

---

# Addressing education for sustainable development in the teaching of science

THE CASE OF A BIOLOGICAL SCIENCES TEACHER EDUCATION PROGRAMME

Deirdre Hogan, School of Education, UL & Ubuntu Network  
19<sup>th</sup> April 2022



## Background to the research – the research question

- **How does the lived nature of science as an academic discipline, in the context of the Science Education programme, support and/or challenge the embedding of Education for Sustainable Development (ESD) in teacher education?**

## Background to the research

What does  
ESD look  
like?

Issues  
focused

Critical  
skills/comps

Multiple  
Perspectives  
(E, S, E)

*Paradigm  
shift?*

Active  
engagement

Immersive  
activities

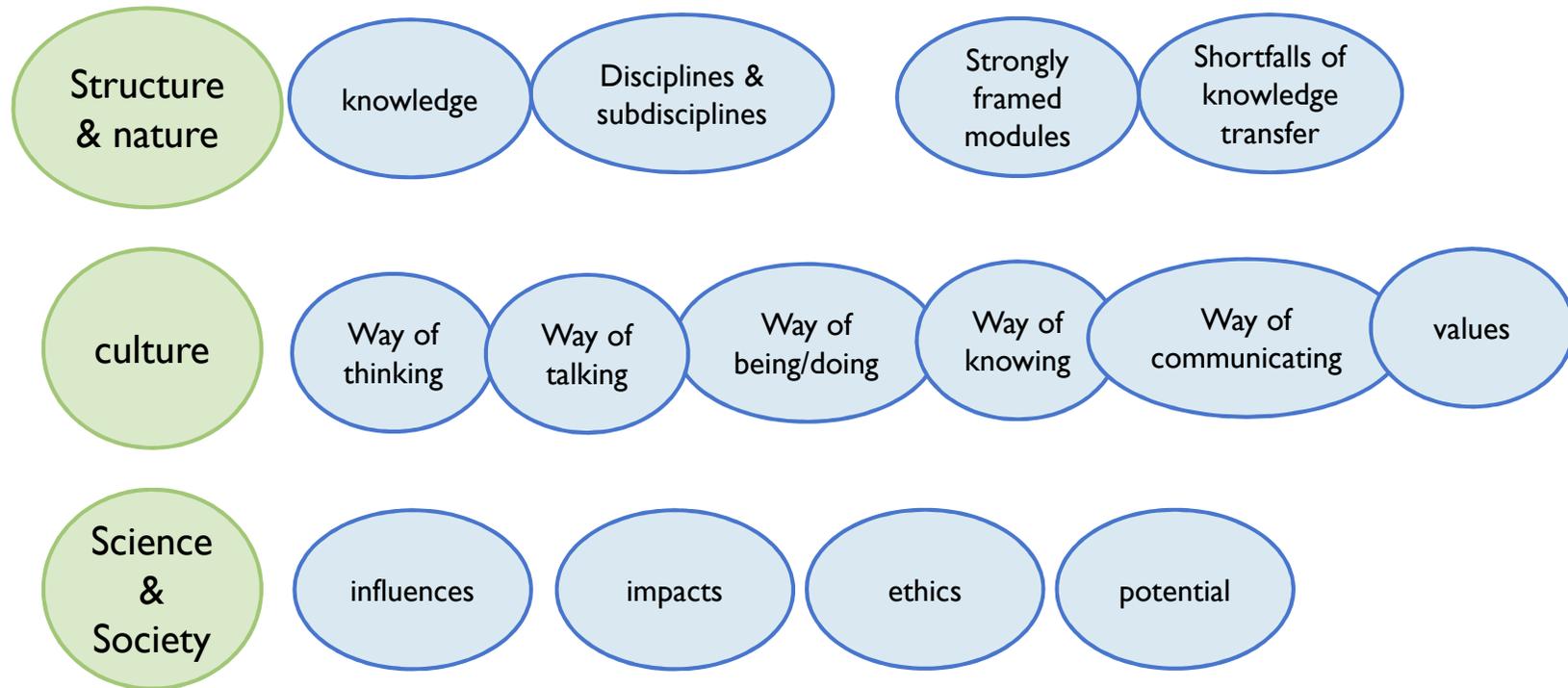
Inter  
disciplinary

Action  
component

**FOR not ABOUT**

# Background to the research

What is the nature of Science as an academic discipline?



## This paper

- **The question addressed in this paper –  
how does the relationship between science and society, in the context of the Science Education (biological sciences) program, support and/or challenge the integration of ESD?**

## FINDINGS

This study set out to explore the nature of science as an academic discipline as it is lived and perceived within the teaching of an undergraduate science teacher education (biological sciences) program and its capacity for the integration of ESD.

Specifically, it sought to develop an understanding of the relationship between science and society in the context of science education and the opportunities for integration of ESD.

## Scientific literacy – addressing socio scientific issues



**content**



**procedural**



**epistemic**

- How we come to know what we know...
- The nature of science (NOS)
- **The role of science and technology in an individual's personal life and society.**

## Methodology

An ethnographic informed research design was adopted to document the social culture, perspectives, and practices inherent in the educational setting. Semi-structured interviews were conducted with academics and tutors from the HEI's Science Department who contribute to the program (n = 11). Focus groups were held with pre-service teachers enrolled on the program (n = 21) and observations from lectures, laboratory sessions, and field trips were carried out.

## Discussion/findings

### **1. Developing Scientific Literacy for Engagement in Socio-Scientific Issues (SSI)**

Acknowledging the importance of the epistemic aspect of scientific literacy, pre-service science teacher education programmes should support students to explore socio scientific issues in a way that is consistent with ESD.

### **2. Barriers to Discursive Pedagogies in Science Education Teacher Education**

Teaching and learning environments should provide opportunity for students to research, discuss and collectively build an understanding of how science can respond to key issues of our time.

### **3. Sustainability in Existing Science Education Modules**

Teaching and learning environments should build upon existing entry points that exist within the programme.