



Networked Inquiry Learning in Secondary Science classrooms: NILSS

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Introduction

The research team together with six teachers and their year 9 and 10 students will explore what knowledge, skills and attitudes are needed so that inquiry teaching and learning in science can be supported through e-networked environments (i.e. blogs, e-mail), and further to see how online resources can support individual and group explorations in science.

Aims

The aim of this project is to investigate opportunities for students to connect with real-world science issues they are interested in and find personally engaging. This team will explore and theorise how science education can be made more relevant to and responsive to the needs and interests of students from diverse backgrounds. Overall, the project goals are to:

- describe the social construction of knowledge when diverse students are involved in individual or group science inquiries that may involve both, face to face and networked online environments, and
- put forward a framework for understanding networked inquiry learning in science classrooms underpinned by activity theory.

In order to achieve this we are working collaboratively with six teachers to create a shared vision for inquiry-oriented learning, and identify how to support teachers so they can equip students to conduct science investigations and effectively collect and analyse data in a scientific manner.

Why is this research important?

In New Zealand and overseas school science has been criticised for lacking authenticity and has been described as having very little to do with issues that are publicly debated. This lack of relevance has been associated with students' lack of interest in science and motivation to continue with science beyond the compulsory years at school.

This research is important because it considers the opportunities science education can provide for students to connect with real-world science issues that they will be interested in and find personally engaging using currently available ICT networking tools. More systematic work is needed in the New Zealand context with this research focus.

What we plan to do

In this project we are interested in finding out:

1. The existing ideas, experiences and visions that the six secondary science teachers have about teaching through inquiry learning in science?
2. The particular research skills students require and acquire when they are involved in inquiry learning in science?
3. How individual understandings change as the students in this study collaboratively engage in inquiry learning projects?
4. How networked environment in this project impact on collaborative inquiries where students and teachers communicate through the web in addition to the face-to-face teaching?

In order to achieve this we will draw from the following data sources:

- teacher planning documents,
- field notes from classroom observations,
- video-recordings and transcripts from the classroom,
- student work produced during and as a result of their inquiries, during homework activities and as part of assessment activities,
- online records from networked activities (e.g. blogs), and
- reflections and insights from both teachers and students collected during formal and informal interviews.

Analysis

This study will develop case studies, one from each teacher and their class in each year, with nested cases of interest from a small number of individual students and or groups when they are engaged in networked inquiry in science classrooms. These will provide rich detailed descriptions of how the process of networked inquiry in science evolves and can be stimulated. These cases will be subject to cross case analysis to search for themes. The goal of the analysis of the cases will be to understand innovative pedagogical practices using network technology in science classrooms, how these innovations change what it is that teachers and students do in science classrooms, the roles ICT plays in supporting them, associated with various outcomes and contextual conditions.

Our partners:

The research partners of the University of Waikato team are six teachers, two each from one Hamilton, one Cambridge and one Tauranga secondary school. Teachers and researchers bring into this project experience and knowledge in research and teaching, specific to science, inquiry, online learning and collaboration and classroom work. Each member of the team is equally valued for the contribution they are making to this project.



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