



Transdisciplinary Science Levels 2-3

Overview and Key Features

Years 9 to 12 Learning 2020



The purpose of this paper

The purpose of this paper is to provide information regarding the overview and key features of the proposed *Transdisciplinary Science Levels 2-3*.

It is designed to enable all interested stakeholders to reflect and provide feedback on key features including learning outcomes, structure, sequencing, likely content and number of work requirements. This feedback will be considered in writing the draft course.

Consultation

Throughout the course development process there will be four opportunities for formal stakeholder consultation:

- Course Scope
- Structural Overview and Key features (Nov/Dec 2020)
- Initial Draft Course (March 2021)
- Final Draft Course (June 2021)

This paper represents the second of four course consultation points for teachers to engage in the course development process for *Transdisciplinary Science Levels 2-3*.

Course Rationale

As part of a group of three flexible science courses with *Introductory Science Level 1* and the *Transdisciplinary Science Levels 2-3* provides a powerful platform for all learners to develop their capabilities, in particular to think creatively, work collaboratively, and be innovative.

Learners undertaking *Transdisciplinary Science Levels 2-3* will apply inquiry-based approaches to design, plan, and undertake investigations on a short term or more extended scale, responding to local or global situations. Both collaboratively and individually, students will employ a scientific approach to collecting, representing, analysing data, and using technological tools effectively. After critically evaluating their procedures or models, students communicate scientifically to draw evidence-based conclusions that may lead to further testing, exploring more effective methods or solutions, or new questions. That is, they will be equipped to navigate, understand and adapt to what we experience as 21st Century learners.

Innovative and critical thinking in the world of science underpins a cohesive understanding of the natural world and the discovery of new ways of doing and thinking. Science is continually refining and expanding knowledge and, as this happens, stimulating new questions for future investigation.

Of the 22 divisions of academic student in the Fields of Research 2007 classification, 10 are scientific and 3 have deep and rich relationships with science.

(<https://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/1297.0Main%20Features52008>)

In practice, most modern and applied science flows between these divisions and is transdisciplinary once contextualised. Only half of these divisions, which are then further divided into recognisable disciplines, are represented within the current TCE offerings.



Years 9 to 12 Curriculum Framework

[Years 9 to 12 Education Framework](#) informs the design of *Transdisciplinary Science Levels 2-3* and it fits within the *Transdisciplinary Projects* focus area of the [Years 9 to 12 Curriculum Framework](#).

Pathways in

The proposed *Transdisciplinary Science Levels 2-3* has a clear pathway from Australian Curriculum Science F-10 and other TASC Science as well as some TASC HaSS, HPE, Technologies and Mathematics courses.

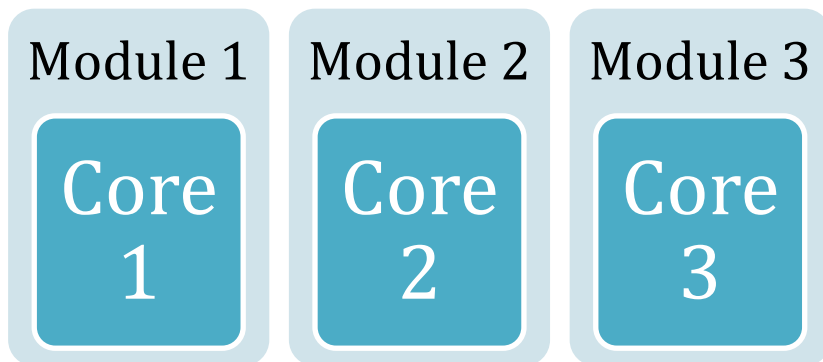
Level 2

Learning Outcomes

On successful completion of this course learners will be able to:

- plan, monitor and evaluate progress to adapt processes and practices within scientific inquiry
- develop and correctly present scientific expertise quantitatively and qualitatively
- explore and present relationships between science applications and technology
- explore and present relationships between science applications and their communities through time
- implement, adapt and refine quantitative methods of scientific inquiry
- implement, adapt and refine qualitative methods of scientific inquiry
- select and apply appropriate science theories and models quantitatively to explain phenomena
- select and apply appropriate science theories and models qualitatively to explain phenomena

Course Structure



Modules Available

Core 1: Inquiry, science and Tasmania

Core 2: Inquiry, methodology and theory

Core 3: Inquiry project



Course Delivery

To be developed through consultation.

Module content

Module 1

- **Science as a Human Endeavour**
 - Science in Tasmania (overview)
 - Choosing a local scientific focus
- **Practical Science Inquiry**
 - Applied introduction to scientific methodologies relevant to the focus
- **Science Understanding**
 - Science disciplines related to chosen focus

Module 2

- **Science as a Human Endeavour**
 - Tasmanian connection to the focus (past, present, future) **OR**
 - National connections to the focus
- **Practical Science Inquiry**
 - Choosing methodologies
 - Applied exploration chosen methodologies through practical inquiry
- **Science Understanding**
 - Science disciplines related to chosen focus and where they apply
 - Theory underpinning focus and the relationships to science disciplines

Module 3

- **Science as a Human Endeavour**
 - Tasmanian connection to an inquiry (past, present, and future) **OR**
 - Global context of your chosen inquiry
- **Practical Science Inquiry**
 - Applying scientific methodologies within an inquiry
- **Science Understanding**
 - Science disciplines related to an inquiry
 - Theory underpinning inquiry and the relationships to science disciplines

Level 3

Learning Outcomes

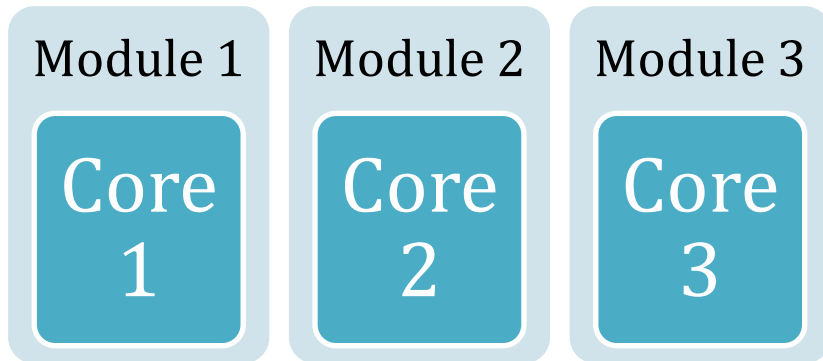
On successful completion of this course learners will be able to:

- plan, monitor and evaluate progress to optimise processes and practices within scientific inquiry
- develop, analyse and communicate scientific expertise quantitatively and qualitatively to others in the field
- explore, analyse and evaluate relationships between science applications and technology
- explore, analyse and evaluate relationships between science applications and their communities through time
- develop and use judgement to implement, synthesise and refine quantitative methods of scientific inquiry



- develop and use judgement to implement, synthesise and refine qualitative methods of scientific inquiry
- synthesise and apply science theories and models quantitatively to analyse and discuss phenomena
- synthesise and apply appropriate science theories and models qualitatively to analyse and discuss phenomena

Course Structure



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Course Delivery

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 - Choosing methodologies








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Relationship to possible Future Provision

Focus Area	P	I	2	3	4
 DISCIPLINE-BASED			Biology Physical Sciences		
 TRANSDISCIPLINARY			Transdisciplinary Science Environmental Science		
 PROFESSIONAL STUDIES					Chemistry Physics
 WORK-BASED					
 PERSONAL FUTURES	Science	Introductory Science			

Note: Subject to ongoing accreditation considerations in line with the Accreditation Framework