematics education to influence mathematics in school and in society

# Short descriptions of projects 4

- Kristín Norðdahl
- The purpose of my research is to investigate the role of outdoor environment in children's education. I will investigate this from different viewpoints, those that influence educational policy, among teachers and children themselves. Finally I will study how teachers see and use the opportunities outdoor environment offer in children's learning.

- Svanborg R. Jónsdóttir
- The aim of my study is to locate and analyze innovation education (IE) in Icelandic compulsory schools. By identifying examples of innovation education and locating these within the pedagogic discourse I intend to extract an understanding of the nature of innovation education and what it requires of students, teachers, schools and their environments and consequently how IE can be enhanced.

# Short descriptions of projects 5

- Haukur Arason
- The purpose of my research is to document the function of physics and chemistry textbooks in lower secondary schools in Iceland, with the intent to understand the cultural climate the textbooks are used in. Thus giving indication of what kind of learning material would be best suited to meet the needs of students, teachers and schools.

- Svava Pétursdóttir
- My study explores the uses of ICT in science teaching; to what extent teachers are using ICT and what kind of uses there are.
- a currently ongoing intervention with a quasi-experimental design investigates the effectiveness of teaching science with ICT, alongside possible effects of participation on the teachers.

# Short descriptions of projects 6

- Jónína Vala Kristinsdóttir
- The study is a collaborative inquiry into mathematics teaching and learning.
- The main goal of the research is to learn to understand how teachers meet new cultural and mathematical challenges and how participation in a learning community with their colleagues and a teacher educator can lead to changes that are valuable for their work.

# Supervisors

- Amalía Björnsdóttir
- Jan Erik Gustafsson
- Allyson Macdonald
- Hafdís Guðjónsdóttir
- Sif Einarsdóttir
- Steinunn Gestsdóttir
- Jón Torfi Jónasson
- Barbara Jaworski
- Kristján Kristjánsson
- Ingólfur Ásgeir Jóhannesson
- Jóhanna Einarsdóttir
- Örn Daníel Jónsson
- Hafþór Guðjónsson
- Sigurlína Davíðsdóttir
- Phil Scott